

ONLINE INTERNET APPENDIX

While most securities have a constant amount outstanding over time, the supply of some securities can change. The actual amount outstanding can change if the bond is callable or when for asset-backed securities a part of the amount issued is returned to investors early. The effective amount outstanding (the tradable amount) of securities can for instance be altered when securities are bought under asset-purchase programs. While if the total amount outstanding diminishes, the security is not included in the sample, the security is included when the amount outstanding is not reduced to zero. To make sure that the changed amount outstanding does not appear as a transaction, I adjust by the pool-factor.¹

The nominal value is

$$(1) \quad \textit{NominalValue} = \textit{RawValue} * e * \textit{Poolfactor}$$

where e is the domestic price of foreign currency. The pool factor adjusts the nominal value of the specific security by partial or special redemptions. If no redemption has occurred, the poolfactor is one. It gives the amount that is left to be distributed.

To obtain a nominal value that moves only when a security is actually bought or sold, the nominal value needs to be adjusted by exchange rate changes and the pool factor.

$$(2) \quad \textit{AdjustedNominalValue}_t = \frac{\textit{NominalValue}_t}{\textit{Poolfactor}_t} * \frac{e_{t-1}}{e_t}$$

$\frac{e_{t-1}}{e_t} - 1$ is the percentage appreciation of the Euro. If the Euro appreciates and the foreign currencies depreciate, this reduces the nominal value of securities in Euros if these securities

¹This changed supply can still have effects that are not captured by the security fixed effects. However, I can control for this security-specific amount outstanding by including security*time fixed effects.

are denominated in foreign currency and these movements do not reflect buy decisions. By multiplying by the poolfactor, I adjust for partial or special redemptions. In the text, I always refer to the adjusted nominal value to adjust for the movements that do not reflect investment decisions. The NetBuy variable is obtained by taking the natural log change of the adjusted nominal value given they trade.

Table A1 Bond Holdings of German Investors (in %)

Variable	Funds	ICPF	Banks
Government	54.9	53.2	33.1
OFC	7.5	7.3	9.8
NFC	8.3	3.9	1.5
Banks	29.3	35.5	55.5
Euro	84.2	92.2	95.1
USD	11.8	2.4	3.4
Other Currency	4.2	5.6	1.8
Domestic	39.6	39.5	73.6
Foreign	60.7	60.7	26.7

Percentage debt securities holdings of investment funds (*Funds*), insurance companies and pension funds (*ICPF*) and *Banks* issued by the Government, Other-Financial Corporations (OFC), Non-Financial Corporations (NFC), Banks, in Euros, US Dollars (USD), other currency and by domestic or foreign residents. Values are averages over the sample period. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, 2005 Q4 – 2014 Q4; author's calculations.

Table A2 Bank Heterogeneity across Time

	Dependent variable: NetBuy				
	(1)	(2)	(3)	(4)	(5)
Returns * Capital	-24.85*** (4.928)	-20.59 (22.108)	-25.63** (12.502)	-14.70 (32.860)	4.628 (34.524)
Returns * Capital * Post-Crisis	10.16 (15.917)				
Returns * Capital * Post-Reg. Reform	29.48** (12.385)				
<i>R</i> -squared	0.249	0.218	0.263	0.284	0.288
Observations	1653727	441778	748569	149868	313512
Institution*Time FE	Yes	Yes	Yes	Yes	Yes
Security*Time FE	Yes	Yes	Yes	Yes	Yes
Sample	Full	Pre-Crisis	Crisis	Post-Crisis	Post-Reg. Reform

The dependent variable is the change in the log of the nominal amount held for banks on the institution level. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. *Capital* is equity as a ratio of its total assets at the beginning of the period. *Capital* is demeaned by the average across banks. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). *Pre-Crisis* refers to the period 2006 Q1:2008 Q1, *Crisis* refers to 2008 Q2:2012 Q3, *Post-crisis* refers to 2012 Q4:2013 Q4 and *Post-Reg. Reform* refers to 2014 Q1:2014 Q4. Standard errors are in parentheses. Standard errors are double clustered at the security and institution level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, monthly bank balance sheet statistics, 2005 Q4 – 2014 Q4; author's calculations.

Table A3 Credit Rating

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.0769*** (0.028)	0.0922*** (0.030)	-1.221*** (0.192)	-0.907*** (0.191)	0.257** (0.119)	0.268** (0.119)
IG	-0.00171 (0.019)	-0.0193 (0.019)	0.128** (0.061)	0.0279 (0.066)	0.0364 (0.035)	0.00731 (0.035)
Return * IG	0.0969* (0.050)	0.139*** (0.051)	0.667*** (0.240)	0.821*** (0.241)	0.179 (0.166)	0.198 (0.167)
<i>R</i> -squared	0.120	0.126	0.161	0.174	0.114	0.116
Observations	232464	232464	29860	29860	120941	120941
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* are the holding period Return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter. *IG* is a dummy that equals one if the security is rated investment grade and zero otherwise and is lagged by one quarter. All independent variables are lagged by one quarter. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, 2005 Q4 – 2014 Q4; author's calculations.

