

Is proprietary trading detrimental to retail investors?

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Motivation

- ▶ Evidence for limited financial literacy and information of retail investors (Lusardi and Mitchell, 2007; Guiso and Japelli, 2006)
- ▶ Financial innovations make efficient investments more complex
- ▶ Demographic change in Europe requires households to complement pay-as-you-go pensions system with saving for retirement
- ⇒ Need for financial advice

- ▶ Universal banks actively involved in most financial markets
- ⇒ Economies of scope in advising retail investors

- ▶ But universal banks might face conflict of interest
- ⇒ Banks might use retail investors as exit channel to save on transaction costs, contain market impact, and not disclose informational advantage when selling off assets

Main Questions and Findings

1. Do German banks systematically push stocks from their proprietary portfolio into their retail customers' portfolios?
⇒ Yes, especially those banks with an asset management unit
... particularly to avoid market impact
2. How do stocks perform that banks sell their customers?
⇒ Those stocks systematically underperform compared to both
... other stocks in banks' proprietary portfolio
... other stocks in households' portfolios
3. How does the customer portfolio performance of bank with prop trading compare to banks without prop trading?
⇒ Customers portfolio performance at banks with prop trading is significantly worse

Contribution to broader debate

- ▶ Is combining proprietary trading and banking efficiency enhancing?
 - ▶ Important for an assessment of the Volcker Rule, Liikanen Report and Vickers Report
 - ▶ All suggest a separation between bank involved in prop trading and retail bank
 - ▶ Contributes to debate about costs/benefits of universal banks
 - ▶ Puri (1996): Underpricing lower for IPOs underwritten by banks
 - ▶ Acharya&Johnson (2007) and Mass&Rehman (2008): Information from lending business reused in banks' proprietary trading and asset management
 - ▶ Ber&Yafeh&Yosha (2001): Bank managed funds pay too much for equity underwritten by the bank
- ⇒ This paper look at synergies or conflict of interest between retail banking and proprietary trading

Outline

Introduction and Motivation

Data and Methodology

Results: Portfolio Effects

Results: Stock performances

Results: Portfolio performance

Conclusion

Data Set

- ▶ Source: Security deposit statistics of the Deutsche Bundesbank
- ▶ Portfolio holdings of all German banks and holdings of their respective aggregate retail customers on security-by-security basis
- ▶ Quarterly frequency from 2005Q4 to 2009Q3

Sample construction:

- ▶ Only listed stocks considered
- ▶ Top percentile of banks according to average quarterly stock portfolio value (covers 58% of German banks' stock holdings)
- ▶ 102 banks with 8,375 different stock positions give us a total of 140,491 observations
- ▶ Matched on security level with market data on performance, transaction volume etc.

Variable Definitions

As key variables, we calculate the normalized change in the holdings of stock i in quarter t in Bank j 's portfolio and in the portfolio of bank j 's Customers

$$\Delta Share_{ijt}^B = \frac{Holdings_{ijt}^B}{FFMC_{it}} - \frac{Holdings_{ijt-1}^B}{FFMC_{it-1}}$$

$$\Delta Share_{ijt}^C = \frac{Holdings_{ijt}^C}{FFMC_{it}} - \frac{Holdings_{ijt-1}^C}{FFMC_{it-1}}$$

We normalize with the free float market capitalization (i.e., $FFMC_{it}$) to

- ▶ eliminate valuation effects
- ▶ account for differences in market depth and
- ▶ stock splits and reverse splits

Methodology

To study whether banks push stocks into their customers' portfolios we estimate the following interaction model:

$$\Delta Share_{ijt}^C = \alpha + \beta_1 \cdot \Delta Share_{ijt}^B + \beta_2 \cdot Sell_{ijt}^B + \beta_3 \cdot \Delta Share_{ijt}^B \times Sell_{ijt}^B + \theta_j + \gamma_t + \epsilon_{ijt}$$

where

- ▶ $\Delta Share_{ijt}^C$: Change in the share of stock i in the aggregated customer portfolio of bank j at time t
- ▶ $\Delta Share_{ijt}^B$: Change in the share of stock i in bank j 's portfolio at time t
- ▶ $Sell_{ijt}^B$: Dummy variable for a sell trade of bank j in stock i
- ▶ $\Delta Share_{ijt}^B \times Sell_{ijt}^B$: Interaction term (variable of interest)
- ▶ θ_j and γ_t : Bank and time fixed effects, respectively

