Investor overreaction and unobservable portfolios: evidence from an emerging market

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❖ OBJECTIVE

Investors tend to overreact to new information, such as positive and negative shocks.

De Bondt and Thaler find that past loser portfolios outperform past winner portfolios by 24.6%. This implies that selling winners short and buying losers is a profitable strategy.

We will use the system generalized method of moments (GMM) estimator to investigate the overreaction.

We will construct "unobservable" portfolios based on company-specific FEs (unobservables) and show how these portfolios outperform the traditional size portfolios.

❖ DATA USED

Our analysis is based on data from the Egyptian stock exchange (EGX). Egypt was chosen by the Economic Reform Forum of the World Bank to be among the 7 best countries in the world in taking effective steps for economic reform and enhancing the investment climate.

To examine the short-term overreaction hypothesis in the Egyptian stock market we will collect daily data of stock prices, free float market capitalization and EGX 30 market index for 100 listed shares in the EGX over the period 2003 to 2010. Our sample includes all listed shares traded with no strict price limits (±5%). We use the EGX 30 index (free-floated market capitalization) to represent the Egyptian stock market benchmark.

We define winner/loser portfolios as the sets of firms experiencing a 1-day price rise/fall of at least 10%.

To avoid seasonality bias, each event should satisfy the following conditions: nonoverlapping, non-Monday, non-January events.

To avoid the bid-ask spread bias, were strict the market price of all shares included in our sample to at least 10 Egyptian pounds

We use the CAPM as a benchmark to measure the abnormal returns with betas estimated for each security over the 100 days prior to the event.

❖ METHODS

• The system GMM

GMM estimator used to overcome econometrics problems may arise when using static panel data models.

We incorporate the initial abnormal returns in event day AR_{i0} into our model to examine the price reversal phenomenon and we control for the effect of the leakage of information on the cumulative abnormal return and use the cumulative average abnormal returns (CARs) for 3 days before the event date as a proxy for the leakage of information.

We also control for firm size to examine the small firm effect, according to which small firms have greater reversals compared with large firms.

We expect that the greater the leakage of information the greater the post-cumulative abnormal returns as this may imply higher degree of market imperfection in emerging markets.

We also estimate the FEs model of Equation (1) and used its residuals as a proxy for the unobservable company-specific effects. We control for the style of ownership by including the dummy variable 'private' into our model to examine the effect of the ownership on the overreaction phenomenon.

$$CAR_{it} = \beta_1 CAR_{it-1} + \beta' x_{it} + \varepsilon_{it}, \quad i = 1, \ldots 100; \quad t = 1, ..10, \ 1...20 \ and \ 1, \ldots 120 \qquad (1)$$

$$\varepsilon_{it} = \mu_i + \nu_{it}$$

where $\beta' = (\beta_1, \beta_2, \beta_3, \beta_4, \beta_5)$ and $x_{it}' = (AR_{i0}, \text{Lnmcap}_{it}, \text{Leak}_{it}, \text{Private}_i, \text{DumQ}_i)$

CAR_{it} is the cumulative average abnormal returns over 10, 20, 50 and 120 days post-event;
AR_{i0} is the initial abnormal return in event day (i.e. at t = 0);
ln $mcap_i$ is the natural logarithm of the free-floated market capitalization of company i;
Leak_i represents the CARs for 3 days before the event date and serves as a proxy for the leakage of information;
DumQ is a dummy variable, takes the value of 1 if the company FE is positive within the estimation window and 0 otherwise;
$private_i$ is a dummy variable = 1 if the company was privately held before IPO, and 0 otherwise.

We report the AR (1) and AR (2) tests for the first and second-order serial correlation of the differenced residuals. → null hypothesis = no serial correlation.

Insignificant value of both tests indicates that the instruments are adequate and that the model is correctly specified.

- **Unobservable or size portfolios ?**

We examine unobservable portfolios (company-specific effects portfolios) performance compared with the traditional size portfolios. *(Unobservable portfolios are formed on the basis of FEs estimated on the estimation window of Equation 1).*

➔ Factors such as management quality and political connections may have an impact on investor overreaction.

Companies are ranked in an ascending order based on their market capitalization within the estimation window. We use both market capitalization and free-float market capitalization as a proxy of size.

All sample firms are grouped into five quintiles based on company FEs and market capitalization. We then estimate the CARs for two size portfolios (big and small) as well as for two company-specific effects portfolios (high and low) based on the first and the fifth quintile of each portfolio.

We investigate possible empirical correlates for unobservable firm factors. → we choose market value added (MVA) as a proxy for management quality, measured by the difference between the market value of the company and the value of its capital (equity) supplied by ordinary shareholders.

