

ONLINE APPENDIX TO

“THE USE AND USEFULNESS OF BIG DATA:  
EVIDENCE FROM FINANCIAL ANALYSTS”

Figure A1  
List of Alternative Data Vendors and In-house Data Science Teams

We compile a list of data-science teams and alternative-data vendors by combining the vendor list of AlternativeData.org, a platform that connects users to providers of alternative data, with that of J. P. Morgan's 2019 Alternative Data Handbook. The figure below lists all the six in-house data-science teams and all the 513 alternative-data vendors. \*denote in-house data-science teams.

AlphaWise (Morgan Stanley)\*

Barclays Investment Sciences and Data Science Team (Barclays)\*

Piper Jaffray Web Analytics (PiperJaffray, now Piper Sandler Companies)\*

RBC Elements (Royal Bank of Canada)\*

UBS Evidence Lab (UBS)\*

Wolfe quant team (Wolfe Research)\*

|                       |                       |                     |                      |
|-----------------------|-----------------------|---------------------|----------------------|
| 1010Data              | Beijing Chuang Yi     | CQG                 | ENGAGE Research      |
| 7Park                 | Fang Technology       | Crain               | Enigma               |
| Aberdeen              | Beijing UC Science &  | Communications Inc. | Entgroup             |
| Accern                | Technology            | CreditRiskMonitor   | EntSight             |
| Accrete               | Benzinga              | Crimson Hexagon     | EOData               |
| Aclima                | Big Byte Insights     | Croprosis           | EPFR                 |
| Acuris                | Bird.i                | CropProphet         | Epsilon              |
| AddThis               | Bitly                 | CrowdThnk           | eSignal              |
| Advan                 | Bitvore               | Cruise Analytics    | Estimize             |
| Affinity Solutions    | BizQualify            | Cuebiq              | Eurekahedge          |
| AggData               | Black Box (TDn2k)     | Cuemacro            | Euromonitor          |
| Agribotix             | Black Sky             | CyberStream         | International        |
| Agricultural Research | Bloomberg Tesla       | Data Guru Limited   | Event Registry       |
| Federation            | Tracker               | Data Simply         | EventVestor          |
| Airports Council      | BMLL Technology       | Datalogix           | Everest Group        |
| International         | Bombora               | Dataminr            | Exante Data          |
| AirSage               | Borrell               | Datamyne            | Exerica              |
| ALASA                 | Boxoffice Media       | Dataprovider.com    | Experian Footfall    |
| Alexandria            | Brain Company         | DataPulse           | ExtractAlpha         |
| AllTheRooms           | BrandLoyalties        | Datarama            | FactSet Revere       |
| Almax Information     | BrandWatch            | DataSift            | FactSquared          |
| Systems               | Brave New Coin        | Datastoxx           | Fashionbi            |
| Alpha Hat             | Brickstream           | DataStreamx         | FastBooking          |
| AlphaFlow             | Bridg                 | DataTrek            | FeatureX             |
| AlphaLetters          | Broughton Capital     | DataWeave           | FHS - Swiss Watch    |
| Alphamatician         | Buddy                 | DataYes             | Data                 |
| Alphasense            | BuildFax              | Dawex               | Finweavers           |
| Alt Hub               | BuiltWith             | DecaData            | First Data Merchant  |
| Alternate DNS         | Business Intelligence | DeepAffects         | Services Corporation |
| Amareos               | Advisors              | Del Mar Networks    | First Data           |
| Amass Insights        | Business Monitor      | Delphia             | SpendTrend           |
| Amenity Analytics     | International         | DemystData          | First to Invest      |
| American Trucking     | Capella Space         | Descartes Labs      | Flexport             |
| Association           | CB Richard Ellis Inc. | Digital Globe       | FN Arena             |
| Ampere Analysis       | CDU-TEK: Central      | DigitalMR           | FNGO                 |
| Anonymous Provider    | Dispatching           | Doane Advisory      | Foursquare           |
| AnthemData            | Department of Fuel    | Service             | Fraud Factors        |
| Apertio Technologies  | Energy Complex of     | Dodge               | Freestyle Media      |
| ApexData              | Russia                | Drawbridge          | FreightWaves         |
| AppAnnie              | Chain Store Guide     | Drewry Shipping     | FTR Freight          |
| Applaudience          | Information Services  | Consultants Ltd     | Transport Research   |
| Apptopia              | ChemOrbis             | Drillinginfo        | Associates           |
| Arab Air Carrier      | China National        | DroneDeploy         | Fysical              |
| Organization          | Chemical Information  | Dun & Bradstreet    | GDELT                |
| Arabesque S Ray       | Center                | EagleAlpha          | Genscape             |
| ARC                   | China Real Estate     | Earnest Research    | Geocento             |
| Arch Metrics          | Information           | Earthcube           | GeoQuant             |
| AreaMetrics           | Corporation           | EcommerceDB         | GeoSpark Analytics,  |
| ARM Insight           | Civic Science         | Edison              | Inc                  |
| Ascend Worldwide      | ClipperData           | Edmunds             | Geospatial Insight   |
| Limited               | CogniSent             | EEDAR               | Geotab               |
| Astutex               | Comlinkdata           | Eilers & Krejcik    | GeoWiki              |
| Audit Analytics       | CompStak              | Gaming              | GfK Boutique         |
| aWhere                | ComScore              | Emolument           | Research             |
| Barchart              | Consumer Edge         | Endor               |                      |
| BayStreet Research    | Cooltrader            | EnerKnol            |                      |

