ASSESSING THE "SANTA CLAUS" APPROACH TO ASSET ALLOCATION: IMPLICATIONS FOR COMMERCIAL REAL ESTATE INVESTMENT

Jianping Mei

is associate professor of finance at New York University.

The allocation of investment funds among different classes of assets, such as stocks, bonds, and real estate, is probably the most important decision for financial institutions. Casual observation suggests that there is wide practice of a "Santa Claus" approach to asset-class allocation, i.e., giving more money to asset-class managers whose performance has been "nice" (good) in the recent past, and giving less money to fund managers if their performance has been "naughty" (poor). Although this may be a sensible approach to solving the asset-allocation problem in a political corporate environment, few studies have asked whether the approach is consistent with rational portfolio management.

In this article, we use asset-allocation data from 1973–1989 for commercial banks to address the above issue. These institutions report their positions in real estate assets and other assets on a regular and homogeneous basis — in bank call reports and other statistical releases. As such, they present a unique laboratory to analyze investment behavior over time and the rationality of such behavior in light of asset-pricing theories. Our major objective is to show that the backward-looking Santa Claus approach to asset allocation may not be consistent with optimal portfolio management and that the Santa Claus strategy may have contributed to the poor performance of U.S. commercial banks' real estate portfolios.

Description of Methodology

The methodology used in this study is a combination of the non-parametric market-timing test developed by Henriksson and Merton (1981) and the portfolio-performance test developed by Mei and Saunders (1996). The test is quite intuitive. It simply says that if bank loan officers have a good investment strategy, then we shall generally see an increase in real estate loans when future excess returns on real estate will be high, and a decrease in real estate loans when future excess returns on real estate will be low.

Following Henriksson [1984], we first define Z_t to be the one-period return on the real estate portfolio and r_t to be the one-period return on risk-less securities. We also define γ_t to be the investment decision (forecast) variable where $\gamma_t = 1$ if commercial banks decide to increase their position (relative to

their mean increase) during time, and $\gamma_t = 0$ if commercial banks decide to reduce their position during time $t - 1$. The two probabilities of interest for γ_t conditional on the realized return of the market are

$$p_{1t} = \text{prob}[\gamma_t = 0 \mid Z_t \leq r_t] \text{ and}$$
$$p_{2t} = \text{prob}[\gamma_t = 1 \mid Z_t \geq r_t]$$

Thus, p_{1t} is the conditional probability of a correct forecast, given that $Z_t \leq r_t$, and p_{2t} is the conditional probability of a correct forecast, given that $Z_t \geq r_t$. Merton [1981] showed that a necessary and sufficient condition for a forecaster's predictions to have no value is that $p_{1t} + p_{2t} = 1$. The existence of forecasting ability will result in $p_{1t} + p_{2t} > 1$.[1]

Based on the above theoretical results, Henriksson and Merton [1981] proposed the following test statistic to test the null hypothesis of $p_{1t} + p_{2t} = 1$:

$$S = \frac{n_1}{N_1} + \frac{N_2 - n_2}{N_2} - 1 \qquad (1)$$

where n_1 is the number of correct forecasts, given $Z_t \leq r_t$; and n_2 is the number of times forecast that $Z_t \leq r_t$ subtracting n_1; N_2 is the number of observations where $Z_t > r_t$; and N_1 is the total number of observations subtracting N_2. They have provided asymtotic standard errors for the statistic, so a simple t-test of the null hypothesis could be formed.

Data

In this study, we use security market–based data to construct real estate returns for our test. Specifically, we construct two real estate stock return-based series: an equally weighted return index of equity real estate investment trusts (EREITs) and an equally weighted return index of mortgage real estate investment trusts (MREITs). These series consist of all available REITs listed on the NYSE, the AMEX, and NASDAQ over the sample period. Based on the above classifications, two monthly real estate return series are derived from the CRSP (daily) tape. Later, we also use the Russell-NCREIF appraisal-based return data, with quite similar results.

To measure asset allocation by the nation's commercial banks, we use the seasonally adjusted monthly percentage changes in total assets and real estate loans at commercial banks. These data are obtained from the Citibase data files.

