IT COULD BE OVERREACTION, NOT LOTTERY-SEEKING, THAT IS BEHIND BALI, CAKICI AND WHITELAW'S MAX EFFECT. ADDITIONAL ANALYSIS

Jake Gorman, Farida Akhtar, Robert B Durand and John Gould.

A referee thoughtfully commented that "this [event study] analysis has a look-ahead bias…the event day is the trading day for which the stock reaches the max in that month [but] knowing that this is the MAX required having seen the return on all days of that month, which investors cannot at that time unless the MAX happens to fall on the last day of the month".

The following analysis considers this comment by replicating Figure 2 and Table 6 of our *Critical Finance Review Paper*. The conclusions we draw in our paper remain unchanged.

A stock's first-MAX-in-21-days event occurs when the day's return is the highest in the past 21 days, and there has been no other first-Max-in-21-days for the past 21 days (i.e. the first-MAX-in-21-days events for each stock are at least 21 days apart, thus each event return might actually be exceeded by a subsequent single-day return over the subsequent 20 days). We note that, by selection, the prior 10 day returns for a first-MAX-in-21-days event will, generally, be lower than for a MAX event as defined by BCW (because BCW-MAX events may be preceded first-MAX-in-21-days events).

Figure A shows a pattern of overreaction: the first-MAX-in-21-days event shows a spike and then a reversal. Unlike Figure 2 in the published paper, we do not see a partial recovery for stocks which, *ex ante*, are expected to experience a MAX event.

Table A repeats the analysis reported in Table 6 using the first-MAX-in-21-days rather than the BCW MAX. In all instances, the pre-first-MAX-in-21-days underperformance we report in [-10,-1] in Table A is more pronounced than the pre-BCW-MAX performance we report for the BCW MAX in Table 6. Negative returns in the posr-first-MAX-in-21-days windows deeper than those we observe in Table 6 but they are consistent with our argument that it is overreaction, rather than lottery-seeking, that is associated with MAX events.

…

Figure A – First-MAX-in-21-days event CAARs for stocks sorted according to expectation and actualization of high MAX returns

Description: The figure shows the cross-sectional cumulative average abnormal returns (CAARs) with respect to the Fama-French-Carhart four-factor asset pricing model over the [-10, +40] first-MAX-in-21-days event trading day window for different stock-month MAX event expectation and actualization designations where each event day-zero is the first-MAX-in-21-days return day. Each MAX event month, from August 1964 to November 2005, the most recent past Equation (1) coefficient estimates in conjunction with up-to-the-prior-month stock characteristic variables are used to estimate the Equation (1) logistic model probability of each sample stock achieving a high MAX return for the month: the top 10% of stocks ranked by estimated probability of achieving a high MAX return are then designated expected high MAX (*expHiMAX*), and the remaining 90% of stocks are designated expected non-high MAX (*expNonHiMAX*). Additionally for each MAX event month: the top 10% of stocks ranked by realized first-MAX-in-21-days return are designated actual high MAX (*act21dHiMAX*), and the remaining 90% of stocks are designated actual non-high MAX (*act21dNonHiMAX*). From the monthly intersections of the stock designations, stock-month MAX events are designated as *expHiMAX*∩*act21dHiMAX*, *expHiMAX*∩*act21dNonHiMAX*, *expNonHiMAX*∩*act21dHiMAX* or *expNonHiMAX*∩*act21dNonHiMAX*.

Interpretation: This figure should be compared to Figure 2 in our *Critical Finance Review Paper* and, as with that figure, we see patterns consistent with overreaction and not lottery-seeking.