Results I

- ▶ Generally, changes in banks' and customers' portfolio are positively correlated
- ▶ But if a bank decreases its share in a stock, customers increase their share

	$\Delta Share_{ijt}^C$
$\Delta Share_{ijt}^B$	0.1315***
$Sell_{ijt}^B$	-0.8838***
$\Delta Share_{ijt}^B \times Sell_{ijt}^B$	-0.2181***
Bank dummies	Yes
Quarter dummies	Yes
R^2	0.064
No of obs	140,491

Results II

- Results robust when controlling for market conditions for stock i such as
1. Positive absolute return previous quarter (Dummy gain _{$it-1$})
 2. Stock price volatility in previous quarter ($Vola_{it-1}$)
 3. Market-to-book-value and trading volume ($MtBV_{it}$ and TV_{it})

	$\Delta Share_{ijt}^C$
$\Delta Share_{ijt}^B$	0.1374***
$Sell_{ijt}^B$	-0.8887***
$\Delta Share_{ijt}^B \times Sell_{ijt}^B$	-0.2292***
Dummy gain _{$it-1$}	-0.1535
$Vola_{it-1}$	20.6872***
$MtBV_{it}$	0.0001
TV_{it}	-0.0001**
Bank dummies	Yes
Quarter dummies	Yes
R^2	0.068
No of obs	132,086

Alternative explanation: Banks serve as market makers

- ▶ Do banks serve as market makers for retail customers?
- ▶ Do they simply always take the other side of the trade?
- ▶ This should imply that we also see a negative interaction when banks increase their position

	$\Delta Share_{ijt}^C$
$\Delta Share_{ijt}^B$	0.0983***
$Sell_{ijt}^B$	-
$\Delta Share_{ijt}^B \times Sell_{ijt}^B$	-
Bank dummies	Yes
Quarter dummies	Yes
R^2	0.051
No of obs	140,491

Alternative explanation: Households herd

- ▶ Maybe effect is simply due to herding behavior of households
- ▶ *Agg. Change in Others:*
Aggregate change in households' portfolio holdings of stock i at other banks in quarter t

	$\Delta Share_{ijt}^C$
$\Delta Share_{ijt}^B$	0.1271***
$Sell_{ijt}^B$	-0.8101***
$\Delta Share_{ijt}^B \times Sell_{ijt}^B$	-0.1967***
Dummy gain $_{it-1}$	-0.0387
$Vola_{it-1}$	19.9709***
$MtBV_{it}$	0.0001
TV_{it}	-0.0001**
Agg. Change in Others $_{it}$	0.0439***
Bank dummies	Yes
Quarter dummies	Yes
R^2	0.092
No of obs	132,086

Role of asset management

- ▶ Banks push those shares to their retail customers in which they want to reduce their portfolio holdings
- ▶ They can particularly do so, if they manage portfolios on behalf of customers, i.e., if they have an asset management (AM) unit

	$\Delta Share_{ijt}^C$			
	<i>Full sample</i>	<i>AM subsample</i>	<i>No-AM subsample</i>	<i>Random AM</i>
$\Delta Share_{ijt}^B$	0.1497***	0.1450***	0.0208	0.1093***
$Sell_{ijt}^B$	-0.9308***	-1.0104***	-0.1460***	-0.9571***
AM_j	0.9454***	-	-	-
$\Delta Share_{ijt}^B \times Sell_{ijt}$	-0.1783***	-0.2457***	-0.0222	-0.2028***
$\Delta Share_{ijt}^B \times Sell_{ijt} \times AM_j$	-0.0846***	-	-	-
Stock controls	Yes	Yes	Yes	Yes
Bank dummies	No	Yes	Yes	Yes
Quarter dummies	Yes	Yes	Yes	Yes
R^2	0.039	0.064	0.211	0.061
No of obs	132,086	113,317	18,769	18,641