Empirical Results

We first examine the extent to which several economic state variables — the excess return on the value-weighted market portfolio, the real interest rate, the relative bill rate, and the dividend yield — can explain the variation across time in the expected returns on real estate assets.[2] We find these forecasting variables are capable of explaining much of the variation of future expected returns on real estate. The expected returns tend to rise during economic recessions and fall during economic expansions. We also find that expected returns on real estate tend to fall after a real estate market rally and increase after a market downturn.[3] This implies that there is a negative correlation between past returns and future expected returns.

By comparing the realized real estate total return (ex post) with our model of the previously expected real estate return for the same period (ex ante), we can derive an "unexpected" real estate return series. This is our proxy for how naughty or nice the real estate asset class has been, during each period, in the perception of the investors who form the market for these assets.

To find out what has driven commercial real estate investment decisions at the aggregate level, we regress the monthly percentage change in real estate investments of banks (in excess of their sample means), I_t, on their past investment changes (I_{t-1}), lagged real estate unexpected returns ($v_{e,\,t-1}$ and $v_{e,\,t-2}$), and lagged interest rates ($Tbill_{t-1}$). The final results are presented in Exhibit 1. The top panel of Exhibit 1 reports the regression results for commercial banks' real estate investment behavior. The first line reports the regression equation using Equity REITs as the real estate return proxy. The second line reports the regression equations using the Mortgage REIT portfolio returns as the real estate return proxies.

As can be seen from the top panel of Exhibit 1, banks' current real estate investments (I_t) are positively and significantly related to their one-period lagged real estate investments (I_{t-1}), and positively and significantly related to the two lagged real estate unexpected returns ($v_{e,\,t-1}$ and $v_{e,\,t-2}$). The goodness of fit ($\overline{R}^2$) for the investment equation is approximately 68% after adjusting for degrees of

Exhibit 1

A. Regression of Bank Real Estate Loans on Lagged Loans and Past Unexpected Excess Returns

	cons	I_{t-1}	$v_{e,\,t-1}$	$v_{e,\,t-2}$	$Tbill_{t-1}$	F-test	$\bar{R}^2$
				EREITs			
I_t	4.107**	0.760**	0.077*	0.103**	−0.166**	0.00	0.677
				Mortgage REITs			
I_t	4.001**	0.776**	0.051	0.060*	−0.174**	0.00	0.671

B. Regression of Bank Real Estate Loans on Total Loans and Past Unexpected Excess Returns

	cons	Total $Loan_t$	$v_{e,\,t-1}$	$v_{e,\,t-2}$	F-test	$\bar{R}^2$
			EREITs			
I_t	7.96**	0.44**	0.10	0.15**	0.00	0.218
			Mortgage			
I_t	7.74**	0.47**	0.02	0.05	0.00	0.193

Note: Real estate investments (I_t) by various financial institutions are measured by: i) the monthly (%) changes in real estate loans made by all commercial banks.
The lagged unexpected return, $v_{e,t}$, is defined as $e_{i,t} - E_{t-1}(e_{i,t})$.
**Indicates significance level at 10%.*
***Indicates significance level at 5%.*
The sample period covers 1973.1–1989.12.

freedom. Similar results hold if we use Mortgage REITs as real estate return proxy. In summary, we find evidence that commercial banks were increasing real estate investment after a good real estate market performance, and lowering investment after a bad real estate market performance during the sample period — a backward-looking Santa Claus investment strategy.

To test against the possibility that commercial banks' real estate investments were simply passively responding to increases and decreases in overall bank investments, we also regressed the percentage changes in commercial banks' real estate investment against percentage changes in total investments and past real estate returns for each class of real estate assets. The results are reported in panel B of Exhibit 1. We find that real estate returns are only partly responsive to total investment changes. For example, a 1% increase in total bank investments leads to a 0.44% increase in bank's real estate investments. Moreover, past real estate returns still had a significant positive effect in determining real estate investments after controlling for total investment changes. We obtain similar results even if the Russell-NCREIF appraisal-based return index is used to proxy real estate market returns. These results are quite similar to those reported in Mei and Saunders (1996).

Market-Timing Test

Obviously, this positive relationship found between *past* real estate returns and current commercial bank investments suggests the presence of a Santa Claus investment strategy on the part of many bank managers. This strategy appears to involve increasing real estate investments after the asset values have gone up, and reducing real estate investments after the asset values have gone down. The interesting question is whether the Santa Claus approach to asset allocation represents good real estate market timing. That is, does this strategy lead to an increase in real estate loan originations when future total returns on real estate will be high and a decrease in real estate loans when future returns on real estate will be low?