|                       |                     |                       |                      |
|-----------------------|---------------------|-----------------------|----------------------|
| Global Tone           | IPquery             | MixRank               | PsychSignal          |
| Communication         | iResearch           | MKT Mediastat         | QL2                  |
| (GTCOM)               | Irisys              | Mobiquity Networks    | Quad Analytix        |
| GNIP                  | iSentia             | Money Dashboard       | Quandl               |
| Good Judgment         | iSentium            | MoneySuperMarket      | Quantcube            |
| GovSpend              | iSpot               | NAIP                  | Quantxt              |
| Grandata              | ISS Analytics       | Narrative.io          | Quest Offshore       |
| Granular.ai           | ISSB Ltd            | New Generation        | QuestMobile          |
| Grapedata             | Jettrack.io         | Research              | Quexopa              |
| Greenwich.HR          | Jiguang             | Newscred              | Rakuten Intelligence |
| Gro Intelligence      | Jumpshot            | Newswhip              | RandomWalk           |
| GroundTruth (xAd)     | JustData            | Nexant Inc.           | RavenPack            |
| GS Dataworks          | JWN Energy          | NEXRAD on AWS         | Real Capital         |
| Guidepoint            | Kayros              | NIC                   | Analytics            |
| Gyana                 | KD Interactive      | Nikkei                | Real Estate Data     |
| h2o                   | Knowsis             | Nowcast               | Realrents            |
| Headset               | Kpler               | NPD                   | Realyse              |
| Health Forum          | ktMINE              | Off-Highway           | Re-analytics         |
| HealthVerity          | Kyber Data Science  | Research Limited      | Redbook Research     |
| Heckyl                | Landsat on AWS:     | Omega Point: a PM     | Inc.                 |
| HFR                   | Legal Shield        | platform with AI      | RedTech              |
| Hillside Partners     | Legis               | intelligence          | REIS                 |
| humanpredictions      | Lexalytics          | Omney Data            | RelateTheNews        |
| Huq Industries        | LikeFolio           | One Click Retail      | RelationshipScience  |
| HySpecIQ              | LIMRA               | OpenCorporates        | RepRisk              |
| ICEYE                 | LinkUp              | OpenSignal            | Repustate            |
| ICI                   | LISTedTECH          | OpenstreetMap         | RetailNext           |
| IFI CLAIMS Patent     | ListenFirst         | Optimum Complexity    | Return Path          |
| Services              | Lota Data           | Orb Intelligence      | Reveal Mobile        |
| iiMedia Research      | Lucena Research     | Orbital Insight       | Revelio Labs         |
| IMS Quintiles         | Lyra Insight        | OTAS                  | Reviewshake          |
| Index Marketing       | M Science           | Ovum Ltd Us Branch    | Rezatec              |
| Solutions Limited     | Magna Global        | Owl Analytics         | Rigdata              |
| IndexMath             | Research            | Pacific Epoch (China) | RigLogix             |
| Inferess              | Manfredi &          | Panjiva               | Rigup                |
| InformaFinancialIntel | Associates          | Panvista Analytics    | Rook Research        |
| ligence               | Manheim             | Parsely               | RootMetrics          |
| InfoTEK Publishing    | MariData            | PatentSight           | RS Metrics           |
| House                 | MarineTraffic       | PatSnap               | RunningAlpha         |
| InfoTrie              | Marinexplore        | Paynxt360             | RVIA                 |
| Innovata              | MarketCheck         | Percolata             | RxData.net           |
| Inovayt               | MarketPsych         | PipeCandy             | Rystad Energy        |
| Insights Data         | Marketscout         | Pitchbook             | Safegraph            |
| Solutions             | Corporation         | PlaceIQ               | Sandalwood           |
| InSpectrum            | MASSIVE Data        | Placemeter            | Satellite Imaging    |
| Intelius              | Heights             | Placer.ai             | Corporation          |
| Interconnect          | MasterCard Advisors | Planet Labs           | SatScout             |
| Analytics             | MatterMark          | Pluribus Labs         | Savvr                |
| Intermodal            | Mavrx               | Prattle               | SciDex Alpha         |
| Association of North  | Measurable AI       | Predata               | Scoop Analytics      |
| America               | MedMine             | Predict HQ            | Scrapehero           |
| International Data    | Meltwater           | Premonition           | Scutify              |
| Corporation Inc.      | Metricle            | PriceStats            | Second Measure       |
| Internet Truckstop    | MIDiA Research      | PROME                 | Seer Aerospace       |
| Intrinio              | Millennium Research | Prosper Insights &    | Selerity             |
| Investing.com         | Group Inc.          | Analytics             |                      |