Table A4 Foreign Currency Bonds

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.0884* (0.050)	0.190*** (0.052)	-0.694*** (0.128)	-0.259* (0.147)	0.170* (0.101)	0.200* (0.107)
Return * FC	0.0153 (0.056)	-0.0762 (0.058)	-0.549** (0.277)	-0.725*** (0.274)	0.477*** (0.179)	0.422** (0.181)
<i>R</i> -squared	0.120	0.126	0.161	0.174	0.114	0.116
Observations	232457	232457	29860	29860	120941	120941
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. *FC* is a dummy that equals one if the security is denominated in foreign currency and zero otherwise. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, 2005 Q4 – 2014 Q4; author's calculations.

Table A5 β Stockmarket

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.119*** (0.026)	0.154*** (0.030)	-0.816*** (0.128)	-0.346*** (0.126)	0.267*** (0.071)	0.291*** (0.081)
Return * β_{Dax}	-0.149 (0.128)	-0.223 (0.156)	-0.654 (0.502)	-1.488* (0.798)	0.840** (0.343)	0.675* (0.367)
<i>R</i> -squared	0.116	0.122	0.159	0.172	0.109	0.110
Observations	230374	230374	29609	29609	117616	117616
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. β_{Dax} is the coefficient obtained from a regression of the price change of the security on the percentage change of the German stockmarket index (Dax). β_{Dax} is demeaned and standardized by the sample standard deviation. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Bootstrapped standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, Bloomberg, Datastream, 2005 Q4 – 2014 Q4; author's calculations.

Table A6 German vs. Foreign Bonds

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.110*** (0.024)	0.133*** (0.027)	-0.915*** (0.146)	-0.514*** (0.153)	0.345*** (0.101)	0.364*** (0.103)
Return * German	-0.162* (0.087)	-0.110 (0.089)	0.287 (0.222)	0.272 (0.232)	-0.0336 (0.179)	-0.0383 (0.181)
<i>R</i> -squared	0.120	0.126	0.161	0.173	0.114	0.116
Observations	232464	232464	29860	29860	120941	120941
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, 2005 Q4 – 2014 Q4; author's calculations.

Table A7 Covariance Stockmarket

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.0821** (0.032)	0.107*** (0.036)	-0.913*** (0.115)	-0.526*** (0.126)	0.239** (0.096)	0.249*** (0.082)
Return * $cov_{\Delta Price, Dax}$	0.00814 (0.012)	0.00863 (0.015)	0.0769 (0.069)	0.0587 (0.093)	0.108** (0.053)	0.102* (0.054)
<i>R</i> -squared	0.120	0.126	0.159	0.171	0.111	0.113
Observations	226614	226614	29432	29432	119032	119032
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. $cov_{\Delta Price, Dax}$ is the covariance of the price change of the security and the percentage change of the German stockmarket index (Dax). $cov_{\Delta Price, Dax}$ is demeaned and standardized by the sample standard deviation. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Bootstrapped standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, Bloomberg, Datastream, 2005 Q4 – 2014 Q4; author's calculations.

Table A8 β Risk-free Yield

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.0962*** (0.026)	0.123*** (0.030)	-0.837*** (0.107)	-0.446*** (0.150)	0.339*** (0.111)	0.349*** (0.077)
Return * β_{rf}	0.0150 (0.018)	0.00738 (0.018)	0.204** (0.097)	0.144 (0.091)	-0.0191 (0.063)	-0.0180 (0.054)
<i>R</i> -squared	0.111	0.117	0.158	0.170	0.106	0.108
Observations	221671	221671	28844	28844	112615	112615
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. β_{rf} is the coefficient obtained from a regression of the yield of the security on the risk-free yield within its maturity bucket. β_{rf} is demeaned and standardized by the sample standard deviation. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Bootstrapped standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, Bloomberg, Datastream, 2005 Q4 – 2014 Q4; author's calculations.

Table A9 Covariance Risk-free Yield

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.0967*** (0.024)	0.125*** (0.027)	-0.868*** (0.095)	-0.487*** (0.145)	0.338*** (0.096)	0.351*** (0.103)
Return * $cov_{yield,rf}$	-0.0203 (0.015)	-0.0391** (0.019)	0.0796 (0.096)	0.0761 (0.105)	0.00425 (0.065)	0.00999 (0.070)
<i>R</i> -squared	0.113	0.119	0.159	0.171	0.106	0.108
Observations	217641	217641	28829	28829	112092	112092
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. $cov_{yield,rf}$ is the covariance of the yield of the security and the risk-free yield within its maturity bucket. $cov_{yield,rf}$ is demeaned and standardized by the sample standard deviation. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Bootstrapped standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, Bloomberg, Datastream, 2005 Q4 – 2014 Q4; author's calculations.