Exhibit 2 presents the results of the market-timing test of Henriksson and Merton [1981]. Our test shows that, although there are some evidence of banks' real estate loans having good market timing in the short-run on equity real estate (less than a year), there is strong evidence they have quite poor market timing on mortgage real estate. They also appear to have quite poor market timing on equity real estate for the longer holding periods of twenty-four-, thirty-six-, and forty-eight-month.

To gauge the economic significance of the Santa Claus strategy of banks, we formed three real estate portfolios based on out-of-sample expected return forecasts and specific investment strategies assumed for bank managers: 1) the Santa Claus strategy, 2) a buy-and-hold strategy, and 3) a contrarian strategy.

Exhibit 3 reports the mean excess returns for the passive buy-and-hold portfolio and the two active portfolio strategies using two different proxies for real estate asset returns. It is interesting to see that not only is the Santa Claus portfolio easily beaten by the buy-and-hold portfolio, but that it also

Exhibit 2

Market Timing Test of Henriksson and Merton [1981]

	$p_1 + p_2$	Standard Deviation	T-test (H_0:$p_1 + p_2 = 1$)	$p_1 + p_2$	Standard Deviation	T-test (H_0:$p_1 + p_2 = 1$)
	Equity REITs			Mortgage REITs		
3-month	1.091	0.052	1.743	0.874	0.051	–2.418
6-month	1.099	0.054	1.808	0.981	0.053	–0.355
12-month	1.103	0.057	1.815	1.040	0.054	0.736
24-month	0.974	0.055	–0.453	0.836	0.064	–2.538
36-month	0.904	0.059	–1.631	0.624	0.071	–5.256
48-month	0.969	0.063	–0.477	0.776	0.087	–2.553

Note: p_1 is the conditional probability of a correct forecast, given that $Z_t < r_t$, and p_2 is the conditional probability of a correct forecast, given that $Z_t > r_t$. The t-test gives the t-statistic to test the null hypothesis of $p_1 + p_2 = 1$.

generates negative excess returns during the holding period.[4] By contrast, the contrarian portfolio beats the buy-and-hold portfolio by a significant margin. Although most banks cannot adjust their real estate loan portfolios as easily as buying and selling REITs (as well as "shorting" real estate), the results tentatively suggest that a financial institution manager could do *better* by following a simple buy-and-hold strategy instead of using the Santa Claus strategy. We also show that a simple asset-allocation approach of investing 50% in real estate (via buy-and-hold) and 50% in risk-free assets (T-bills) will have a smaller portfolio risk but higher positive excess returns than the Santa Claus strategy.

Exhibit 3

Mean Portfolio Excess Returns Based on Out-of-Sample Predictions

Strategy	Santa Claus	Buy & Hold	Contrarian	50% Buy & Hold, 50% T-bill
EREITs				
Mean return	–0.079	0.550	0.629	0.287
Standard deviation of portfolio	(1.68)	(3.09)	(2.58)	(1.54)
Mortgage REITs				
Mean return	–0.392	0.344	0.737	0.172
Standard deviation of portfolio	(2.35)	(4.06)	(3.21)	(2.03)

In other words, U.S. banks at the aggregate level appear to *have increased real estate investments at times when future excess returns on real estate were decreasing and to have reduced real estate investments at times when future real estate returns were increasing*. Since U.S. banks have been adopting this apparent investment strategy based on past returns for most of the 1970s and 1980s, it is perhaps no surprise that they have exhibited mediocre or bad performance in their real estate investment portfolios. Our results here confirm that a poor investment strategy — i.e., a belief that high past excess returns imply high future excess returns — has resulted in poor investment performance. As a matter of fact, Mei and Saunders (1996) have shown that past excess returns often imply low future-expected excess returns, since real estate returns tend to be mean-reverting. As we all know from elementary finance, consistently gambling with bad odds will sooner or later lead to financial loss.

