

Online Appendix

Table A-1 Definition of dependent variables

Variable name	Variable definition
<i>LOG_issued_shares</i>	Natural logarithm of the number of issued shares (measured in thousands).
<i>REP_S</i>	Total amount of repurchase divided by one-year lagged total sales.
<i>REP_A</i>	Total amount of repurchase divided by one-year lagged total assets.

Table A-2 Descriptive statistics

Variables	Obs	Mean	Median	Max	Min	Std.Div
<i>LOG_issued_shares</i>	3352	17.2400	17.1131	22.9749	11.3022	1.3676
<i>REP_S</i>	3331	0.0042	0.0000	0.3441	0.0000	0.0166
<i>REP_A</i>	3331	0.0031	0.0000	0.2949	0.0000	0.0121

Table A-3 Analysis on share repurchase

	(1) <i>REP_S</i>	(2) <i>REP_A</i>	(3) <i>REP_S</i>	(4) <i>REP_A</i>
<i>year15_18</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0011 (1.58)	0.0008* (1.65)		
<i>year15_18</i> × <i>Treatment</i> × <i>RD_A</i>			0.1081 (1.30)	0.0828 (1.36)
<i>year15_18</i> × <i>Treatment</i>	-0.0016 (-0.30)	-0.0017 (-0.45)	0.0033 (1.10)	0.002 (0.90)
<i>Treatment</i> × <i>LOGRD</i>	-0.0005 (-0.56)	-0.0005 (-0.74)		
<i>Treatment</i> × <i>RD_A</i>			-0.1095 (-1.05)	-0.0717 (-0.95)
<i>Treatment</i>	-0.0006 (-0.09)	0.001 (0.20)	-0.0019 (-0.55)	-0.0009 (-0.37)
<i>LOGRD</i>	-0.001 (-1.24)	-0.0008 (-1.43)		
<i>RD_A</i>			-0.0214 (-0.31)	-0.0215 (-0.43)
<i>MV_BV</i>	-0.0016 (-0.68)	-0.0003 (-0.19)	-0.0017 (-0.74)	-0.0005 (-0.27)
<i>CF_A</i>	0.0282 (1.51)	0.0206 (1.50)	0.0275 (1.47)	0.0199 (1.45)
<i>BETA</i>	-0.0054*** (-2.97)	-0.0039*** (-2.96)	-0.0055*** (-3.01)	-0.0040*** (-3.02)
<i>LOGAGE</i>	0.0021 (0.88)	0.0015 (0.87)	0.0019 (0.80)	0.0013 (0.73)
<i>NI_A</i>	0.0951*** (3.65)	0.0804*** (4.23)	0.0951*** (3.64)	0.0805*** (4.22)
<i>F_A</i>	-0.0269** (-2.20)	-0.0192** (-2.18)	-0.0270** (-2.21)	-0.0193** (-2.19)
<i>SIZE</i>	0.0053*** (4.25)	0.0042*** (4.70)	0.0044*** (4.53)	0.0033*** (4.82)
<i>RE_K</i>	-0.0003 (-0.13)	-0.0006 (-0.34)	-0.0005 (-0.19)	-0.0008 (-0.41)
<i>NI_A_vol</i>	0.0125 (0.37)	0.0143 (0.57)	0.0139 (0.41)	0.0152 (0.61)
<i>MAIN</i>	-0.0289*** (-3.99)	-0.0214*** (-4.10)	-0.0282*** (-3.89)	-0.0209*** (-3.99)
<i>FOR</i>	0.0325*** (2.95)	0.0192** (2.40)	0.0332*** (3.00)	0.0195** (2.44)
Industry dummy	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES
Observations	3331	3331	3331	3331