We ask if better corporate governance (CG) characteristics can explain company heterogeneity → we include as an empirical proxy for unobservables the role of political connections of the board of directors. Political connections in emerging markets have an important impact on stock price behavior.

Then, we measure political connections by the presence of a minister, a member of parliament and by ruling party members on the board of directors.

To empirically examine the effect of the above variables on company FEs, we carry out the following cross-sectional regression:

$$CSE_i = \alpha_i + \beta_1 MVA_i + \beta_2 CG_i + \beta_3 Polcon_{ii} + \varepsilon_i \quad (2)$$

CSE_i represents the company-specific effects;
MVA_i is the lagged company market value added measured by the difference between market and book value of equity;
CG_i is dummy variable takes the value of 1 for company (i) if it complies or partially complies with the Egyptian Corporate Governance Code, and 0 otherwise;[8]
$Polcon_i$ is dummy variable takes the value of 1 if there is a minister, member of parliament or ruling party member on the board of directors, and 0 otherwise;
ε_i is white noise error term.

❖ RESULTS

The sample size is 100 companies over 120 days as test periods (12 000 observations).

Table 1. Descriptive statistics

	Mean	S.D	Skewness	Kurtosis
Panel A: Loser portfolios				
Car_{it}	0.1459	0.5331	0.8378	3.5184
AR_{i0}	−0.0560	0.0305	−0.9938	5.4384
Lnmcap	19.557	2.1201	−0.2359	3.4275
Leak	0.0107	0.0364	0.3326	3.9305
Private	0.5000	0.5051	0.0000	1.0000
Panel B: Winner portfolios				
Car_{it}	−0.2052	0.6675	0.2085	6.1621
AR_{i0}	0.0711	0.0389	1.3019	4.4327
Lnmcap	19.731	1.8593	−0.3922	3.6710
Leak	0.0066	0.0422	0.9448	4.0901
Private	0.5000	0.5051	0.0000	1.0000

Rendement anormal initial (Ar_{i0})

Rendements anormaux cumulés (Car_{it})

➔ Loser portfolios outperform the winner portfolios (Car_{it} 14.59% vs -20.52%)

Table 2 presents the correlation matrix for the winners' and losers' covariates. But the reported correlations show that there is no potential multicollinearity as neither of these correlations is above 0.50 or significant even at 10%.

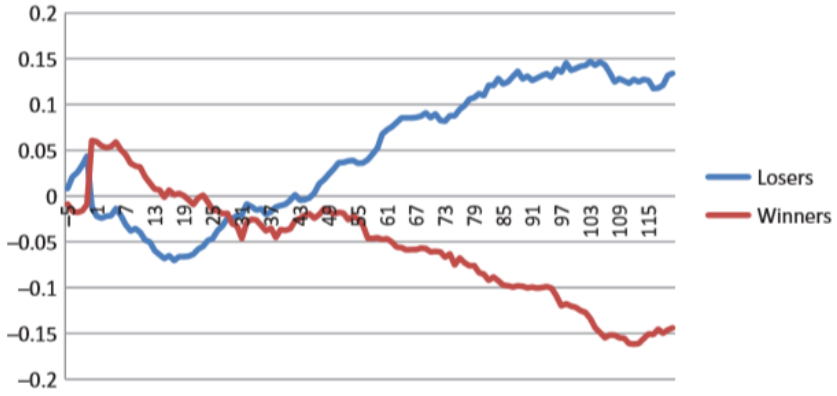

Fig. 1. Cumulative average abnormal returns for winners and loser portfolios over the event window

It is clear from the figure that past loser portfolios outperform past winner portfolios, so that investors can achieve abnormal returns by selling winners and buying losers (the disposition effect).

Table 3. System GMM estimates

	Loser portfolios		Winner portfolios	
	10 days	20 days	10 days	20 days
C	−0.0161***	−0.0106***	0.0052	−0.4708
	(0.0582)	(0.0034)	(0.0091)	(0.3103)
L.Carit	0.0698***	0.0749***	0.0376***	0.0423***
	(0.0085)	(0.0092)	(0.0061)	(0.0059)
Lnmcap	0.0006**	0.0004**	0.0008	0.0223
	(0.0003)	(0.0002)	(0.0006)	(0.0447)
ARio	−0.0292**	−0.0173***	−0.0195*	−0.1960**
	(0.0123)	(0.0061)	(0.0120)	(0.0982)
DumQ	−0.0026**	−0.0014**	−0.0014*	−0.0103*
	(0.0011)	(0.0006)	(0.0008)	(0.0064)
Leak	0.1648***	0.2232***	−0.1218***	−0.0739***
	(0.0338)	(0.0183)	(0.0251)	(0.0162)
Private	0.0004	0.0001	0.0018	0.0008
	(0.0010)	(0.0001)	(0.0012)	(0.0011)
Arellano Bond test for AR (1) (*p*-value)	0.011	0.015	0.005	0.007
Arellano Bond test for AR (2) (*p*-value)	0.406	0.317	0.502	0.609
Hansen test (*p*-value)	(0.368)	(0.568)	(0.499)	(0.372)