It is worth noting that although our study only covers the 1973–1989 sample period, due to data availability at the time of the study, our results would also hold if the real estate market downturn of the early 1990s was also included. Casual observation suggests that banks had significantly cut down their real

estate lending during this downturn, and their Santa Claus behavior during the period should strengthen our results. An updated study covering the downturn will be provided in a later issue of *Real Estate Finance.*

Loan-to-Value Ratio and the Santa Claus Strategy

One partial explanation for the Santa Claus strategy of commercial banks could be their loan-approval procedures. In general, banks tend to approve loans with a low loan-to-value ratio — i.e., given a fixed loan amount, a loan is more likely to be approved if its underlying real estate has a high market value. In other words, banks are less likely to decline real estate loans if the underlying real estate has a high market or appraisal value. In such a world, a run up in real estate prices might lead to high appraisal value of real estate assets and high collateral value, which leads to easy access to real estate credit. On the other hand, a fall in real estate prices might lead to enhanced perceptions among loan officers that the underlying collateral position of the loan is weak, and lead to a rejection of real estate loans. This means relatively easy credit availability (increased real estate investments) during and after a real estate market boom, and a possible credit crunch (decreased real estate investments) during and after a market fall. (Similar arguments could also be made for the debt-coverage ratio.)

If this is a fair characterization of the loan-approval process, then the loan-to-value-ratio analysis may be partly to blame for contributing to the Santa Claus behavior of bank loan officers. Further, it might be that the more strict the loan-to-value standard, the more damaging the Santa Claus strategies of commercial banks.

The fundamental flaw of the loan-to-value analysis is that it implicitly assumes that real estate value would either remain unchanged over time or past performance would persist over time. Unfortunately, as we have shown, real estate expected returns (and the real estate market) do change over time. As a matter of fact, it could be shown that these ratios are *biased* estimates of their future values. In other words, after a market rally, these loan-to-value ratios tend to give a much too rosy picture of the future and would make investors overly confident. On the other hand, after a market downturn, these ratios tend to give a much too grim picture of the future and would make investors overly pessimistic. *If real estate markets follow a cyclical process,* a sensible contrarian investment strategy would be to relax loan-to-value standards after a market downturn and to tighten loan-to-value standards after a real estate market rally.

Conclusions

In this study, we used commercial banks' real estate investment data to address the issue of whether their poor performance in recent years has been consistent with a poorly formed investment strategy. We first examined the variation of ex ante (or expected) excess returns on various real estate investment portfolios. We find that expected returns on real estate are time-varying, generally tend to increase after a real estate market rally, and tend to fall after a market downturn. We then documented the evidence that commercial banks have been using the Santa Claus approach in determining the allocation of investment funds among different classes of assets. We find that their real estate investments have largely been driven by past real estate performances — i.e., they were increasing real estate investment after good real estate market performance and lowering investment after bad real estate market performance. This Santa Claus strategy ignored the potential negative correlation between current and past real estate returns and their future expected values.

Our further analysis shows that either a simple buy-and-hold strategy or a contrarian strategy could easily beat the Santa Claus strategy. And the standard loan-to-value ratio analysis used in the bank loan underwriting process may have contributed to this Santa Claus behavior. In order to avoid repeating the costly mistakes of the real estate debacle, we propose that the backward-looking Santa Claus strategy should be replaced by either a simple buy-and-hold strategy or a contrarian investment strategy of increasing real estate exposure after a market downturn, and reducing real estate exposure after a real estate market rally.

It is worth noting that our results are established at the aggregate level. It may or may not apply to the more practical regional or property level. But the study has developed a systematic approach to evaluate the market-timing performance of various investment strategies, and it should be helpful to real

estate investment managers in their asset-allocation and market-timing decisions.

In summary, bank real estate managers may have a merrier Christmas without the Santa Claus!

Endnotes

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[1] For a more thorough presentation of this framework, see Merton [1981] and Henriksson and Merton [1981].

[2] The "expected return" (ex ante return) is the total return investor's are forecasting, based in present and past relevant observable information. Such return expectations reflect equilibrium in the capital markets and investors' perceptions about and preferences for risk and return in the various asset classes. Implicitly, current asset market valuations are based on a combination of these return expectations and projections of future cash flows to investors from the assets.

[3] This is just the flip side of asset valuations. Other things being equal, lower expected future returns implies higher current asset market values, and vice versa.

[4] The term excess return refers to the total return over and above the T bill return for the same period.

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