

## **Internet Appendix Tables for**

Ending “Too Big To Fail”:  
Government Promises vs. Investor Perceptions

**Internet Appendix Table A.I**  
**Korean Corporate Sector Net Finance Flows, 1990-2002**

All values are given in units of one trillion Won. SOURCE: Bank of Korea

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Total Financing</b>	50.8	58.2	54.9	65.0	89.0	100.0	118.8	118.0	27.7	51.8	65.8	50.6	83.3
<b>Direct Financing</b>	21.5	22.1	21.3	31.9	32.5	48.1	56.1	44.1	49.5	24.8	17.2	37.7	20.0
<i>Corporate Paper</i>	1.9	-2.2	4.2	9.0	4.4	16.1	20.7	4.4	-11.7	-16.1	-4.8	4.4	-3.8
<i>Bonds</i>	10.9	14.1	6.6	9.5	12.6	15.4	21.2	27.5	45.9	-2.8	-2.1	11.4	-7.9
<i>Stocks</i>	6.0	6.7	7.2	9.5	13.2	14.4	13.0	9.0	13.5	41.1	20.8	16.2	28.7
<b>Indirect Finance</b>	19.5	24.3	19.9	20.4	39.7	31.9	33.2	43.4	-15.9	2.2	11.7	-0.3	51.1
<i>Banks</i>	8.0	11.5	8.3	8.5	18.4	14.9	16.7	15.2	0.3	15.5	23.3	3.2	41.1
<i>Non-Banks</i>	11.5	12.8	11.6	11.9	21.2	17.0	16.6	28.2	-16.6	-13.3	-11.6	-3.7	8.6
<b>Overseas Borrowings</b>	3.2	2.4	3.9	1.0	5.9	8.4	12.4	6.6	-9.8	11.6	16.8	0.6	2.4
<b>Other</b>	6.5	9.4	9.7	11.7	11.0	11.7	17.1	24.0	3.8	13.2	20.0	12.6	10.8
<b>Nominal GDP</b>	186.7	226.0	257.5	290.7	340.2	398.8	448.6	491.1	484.1	529.5	578.7	622.1	684.3

## Internet Appendix Table A.II

### Definition and Source of Variables

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All variables except the price index and chaebol indicators are obtained from the NICE datasets. Numbers given in parentheses represent the actual NICE code for that particular variable.

#### Financial Flow Variables

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Gross Bond Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Gross bond flows = "Increase in debentures payable" (_43121). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Gross Equity Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Gross equity flows = "Increase in capital stock" (_43140) + "Payment of margin for new stock offering" (_43150) + "Increase in Paid-in capital in excess of par values" (_43161). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Gross Loan Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Gross loan flows = "Increase in short-term borrowings" (_43111) + "Increase in long-term borrowings (Foreign Currency)" (_43122). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Net Bond Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Net bond flows = Gross bond flows - "Redemption of debentures payable by purchase" (_43521). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Net Equity Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Net equity flows = Gross equity flows - "Decrease in capital stock" (_43550). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Net Loan Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Net loan flows = Gross loan flows - "Redemption of short-term borrowings" (_43511) - "Redemption of long-term borrowings (foreign currency)" (_43522). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.

## Internet Appendix Table A.II Continued

### Ownership Variables

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Control-Ownership Gap	This variable is obtained directly from Joh (2003), who creates the variable using the ownership data provided by NICE. For each firm, the NICE ownership data lists the largest eight shareholders and their direct ownership stake (in percent) of that firm. 'Control-Ownership Rights Gap' is calculated by summing over the ownership stakes for all of the largest eight shareholders and then subtracting 'ownership concentration' (see below for construction of this variable). In all regressions, this variable is given as a fraction rather than a percent.
Ownership Concentration	This variable is obtained directly from Joh (2003), who creates the variable using the ownership data provided by NICE. For each firm, the NICE ownership data lists the largest eight shareholders and their direct ownership stake (in percent) of that firm. 'Ownership concentration' is calculated by simply summing the ownership stakes for "personal" holdings among the top shareholders. All institutional shareholders (financial institutions and non-financial corporations), foreign owners, government, and employment stock ownership stakes are excluded from this calculation. In all regressions, this variable is given as a fraction rather than a percent.

