

FinTech and Customer Capital: Supplemental Appendix

More details on sample construction

GICS codes were chosen for the financial industry definitions because they offer a more straightforward interpretation than NAICS in this setting. For example, prominent FinTech firms such as PayPal Holdings Inc and Block Inc have a 2-digit NAICS code outside of 52, even though the GICS code system classifies both of them as financial firms. In general, the GICS classification separates financial firms into categories in a more intuitive manner than NAICS codes. Real estate firms (GICS code 4040) and mortgage REITS (GICS code 402040) are excluded from the analysis. The start point of the sample in 1997 is dictated by the availability of digitized SEC 10-K filings in Edgar, which are used to supplement the data collected by Capital IQ. The Compustat sample includes all firm-year observations in the financial sector with a few standard exceptions. We exclude firm-year observations with missing information on total assets, revenue, end of year stock price, or operating income before depreciation. We also exclude firm-year observations with a negative value of either revenue or total book assets. Finally, given the importance of matching with SEC filings, we drop any firm observation with no central index key (CIK), which is the main identifier used by the SEC.

Revenue is a key scaling variable in the analysis below, and revenue is more complicated for financial firms relative to non-financial firms. Throughout the analysis, the Capital IQ measure of revenue is used, which is defined precisely in the Capital IQ web interactive platform. Specifically, for most financial institutions, the Capital IQ measure of revenue is net interest income plus total non-interest income minus provision for loan loss reserves. For financial firms for which interest income is not a primary source of revenue, revenue is defined similarly to non-financial firms.

Table A1: Questions Used for 10-K Analysis

10-K Item	Concept of Interest	Question
Item 1	FinTech (Self-Identified)	<p>“# Instructions</p> <p>-You are a financial analyst specialized in covering the financial services sector.</p> <p>-Your task is to read the following business description from a firm’s SEC 10-K filing and determine whether the firm explicitly describes itself as a ‘financial technology company,’ ‘fintech company,’ or equivalent language (such as ‘technology-enabled financial services’ or ‘financial innovation platform’).</p> <p>-Note: General mentions of ‘technology’ or ‘innovation’ alone do not qualify unless explicitly connected to financial services delivery or business model transformation.</p> <p># Requested Output</p> <p>-Answer with only one of the following words: Yes, No, or Unclear.</p> <p># Business Description Text”</p> <p>{item1}</p>
Item 1	FinTech (FSB Definition)	<p>“# Instructions</p> <p>-You are a financial analyst specialized in covering the financial services sector.</p> <p># Definition</p> <p>-The Financial Stability Board defines ‘fintech’ as: ‘Technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.’</p> <p># Task</p> <p>-Read the following business description. Based solely on the above definition from the Financial Stability Board, please determine whether the firm qualifies as a fintech firm.</p> <p># Requested Output</p> <p>-Answer with only one of the following words: Yes, No, or Unclear.</p> <p># Business Description Text</p> <p>{item1}”</p>

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10-K Item	Concept of Interest	Question
Item 1	Brand value	“We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgment to answer the following question: Is an emphasis on increasing brand value an important element in the firm’s sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:”
Item 1	Sales force	“We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgment to answer the following question: Is an emphasis on a sales force or a sales staff an important element in the firm’s sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:”
Item 1	Advertising	“We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgment to answer the following question: Is an emphasis on advertising an important element in the firm’s sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:”
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10-K Item	Concept of Interest	Question
Item 1	Customer data usage	“We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgment to answer the following question: Is an emphasis on obtaining and using customer data an important element in the firm’s sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:”
Item 1	Customer service	“We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgment to answer the following question: Is an emphasis on customer service an important element in the firm’s sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:”
Item 1	Customers	“We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the extent to which the firm spends resources on marketing, advertising, product promotion, branding, customer service, sales force, and other closely related activities. Your task is to read the following document and determine the primary customers of the firm in question. Specifically, does the firm primarily market its products to households, businesses, or the government? Please provide an answer that is only a single word: households, businesses, or the government. Here is the document:”
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10-K Item	Concept of Interest	Question
Item 1	Platform business model	“We are economists conducting research on the underlying business models used by firms. One business model involves building a platform on which individuals or other entities interact. A platform business model involves profiting from a platform that allows two or more groups of users to interact. Your task is to read the following document and answer the following question: Is such a platform part of the business model of the firm? Please provide an answer that is only a single word, either yes or no. Here is the document:”