Table A10 Volatility

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.115*** (0.043)	0.148*** (0.044)	-0.894*** (0.123)	-0.365* (0.192)	0.521*** (0.122)	0.571*** (0.140)
Return * vol	-0.00875 (0.021)	-0.0118 (0.020)	0.0538 (0.070)	-0.0398 (0.089)	-0.116* (0.061)	-0.122* (0.072)
<i>R</i> -squared	0.120	0.126	0.161	0.173	0.112	0.114
Observations	232321	232321	29848	29848	120336	120336
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. *vol* is the standard deviation of $\Delta Price$. *vol* is demeaned and standardized by the sample standard deviation. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Bootstrapped standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, Bloomberg, Datastream, 2005 Q4 – 2014 Q4; author's calculations.

Table A11 VIX

	Dependent variable: NetBuy					
	Funds		ICPF		Banks	
	(1)	(2)	(3)	(4)	(5)	(6)
Return	0.0782*** (0.027)	0.130*** (0.030)	-0.977*** (0.124)	-0.468*** (0.143)	0.329*** (0.093)	0.348*** (0.099)
VIX	0.00320 (0.003)		0.0415*** (0.012)		-0.00318 (0.007)	
Return * VIX	0.102* (0.057)	-0.0102 (0.061)	0.574** (0.276)	0.203 (0.338)	0.0538 (0.200)	0.0324 (0.211)
<i>R</i> -squared	0.120	0.126	0.162	0.173	0.114	0.116
Observations	232184	232184	29860	29860	120888	120888
Security FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes	No	Yes

The dependent variable is the change in the log of the nominal amount held. *Return* is the holding period return defined as the quarterly change in the price plus the quarterly coupon divided by the price in the previous quarter and lagged by one quarter. *VIX* is the log of the implied volatility for S&P 500 stock options and demeaned by the sample average. Column (1)-(2) estimate the specification for the investment fund sector. Column (3)-(4) estimate the specification for the insurance companies and pension fund sector. Column (5)-(6) estimate the specification for the banking sector. Fixed effects are either included (Yes), not included (No), or spanned by other fixed effects (-). Standard errors are in parentheses. Standard errors are clustered at the security level and robust to heteroskedasticity and autocorrelation. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Securities Holdings Statistics, Datastream, 2005 Q4 – 2014 Q4; author's calculations.

Fig. A1. Balance Sheet of Banks in Germany

Assets	Liabilities
	Capital
Loans to Non-Banks	Retail Deposits
Loans to Banks	Interbank Borrowing
Debt Securities	Debt Securities Issued
Other	Other

Note: Assets (in EUR billions, share of total assets): Loans to Non-Banks (3127, 40%), Loans to Banks (1950, 25%), Debt Securities (1176, 15%), Others (1599, 20%); Liabilities (in EUR billions, share of total liabilities): Capital (382, 5%), Retail Deposits (3299, 42%), Interbank Borrowing (1717, 22%), Debt Securities issued (1115, 14%), Other (1341, 17%); Total: EUR 7853 billion. Source: Author's calculations; Data: Deutsche Bundesbank, time series database, banks and other financial institutions, banks.

Fig. A2. Balance Sheet of Investment Funds in Germany

Assets	Liabilities
Debt Securities	Investment Fund Shares issued
Equity Securities	
Investment Fund Shares	
Cash and Deposits	
Other	Other

Note: Assets (in EUR billions, share of total assets): Debt Securities (825, 50%), Equity Securities (303, 18%), Investment Fund Shares (277, 17%), Cash and Deposits (70, 4%), Other (179, 11%); Liabilities (in EUR billions, share of total liabilities): Investment Fund Shares issued (1597, 97%), Other (56, 3%); Total: EUR 1653 billion. Source: Author's calculations; Data: Deutsche Bundesbank, time series database, banks and other financial institutions, investment companies

Fig. A3. Balance Sheet of Insurance Companies and Pension Funds in Germany

Assets	Liabilities
Equity Securities and Investment Fund Shares	Equity
Cash and Deposits	Net Equity of Household in Life Insurance and Pension Funds
Debt Securities	
Loans	Unearned Premiums and Reserves for outstanding Claims
Other	Other

Note: Assets (in EUR billions, share of total assets): Investment Fund Shares and Equity Securities (1014, 42%), Cash and Deposits (384, 21%), Debt Securities (384, 16%), Loans (299, 12%), Other (209, 9%); Liabilities (in EUR billions, share of total liabilities): Equity (361, 15%), Net Equity of Household in Life Insurance and Pension Funds (1592, 66%), Unearned Premiums and Reserves for outstanding Claims (296, 12%), Other (90, 3%) Total: EUR 2428 billion. Source: Author's calculations; Data: Deutsche Bundesbank, time series database, banks and other financial institutions, insurance corporations and pension funds.