### Chaebol Indicators

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Top 5 Chaebol Indicator	The top 5 chaebols are determined using the Korean Fair Trade Commission's (KFTC) annual publication of the largest 30 chaebols based on total assets. The Top 5 Chaebols indicator in the regressions uses the 1996 KFTC listing. For firms associated with a top 5 chaebol in 1996, the indicator equals "1", while the indicator equals zero for all other firms. The top 5 chaebols are Hyundai, Samsung, Daewoo, SK, and LG.
Top 6-30 Chaebol Indicator	The top 6-30 chaebols are determined using the Korean Fair Trade Commission's (KFTC) annual publication of the largest 30 chaebols based on total assets. The Top 6-30 Chaebols indicator in the regressions uses the 1996 KFTC listing. For firms associated with a top 6-30 chaebol in 1996, the indicator equals "1", while the indicator equals zero for all other firms.

### Firm Characteristics

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Cash Flows	Equals operating cash flows plus depreciation minus changes in non-cash accruals. This is calculated using the NICE financial dataset variables, "Operating Cash Flow" (_25000) - change in "Current Assets, excluding cash" (_11000 -_11110) + change in "Current Liabilities, excluding debt & taxes" (_15000 -_15020 -_15110 -_15070) + "depreciation" (_24880) + "amortization" (_24360). All missing values are assumed to be zeros.
Cash Volatility	Standard deviation of (cash flows/assets) from 1994-1996.

## Internet Appendix Table A.II Continued

Debt / Assets	Equals the NICE financial dataset variable "Total Liabilities" (_16900) divided by "Total Assets" (_14900). Missing values are left missing.
Modified Altman-Z Score	Defined as $3.3*(EBIT/assets) + 1.0*(sales/assets) + 1.4*(retained\ earnings/assets) + 1.2*(working\ capital/assets)$ , where the components are calculated using the NICE financial dataset variables, "Total Assets" (_14900), "EBIT" (_25000), "Total Sales" (_21000), "Retained Earnings" (_19000), and "Working Capital" (_11000-_15000).
Total Assets	Equals the NICE financial dataset variable "Total Assets" (_14900). Missing values are left missing.
Return on Assets (ROA)	Calculated using the NICE financial dataset variable "Ordinary Income [or loss]" (_27000) normalized by total assets. Ordinary income is operating income (sales minus the cost of sales, selling expenses, and administrative expenses) minus interest payments plus dividends and gains on securities. Unlike net income, ordinary income excludes extraordinary gains or losses and taxes.

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### Bond Issuance Characteristics

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YTM	Equals yield to maturity (in percent) at time of issuance.
Maturity	Integer value that represents the number of years before the issued bonds mature. In the few cases where firms issue bonds that do not mature on the same day as issuance, the maturity is calculated by rounding the # of years to the nearest integer value. (A few firms issue bonds on a given day but set the bonds to mature at the end of a future calendar year. E.g., bonds might be issued on Oct. 24, 1998, but rather than mature on Oct. 24, 2001, the bonds don't mature until the end of the year on Dec. 31, 2001. In this example, the bonds would be classified as maturing in three years). Bonds that mature in less than year are assigned a maturity equal to zero.
Credit Rating	Average credit rating of issuing firm at time of issuance as reported by Korea's three largest credit rating agencies: NICE, Korean Investors Service, and Korea Ratings Corporation. Each rating is converted into a numerical value where a credit rating of AAA is assigned a score of twenty-six, a credit score of AAA- is assigned a score of twenty-five, and so on to D = 0.
Embedded Options	Indicator that equals one if the bond issuance has an embedded option.