*Notes: The table presents the estimation of Equation (2) L.Carit is lagged CARs over 10, 20, 50 and 120 days post-event. Robust standard errors are between parentheses. ***, **, * indicate significance at the 1%, 5% and 10% levels.*

The size coefficients are significant for losers portfolios, but insignificant for the winners → may reflect the greater effect of size on the CAR in cases of negative shocks.

The leakage of information variable displays a positive sign and is highly significant for loser portfolios →the higher the leakage of information the greater the magnitude of price reversal.

Moreover, we find a negative and significant coefficient on the leakage of information variable for winner portfolios →investor optimism and herding behaviour in case of good news.

The DumQ variable (our proxy for company-specific effects) has a negative and highly significant coefficient for the loser portfolios, but a marginally insignificant coefficient for the winner portfolios → low unobservable effect portfolios outperform high unobservable effects portfolios for the losers but not for the winners.

Table 4. Cross-sectional regressions for the unobservable factors

	Losers	Winners
C	0.0019	0.0417***
	(0.0123)	(0.0071)
MVA	−0.0009***	−0.0004**
	(0.0002)	(0.0002)
Pol	0.0038**	0.0068**
	(0.0015)	(0.0034)
CG	−0.0275*	−0.0151
	(0.0162)	(0.0099)
R^2	0.3265	0.3078
Adj R^2	0.2712	0.2467
F stat	3.6125***	3.1785***
White test for heteroscedasticity	0.6849	0.5327

MVA : negatively and significantly related to permanent differences in the company's reaction to news for both winner and loser portfolios → the better the quality of management the more efficiently are the stock priced and the less permanent firms' overreaction to news.

Pol : positive and significant effect → the higher degree of political connections the firm has, the higher the company's heterogeneity.

CG : → negative sign may be interpreted as meaning that the better corporate governance characteristics the lowers firm specific effects and thus higher overreaction to market shocks.

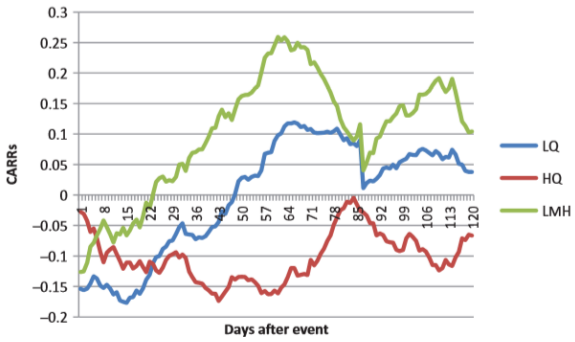

Fig. 2. Unobservable portfolios for the losers

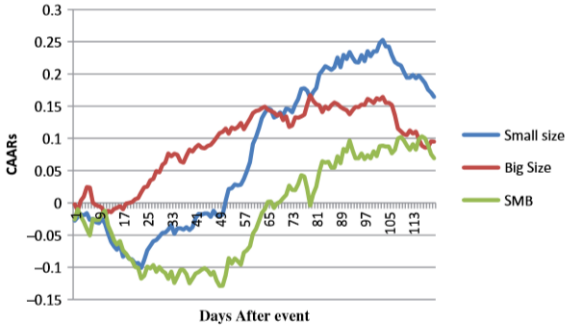

Fig. 3. Size portfolios for the losers

Figures 2 and 3 present the CARs for both unobservable (company-specific effects) and size portfolios for the losers. In case of bad news (losers), low specific-effects portfolios outperform high specific effects ones.

Moreover, the arbitrage portfolios (low minus high) LMH outperform (small minus big) SMB portfolios on average.

❖ Conclusion

We found evidence of the short-term overreaction phenomenon in the EGX as the coefficients for the initial abnormal returns on event day are negative and significant for the winners and losers.

This implies that the lower the initial negative shock the greater the cumulative abnormal returns subsequent to the event. *(et inversement)* → consistent with the price reversal phenomenon in case of large 1-day price decline.

including the DumQ variable (our proxy for company unobservables) in the system GMM suggests that low-company-specific effects portfolios outperform those of high specific effects. Moreover, we also found that unobservable portfolios (LMH) outperform traditional size (SMB) portfolios.

Finally, constructing portfolios based on some unobserved factors (management quality, corporate governance and political connections of board members) significantly outperform traditional portfolios based on size.