***, **, * denote significance at 10%, 5%, and 1% levels, respectively

Table A-4 Analysis on number of shares

	(1)	(2)
	<i>LOG_issued_shares</i>	<i>LOG_issued_shares</i>
<i>year15_18</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0189* (1.73)	
<i>year15_18</i> × <i>Treatment</i> × <i>RD_A</i>		4.5138** (2.14)
<i>year15_18</i> × <i>Treatment</i>	-0.1537** (-1.97)	-0.1168** (-2.08)
<i>Treatment</i> × <i>LOGRD</i>	-0.0076 (-0.07)	
<i>Treatment</i> × <i>RD_A</i>		5.4682 (1.52)
<i>LOGRD</i>	0.0427* (1.66)	
<i>RD_A</i>		1.7271 (1.04)
<i>MV_BV</i>	0.4347*** (6.09)	0.4343*** (6.17)
<i>CF_A</i>	-0.0413 (-0.14)	-0.045 (-0.1536)
<i>BETA</i>	0.0346 (0.95)	0.0387 (1.11)
<i>LOGAGE</i>	2.6112*** (2.70)	2.4517** (2.58)
<i>NI_A</i>	-0.2363 (-0.31)	-0.1918 (-0.25)
<i>F_A</i>	-0.5083 (-1.14)	-0.521 (-1.18)
<i>SIZE</i>	0.5737*** (4.32)	0.6370*** (4.98)
<i>RE_K</i>	-0.1528** (-2.47)	-0.1618** (-2.56)
<i>NI_A_vol</i>	-0.5576 (-0.75)	-0.6642 (-0.88)
<i>MAIN</i>	-0.3228 (-0.84)	-0.3294 (-0.84)
<i>FOR</i>	-1.1783*** (-3.08)	-1.1667*** (-3.04)
Constant	-0.6208 (-0.14)	-0.493 (-0.11)
Firm fixed effects	YES	YES
Year fixed effects	YES	YES
R-squared	0.197	0.202
Observations	3352	3352

***, **, * denote significance at 10%, 5%, and 1% levels, respectively

Table A-5 Parallel trend test

	(1) <i>DIV_S</i>	(2) <i>DIV_A</i>	(3) <i>DIV_S</i>	(4) <i>DIV_A</i>
<i>Year14</i> × <i>Treatment</i> × <i>LOGRD</i>	0.00005 (0.48)	0.00005 (0.60)		
<i>Year15</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0002* (1.81)	0.0002** (1.98)		
<i>Year16</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0002 (0.96)	0.00010 (1.33)		
<i>Year17</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0005*** (2.85)	0.0003** (2.55)		
<i>Year18</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0007*** (3.79)	0.0004*** (3.43)		
<i>Year14</i> × <i>Treatment</i> × <i>RD_A</i>			-0.0012 (-0.09)	0.0024 (0.26)
<i>Year15</i> × <i>Treatment</i> × <i>RD_A</i>			0.0343* (1.70)	0.0301** (2.05)
<i>Year16</i> × <i>Treatment</i> × <i>RD_A</i>			0.0237 (1.45)	0.0133 (1.16)
<i>Year17</i> × <i>Treatment</i> × <i>RD_A</i>			0.0459** (2.50)	0.0267** (2.01)
<i>Year18</i> × <i>Treatment</i> × <i>RD_A</i>			0.0536** (2.49)	0.0393** (2.54)
<i>Year14</i> × <i>Treatment</i>	-0.0002 (-0.25)	-0.0004 (-0.87)	0.0001 (0.15)	-0.0002 (-0.77)
<i>Year15</i> × <i>Treatment</i>	-0.0018* (-1.80)	-0.0014** (-2.22)	-0.0011* (-1.75)	-0.0009** (-2.25)
<i>Year16</i> × <i>Treatment</i>	-0.0013 (-1.06)	-0.0013* (-1.95)	-0.0008 (-1.22)	-0.0008** (-1.96)
<i>Year17</i> × <i>Treatment</i>	-0.0039*** (-3.43)	-0.0028*** (-3.61)	-0.0020** (-2.51)	-0.0015*** (-3.14)
<i>Year18</i> × <i>Treatment</i>	-0.0050*** (-4.09)	-0.0034*** (-4.00)	-0.0021** (-2.57)	-0.0016*** (-2.94)
<i>Treatment_LOGRD</i>	-0.0006 (-0.91)	-0.0006 (-1.24)		
<i>Treatment_RD_A</i>			-0.0495 (-1.34)	-0.0276 (-0.82)
<i>LOGRD</i>	0.0004 (0.84)	0.0008** (2.15)		
<i>RD_A</i>			0.0020 (0.10)	0.0439** (2.41)
<i>MV_BV</i>	0.0046*** (5.37)	0.0032*** (6.08)	0.0046*** (5.34)	0.0031*** (6.02)
<i>CF_A</i>	0.0019 (0.83)	0.0018 (1.14)	0.0019 (0.81)	0.0021 (1.31)
<i>BETA</i>	0.0001 (0.17)	0.0001 (0.42)	0.0001 (0.26)	0.0001 (0.56)
<i>LOGAGE</i>	0.0009 (0.28)	0.0016 (0.54)	-0.0004 (-0.13)	0.0006 (0.19)
<i>NL_A</i>	0.0299*** (4.38)	0.0441*** (8.59)	0.0292*** (4.24)	0.0444*** (8.45)
<i>F_A</i>	0.0064 (0.76)	0.0039 (1.11)	0.0063 (0.73)	0.0037 (1.03)
<i>SIZE</i>	0.0042*** (2.77)	0.0001 (0.13)	0.0043*** (2.74)	0.0008 (0.76)
<i>RE_K</i>	0.0019*** (3.14)	0.0022*** (4.06)	0.0019*** (3.15)	0.0021*** (3.81)
<i>NL_A_vol</i>	-0.0113 (-1.45)	-0.0081 (-1.52)	-0.0116 (-1.45)	-0.0092* (-1.70)
<i>MAIN</i>	-0.0019 (-0.67)	0.0012 (0.51)	-0.0024 (-0.83)	0.0010 (0.44)
<i>FOR</i>	0.0010 (0.25)	0.0013 (0.47)	0.0016 (0.42)	0.0018 (0.65)
<i>Constant</i>	-0.0422** (-2.02)	-0.0078 (-0.45)	-0.0365* (-1.71)	-0.0079 (-0.45)
Firm fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
R-squared	0.273	0.350	0.270	0.347
Observations	3331	3331	3331	3331