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<b>Price Index</b>	The NICE financial dataset reports nominal values. These nominal values were indexed for inflation using the Consumer Price Index (CPI) issued by the Korean Central Bank. The base year is 2000.
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## Internet Appendix Table A.III

### Bond Allocation for 500 Largest Firms

The table reports coefficients from firm-level regressions of log 1998 gross bond flows (in 1000s Won) for the largest 500 firms (using total assets as of 1996) onto 3-digit industry fixed effects and pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. All RHS variables are measured with respect to 1996. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. The Control-Ownership Gap is Joh's difference between the sum of all large shareholdings and the sum of only personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities. 'Cash flows' are operating cash flows plus depreciation and minus changes in accruals. 'Cash volatility' is the standard deviation of cash flows/assets from 1994-1996. The modified altman-Z score is defined as  $3.3*(EBIT / assets) + 1.0*(sales / assets) + 1.4*(retained earnings / assets) + 1.2*(working capital / assets)$ . \* = 10% level, \*\* = 5% level, \*\*\* = 1% level.

<i>Dependent Variable =</i>	<b>Log(Bond Flows in 1998)</b>			
	(i)	(ii)	(iii)	(iv)
Top 5 Chaebol	1.298*** (0.281)	1.573*** (0.327)	1.685*** (0.317)	1.285*** (0.270)
Top 6-30 Chaebol	0.477* (0.252)	0.485 (0.316)	0.541* (0.314)	0.522** (0.251)
Log(Assets)	1.064*** (0.092)	1.120*** (0.132)	1.070*** (0.128)	1.083*** (0.092)
Debt / Assets	-1.490* (0.875)	-1.834 (1.141)	-1.759* (1.055)	-1.007 (0.800)
Ownership Concentration		0.214 (0.493)		
Control-Ownership Difference			-0.621 (0.396)	
Cash Flows / Assets				0.188 (1.034)
Volatility(Cash Flows / Assets)				1.163 (1.634)
Modified Altman-Z Score				0.011 (0.015)
Industry Fixed Effects	YES	YES	YES	YES
Observations	297	206	206	285
R-squared	0.77	0.76	0.76	0.77

**Internet Appendix Table A.IV**  
**Net Bond Flows in 1998, Chaebol Affiliation & Governance**

The table reports coefficients from firm-level regressions of 1998 net bond flows normalized by assets onto 3-digit industry fixed effects and pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. All RHS variables are measured with respect to 1996. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. The Control-Ownership Gap is Joh's difference between the sum of all large shareholdings and the sum of only personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities. 'Cash flows' are operating cash flows plus depreciation and minus changes in accruals. 'Cash volatility' is the standard deviation of cash flows/assets from 1994-1996. The modified altman-Z score is defined as  $3.3*(EBIT / assets) + 1.0*(sales / assets) + 1.4*(retained earnings / assets) + 1.2*(working capital / assets)$ . \* = 10% level, \*\* = 5% level, \*\*\* = 1% level.

<i>Dependent Variable =</i>	<b>(Net Bond Flows / Assets) in 1998</b>			
	(i)	(ii)	(iii)	(iv)
Top 5 Chaebol	6.989*** (1.691)	7.008*** (2.211)	7.413*** (2.176)	7.197*** (1.787)
Top 6-30 Chaebol	2.589 (1.989)	3.54 (2.472)	4.007 (2.483)	2.747 (1.985)
Log(Assets)	0.299 (0.350)	0.536 (0.538)	0.706 (0.457)	0.531 (0.341)
Debt / Assets	0.248 (4.789)	-3.938 (3.715)	-4.438 (3.669)	-0.094 (4.783)
Ownership Concentration		-2.33 (2.394)		
Control-Ownership Difference			-0.618 (1.871)	
Cash Flows / Assets				0.414 (4.563)
Volatility(Cash Flows / Assets)				23.470** (11.384)
Modified Altman-Z Score				-0.271 (0.167)
Industry Fixed Effects	YES	YES	YES	YES
Observations	504	349	349	476
R-squared	0.24	0.32	0.32	0.28