Market Impact

- ▶ Do banks push stocks to retail customers to avoid market impact?
- ▶ $ILLIQ_{i,t}$: Amihud ratio for stock i in quarter t
- ▶ Q3: 33% most illiquid stocks in a quarter
- ▶ Q1: 33% most liquid stocks in a quarter

	$\Delta Share_{ijt}^C$		
	Q1+Q3	Liquid (Q1)	Illiquid (Q3)
$\Delta Share_{ijt}^B$	0.1324***	0.0130**	0.1391***
$Sell_{ijt}^B$	-1.1270***	-0.1900***	-2.2913***
$\Delta Share_{ijt}^B \times Sell_{ijt}^B$	-0.1095***	-0.0113**	-0.2164***
$ILLIQ_{i,t}^{Q3}$	3.7916***	-	-
$\Delta Share_{ijt}^B \times Sell_{ijt}^B \times ILLIQ_{i,t}^{Q3}$	-0.0962***	-	-
Stock controls	Yes	Yes	Yes
Bank dummies	Yes	Yes	Yes
Quarter dummies	Yes	Yes	Yes
R^2	0.129	0.031	0.161
No of obs	81,705	41,342	40,363

Ownership

- ▶ High ownership could affect banks' incentives to push stocks to customers for two reasons
1. Price impact affects value of banks' portfolio holdings
 2. Banks might have informational advantage particular in stocks in which they hold a large block

	$\Delta Share_{ijt}^C$	
	$HO_{ijt}^{Dum} > 0.5\%$	$3\% > HO_{ijt}^{Dum} > 0.5\%$
$\Delta Share_{ijt}^B$	0.1346***	0.1384***
$Sell_{ijt}^B$	-0.8659***	-0.8572***
HO_{ijt}^{Dum}	0.7463**	0.9686**
$\Delta Share_{ijt}^B \times Sell_{ijt}^B$	-0.1942***	-0.1985***
$\Delta Share_{ijt}^B \times Sell_{ijt}^B \times HO_{ijt}^{Dum}$	-0.0508***	-0.0574***
Stock controls	Yes	Yes
Bank dummies	Yes	Yes
Quarter dummies	Yes	Yes
R^2	0.068	0.068
No of obs	132,086	131,455

Financial Crisis

- ▶ Where banks more inclined to use retail customers as exit channel during crisis?
- ▶ $Crisis_t$: Dummy variable for quarters after 2008Q3

	$\Delta Share_{ijt}^C$		
	<i>Full period</i>	<i>Pre-Crisis</i>	<i>Crisis</i>
$\Delta Share_{ijt}^B$	0.1372***	0.1377***	0.1291***
$Sell_{ijt}^B$	-0.8895***	-0.9021***	-0.8704***
$Crisis_t$	-0.9022***	-	-
$\Delta Share_{ijt}^B \times Sell_{ijt}^B$	-0.2063***	-0.2067***	-0.2692***
$\Delta Share_{ijt}^B \times Sell_{ijt}^B \times Crisis_t$	-0.0717**		
Stock controls	Yes	Yes	Yes
Bank dummies	Yes	Yes	Yes
Quarter dummies	Yes	Yes	Yes
R^2	0.068	0.075	0.065
No of obs	132,086	83,253	48,833

In sum

- ▶ Our findings provide evidence for the notion that banks push directly stocks from their portfolios to their retail customers
- ▶ The fraction of stocks which flows into the customer portfolios is larger for illiquid stocks and for stocks in which banks hold a block
- ▶ This suggests that banks try to avoid market impact

Performance

- ▶ How do stocks that flow from bank portfolios into customer portfolios perform?
- ▶ We calculate daily gross stock returns and daily abnormal returns for each quarter based on four-factor model
- ▶ Compare average daily performance of stocks that previously flew from bank to a customer portfolio with average performance of ...
 1. other stocks in customer portfolios
 2. other stocks that customers increased their holdings in
 3. other stocks in bank's portfolio
 4. other stocks that banks' increased their holdings in
 5. other stocks that banks sold off
- ▶ At the bank level we compare the performance of portfolios (equal and value weighted) for the the case group with the five control groups