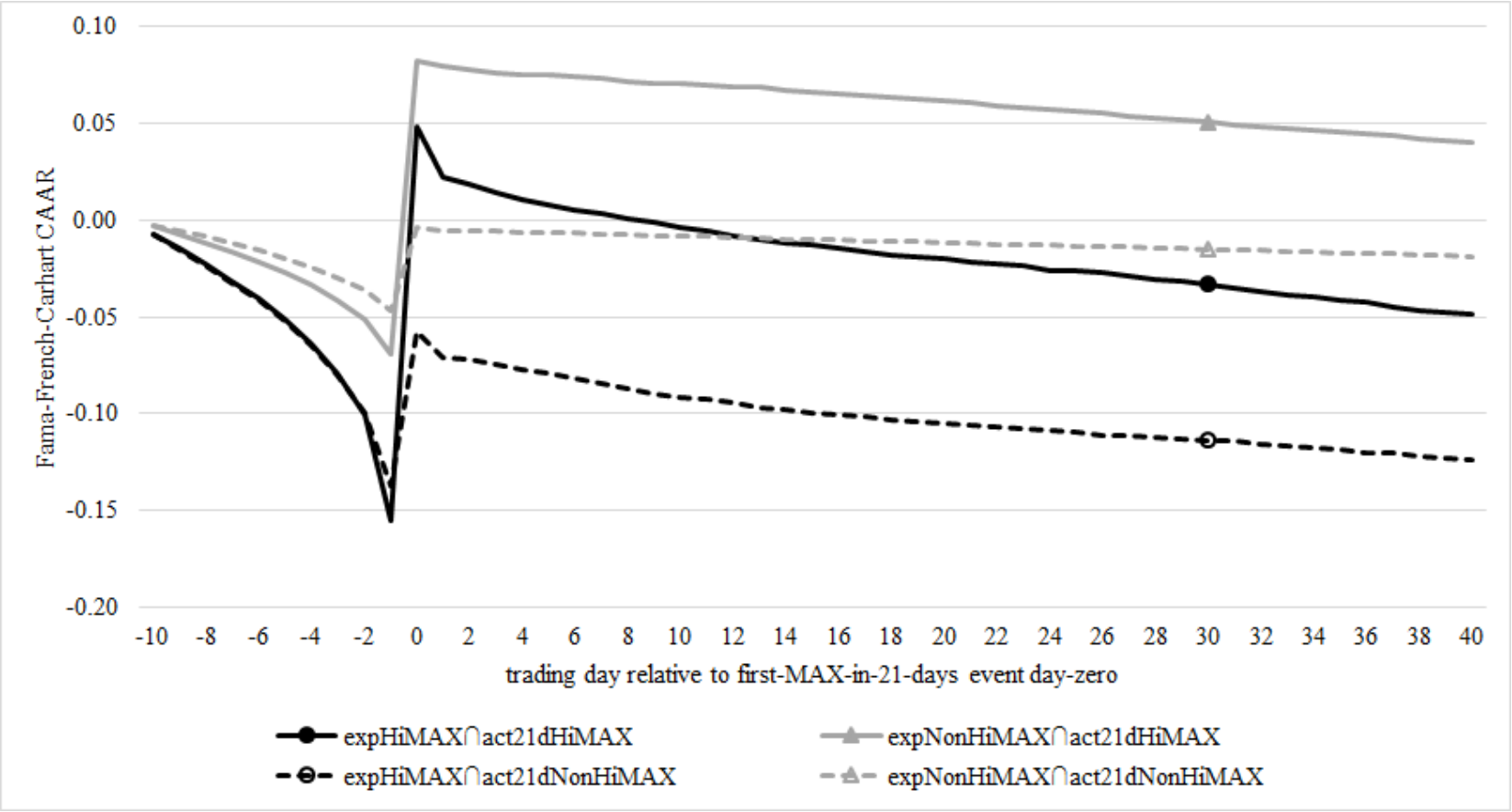

Table A: First-MAX-in-21-days event CAARs for stocks sorted according to expectation and actualization of high MAX returns

Description: The table presents the cross-sectional cumulative average abnormal returns (CAARs) with respect to the Fama-French-Carhart four-factor asset pricing model and CAAR differences for different stock-month MAX event expectation and actualization designations and various MAX event trading day windows where each event day-zero is the first-MAX-in-21-days return day. Each MAX event month, from August 1964 to November 2005, the most recent past Equation (1) coefficient estimates in conjunction with up-to-the-prior-month stock characteristic variables are used to estimate the Equation (1) logistic model probability of each sample stock achieving a high MAX return for the month: the top 10% of stocks ranked by estimated probability of achieving a high MAX return are then designated expected high MAX (*expHiMAX*), and the remaining 90% of stocks are designated expected non-high MAX (*expNonHiMAX*). Additionally for each MAX event month: the top 10% of stocks ranked by realized first-MAX-in-21-days return are designated actual high MAX (*act21dHiMAX*), and the remaining 90% of stocks are designated actual non-high MAX (*act21dNonHiMAX*). From the monthly intersections of the stock designations, stock-month MAX events are designated as *expHiMAX*∩*act21dHiMAX*, *expHiMAX*∩*act21dNonHiMAX*, *expNonHiMAX*∩*act21dHiMAX* or *expNonHiMAX*∩*act21dNonHiMAX*. Newey–West (1987) adjusted T-statistics are reported in parentheses. Bolded figures denote significance at the 0.5% level or better. Returns are presented in percentage terms.

Interpretation: This table should be compared to Table 6 in our *Critical Finance Review Paper*. Yellow highlighting estimates that an estimate is statistically significant in this table and, or, has an opposite sign (that is positive as opposed to negative and *vice versa*) to that reported in Table 6. The figures, however, are consistent with the conclusion that it is overreaction, rather than lottery-seeking, which is behind Bali, Cakici and Whitelaw's MAX effect.

		CAAR window				
	Stock designation	[-10,-1]	[+1,+5]	[+6,+10]	[+11,+20]	[+21,+40]
(A)	*expHiMAX*∩*act21dHiMAX* 41,112 obs.	**-15.49** (-137.54)	**-4.02** (-44.82)	**-1.16** (-14.44)	**-1.64** (-16.00)	**-2.86** (-20.49)
(B)	*expNonHiMAX*∩*act21dHiMAX* 44,519 obs.	**-6.95** (-99.50)	**-0.78** (-14.36)	**-0.44** (-9.31)	**-0.88** (-13.73)	**-2.16** (-23.83)
(C)	*expHiMAX*∩*actNonHiMAX* 40,019 obs.	**-13.71** (-167.18)	**-2.22** (-30.12)	**-1.21** (-17.21)	**-1.36** (-14.84)	**-1.90** (14.94)
(D)	*expNonHiMAX*∩*actNonHiMAX* 732,341 obs.	**-4.71** (-475.53)	**-0.26** (-32.46)	**-0.19** (-25.05)	**-0.33** (-30.81)	**-0.70** (-45.96)
(A)-(B)	*expHiMAX*∩*actHiMAX* minus *expNonHiMAX*∩*actHiMAX*	**-8.54** (-64.32)	**-3.24** (-30.85)	**-0.72** (-7.67)	**-0.76** (-6.29)	**-0.70** (-4.21)
(C)-(D)	*expHiMAX*∩*actNonHiMAX* minus *expNonHiMAX*∩*actNonHiMAX*	**-9.01** (-109.05)	**-1.96** (-26.46)	**-1.02** (-14.40)	**-1.03** (-11.18)	**-1.21** (-9.44)