***, **, * denote significance at 10%, 5%, and 1% levels, respectively

Table A-6 Additional analysis: Dividend per share

	(1)		(2)
<i>(LOGRD)</i>	<i>DIV_per</i>	<i>(RD_A)</i>	<i>DIV_per</i>
<i>Year15</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0012** (2.55)	<i>Year15</i> × <i>Treatment</i> × <i>RD_A</i>	0.0760** (2.36)
<i>Year16</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0013*** (2.74)	<i>Year16</i> × <i>Treatment</i> × <i>RD_A</i>	0.0524 (1.22)
<i>Year17</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0010 (1.63)	<i>Year17</i> × <i>Treatment</i> × <i>RD_A</i>	-0.0402 (-0.61)
<i>Year18</i> × <i>Treatment</i> × <i>LOGRD</i>	0.0016** (2.28)	<i>Year18</i> × <i>Treatment</i> × <i>RD_A</i>	-0.0892 (-1.00)
<i>Year15</i> × <i>Treatment</i>	-0.0070** (-2.57)	<i>Year15</i> × <i>Treatment</i>	-0.0012 (-1.12)
<i>Year16</i> × <i>Treatment</i>	-0.0079** (-2.44)	<i>Year16</i> × <i>Treatment</i>	-0.0008 (-0.41)
<i>Year17</i> × <i>Treatment</i>	-0.0061 (-1.38)	<i>Year17</i> × <i>Treatment</i>	0.0006 (0.21)
<i>Year18</i> × <i>Treatment</i>	-0.0077 (-1.48)	<i>Year18</i> × <i>Treatment</i>	0.0037 (0.97)
<i>Treatment_LOGRD</i>	-0.0027 (-1.11)	<i>Treatment_RD_A</i>	-0.1346 (-1.22)
<i>LOGRD</i>	0.0011 (0.85)	<i>RD_A</i>	0.0316 (0.53)
<i>MV_BV</i>	-0.0039 (-1.33)	<i>MV_BV</i>	-0.0037 (-1.28)
<i>CF_A</i>	-0.0019 (-0.27)	<i>CF_A</i>	-0.0015 (-0.21)
<i>BETA</i>	-0.0006 (-0.55)	<i>BETA</i>	-0.0007 (-0.58)
<i>LOGAGE</i>	-0.0516*** (-3.22)	<i>LOGAGE</i>	-0.0515*** (-3.16)
<i>NI_A</i>	0.0903*** (4.31)	<i>NI_A</i>	0.0892*** (4.10)
<i>F_A</i>	0.0161 (0.91)	<i>F_A</i>	0.0146 (0.82)
<i>SIZE</i>	0.0073* (1.65)	<i>SIZE</i>	0.0075* (1.68)
<i>RE_K</i>	0.0061*** (3.02)	<i>RE_K</i>	0.0065*** (3.07)
<i>NI_A_vol</i>	0.0099 (0.41)	<i>NI_A_vol</i>	0.0128 (0.52)
<i>MAIN</i>	-0.0049 (-0.42)	<i>MAIN</i>	-0.0036 (-0.30)
<i>FOR</i>	0.0172 (1.16)	<i>FOR</i>	0.0203 (1.39)
<i>Constant</i>	0.1681** (2.00)	<i>Constant</i>	0.1638* (1.93)
Firm fixed effect	Yes	Firm fixed effect	Yes
Year fixed effect	Yes	Year fixed effect	Yes
R-squared	0.266	R-squared	0.264
Observations	3331	Observations	3331

***, **, * denote significance at 10%, 5%, and 1% levels, respectively