Results

Average stock return comparison:

	Obs	Mean	Median	t-test	Wilcoxon test
<i>Panel A: Gross returns</i>					
Case Group vs.	12,240	-0.0569	-0.0278		
Control Group 1	2,227,512	-0.0587	-0.0215	-0.758	-2.434**
Control Group 2	952,633	-0.0546	-0.0221	-0.977	-3.148***
Control Group 3	117,094	-0.0483	-0.019	-3.689***	-4.794***
Control Group 4	75,676	-0.0409	-0.0171	-6.985***	-7.534***
Control Group 5	41,123	-0.0621	-0.0269	1.944**	0.599
<i>Panel B: 4-factor alpha</i>					
Case Group vs.	12,240	-0.0422	-0.0222		
Control Group 1	2,227,512	-0.0423	-0.0143	0.0347	-1.749*
Control Group 2	952,633	-0.0328	-0.0113	-4.295***	-5.713***
Control Group 3	117,094	-0.0288	-0.0079	-6.384***	-6.616***
Control Group 4	75,676	-0.0202	-0.0062	-10.469***	-10.136***
Control Group 5	41,123	-0.0448	-0.0173	1.084	0.297

- ▶ Stocks in the base group underperform the stocks in all control groups (except group 5)
- ▶ Stocks sold by banks to their customers underperform the stocks in the group *Control2* quarterly by roughly 100 basis points in absolute terms

Results

Equal and value weighted portfolio comparison:

	Obs	Value-weighted	t-test	Equal-weighted	t-test
<i>Panel A: Gross returns</i>					
Control Group 1 vs. Case Group	791	-0.0234 -0.0359	3.326***	-0.00003 -0.0158	4.140***
Control Group 2 vs. Case Group	791	-0.0231 -0.0359	3.352***	-0.00007 -0.0158	4.999***
Control Group 3 vs. Case Group	791	-0.0320 -0.0399	1.883**	-0.0043 -0.0158	3.837***
Control Group 4 vs. Case Group	791	-0.0292 -0.0399	2.515***	-0.0066 -0.0158	2.969***
Control Group 5 vs. Case Group	791	-0.0304 -0.0399	2.228***	-0.0049 -0.0158	3.508***
<i>Panel B: 4-factor alpha</i>					
Control Group 1 vs. Case Group	791	-0.0169 -0.0274	2.734***	-0.000014 -0.0083	2.430***
Control Group 2 vs. Case Group	791	-0.0194 -0.0274	2.043**	-0.00008 -0.0083	2.411***
Control Group 3 vs. Case Group	791	-0.0224 -0.0305	2.228**	-0.0019 -0.0083	2.281**
Control Group 4 vs. Case Group	791	-0.0194 -0.0305	2.796***	-0.0041 -0.0083	1.442*
Control Group 5 vs. Case Group	791	-0.0212 -0.0305	2.458***	-0.0013 -0.0083	2.467***

In sum

- ▶ Stocks pushed by banks in their retail customers' portfolio are performing even worse than average stocks in customers portfolio

Is prop trading *really* detrimental to retail investors?

- ▶ Differences in performance of aggregate customer portfolios of banks with proprietary trading as compared to customer portfolios of banks without proprietary trading

	Obs	One-Factor Alpha	t-test	4-Factor Alpha	t-test
<i>Equal-weighted portfolios</i>					
α^{no} vs.	677	-0.0235	4.519***	-0.0215	5.564***
α^{yes}	1,169	-0.0292		-0.0286	
<i>Value-weighted portfolios</i>					
α^{no} vs.	677	-0.0076	3.485***	-0.0060	4.527***
α^{yes}	1,169	-0.0119		-0.0117	

Conclusion

- ▶ Substantial conflict of interest between proprietary trading and financial advice given by universal banks
- ▶ Banks seem to dump underperforming stocks into their retail customers' portfolio
- ▶ This effect so substantial that it leads to a lower portfolio performance of customer portfolios at banks with proprietary trading