Table A2: Top 30 FinTech Firms by Revenue, 2022

Company Name	GICS Industry	Sales & Marketing / Revenue
VISA INC	402010	0.046
PAYPAL HOLDINGS INC	402010	0.082
MASTERCARD INC	402010	0.035
BLOCK INC	402010	0.117
NASDAQ INC	402030	0.008
ROCKET COS INC	402010	0.157
COINBASE GLOBAL INC	402030	0.162
TOAST INC	402010	0.117
PROG HOLDINGS INC	402020	0.006
BREAD FINANCIAL HOLDINGS INC	402020	0.081
GREEN DOT CORP	402020	0.206
ROBINHOOD MARKETS INC	402030	0.073
AFFIRM HOLDINGS INC	402010	0.395
MONEYGRAM INTERNATIONAL INC	402010	0.030
LENDINGCLUB CORP	402020	0.156
ENOVA INTERNATIONAL INC	402020	0.382
OPORTUN FINANCIAL CORP	402020	0.128
UPSTART HOLDINGS INC	402020	0.405
SELECTQUOTE INC	403010	0.634
MARQETA INC	402010	0.005
PAYONEER GLBL INC	402010	0.300
CUSTOMERS BANCORP INC	401010	0.004
LIVE OAK BANCSHARES INC	401010	0.021
PAYMENTUS HOLDINGS INC	402010	0.147
CURO GROUP HLDGS CORP	402020	0.073
TRICO BANCSHARES	401010	0.009
ATLANTICUS HOLDINGS CORP	402020	0.162
S&T BANCORP INC	401010	0.015
ROOT INC	403010	0.152
AMERANT BANCORP INC	401010	0.038

Notes: This table lists the 30 largest FinTech firms (narrow definition) by revenue in 2022, along with their sales and marketing expense to revenue ratio and their GICS financial sector.

Table A3: Sales and Marketing Expense to Revenue Ratio, by Financial Sector

	Narrow Definition		Broad Definition	
	Non-FinTech	FinTech	Non-FinTech	FinTech
Banks (401010)	0.013 (N=421)	0.015 (N=6)	0.013 (N=419)	0.013 (N=8)
Finance Services (402010)	0.013 (N=54)	0.073 (N=23)	0.012 (N=33)	0.044 (N=44)
Consumer Finance (402020)	0.066 (N=24)	0.130 (N=14)	0.059 (N=18)	0.130 (N=20)
Capital Markets (402030)	0.005 (N=149)	0.040 (N=10)	0.000 (N=123)	0.068 (N=36)
Insurance (403010)	0.008 (N=95)	0.656 (N=3)	0.002 (N=83)	0.424 (N=15)

Notes: This table reports the number of firms and the median sales and marketing expense to revenue ratio by GICS code for FinTech and non-FinTech financial firms. The sample is limited to firm-year observations from 2018 to 2022.

Table A4: Sales and Marketing Expense to Revenue Ratio, by Firm Age

	Narrow Definition		Broad Definition	
	Non-FinTech	FinTech	Non-FinTech	FinTech
(0,10]	0.029 (N=26)	0.162 (N=10)	0.003 (N=18)	0.157 (N=18)
(10,20]	0.006 (N=72)	0.123 (N=17)	0.004 (N=64)	0.138 (N=25)
(20,30]	0.013 (N=64)	0.079 (N=11)	0.012 (N=42)	0.037 (N=33)
(30,40]	0.017 (N=53)	0.124 (N=3)	0.015 (N=43)	0.090 (N=13)

Notes: This table reports the median sales and marketing expense to revenue ratio for FinTech and non-FinTech financial firms as of 2022, grouped by age since establishment.

Table A5: Alternative Customer Capital Measure

Panel A: Narrow Definition			
	Median	Mean	Weighted Mean
Non-Financial	0.190	0.214	0.188
Financial, Non-FinTech	0.086	0.105	0.128
FinTech	0.181	0.184	0.215
Panel B: Broad Definition			
	Median	Mean	Weighted Mean
Non-Financial	0.190	0.214	0.188
Financial, Non-FinTech	0.080	0.094	0.124
FinTech	0.176	0.193	0.186

Notes: This table reports the median, mean, and revenue-weighted mean of the salaries of sales and marketing employees scaled by total salaries paid by the firm. The sample is limited to firm-year observations from 2018 to 2022.

Table A6: FinTech Status and Alternative Customer Capital Investment

	(1)	(2)	(3)	(4)	(5)
Panel A: Narrow Definition					
FinTech	0.086** (0.010)	0.085** (0.010)	0.031** (0.009)	0.029** (0.009)	0.029** (0.009)
Observations	6,291	6,291	6,291	6,077	6,077
R-squared	0.051	0.052	0.380	0.383	0.387
	(1)	(2)	(3)	(4)	(5)
Panel B: Broad Definition					
FinTech	0.100** (0.009)	0.100** (0.009)	0.057** (0.009)	0.055** (0.009)	0.055** (0.009)
Observations	6,291	6,291	6,291	6,077	6,077
R-squared	0.222	0.223	0.428	0.426	0.430
Year FE	No	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes
Age category FE	No	No	No	Yes	Yes
Size FE	No	No	No	No	Yes

Notes: This table reports coefficients from firm-level regressions of the salaries of sales and marketing employees to total salaries ratio on FinTech indicator variables. Standard errors are double-clustered by firm and year.