|                      |                          |                     |
|----------------------|--------------------------|---------------------|
| Semiconductor        | T.H. Capital             | VesselsValue        |
| Equipment &          | Tailwind Imaging         | Vestdata            |
| Materials            | Tala                     | VidaMinds           |
| International        | Talismatic               | Vigilant            |
| Semlab               | TalkingData              | Vortexa             |
| Sense360             | Tecnon Orbichem          | Wall Street Horizon |
| Sensor Tower         | Tegus                    | Wards Automotive    |
| Sentifi              | TellusLabs               | Group               |
| Sentiment Trader     | Teragence                | Waste Analytics     |
| Sequentum            | Terra Bella              | WDZJ.com            |
| SESAMm               | Terrain Tiles            | Webhose.io          |
| Sg2 (MarketPulse)    | TerraQuanta              | Wikimapia           |
| Sharablee            | Thasos                   | Windward            |
| ShareIQ              | The Climate              | Woodseer            |
| ShareThis            | Corporation              | World View          |
| ShareThis, Inc.      | The Fertilizer Institute | WXshift             |
| ShopperTrak          | TheySay                  | Xebral              |
| Shoppertrak Rct      | Thinknum                 | X-mode              |
| Corporation          | ThinkTopic               | Yewno               |
| Sigmai               | TickerTags               | YipitData           |
| Signal.co            | Tipigo                   | Yodlee / Envestnet  |
| SimilarWeb           | Tipranks                 | Zaoshu.io           |
| SJ Consulting Group  | TMT Analysis             | Zephyr              |
| Inc.                 | Towergate                | Zhiwei Data         |
| Sky Watch            | Informatics              |                     |
| Skydeo               | Trackur                  |                     |
| Slice Intelligence   | Tradesparq               |                     |
| Slingshot Aerospace  | TransCore                |                     |
| SmarterWorks         | Transport Topics         |                     |
| SMB Intelligence     | Publishing Group         |                     |
| Smith Travel         | Trendeo                  |                     |
| SNL Kagan            | Tribe Dynamics           |                     |
| Social Alpha         | Triton Research          |                     |
| Social Market        | TrustData                |                     |
| Analytics            | TrustedInsight           |                     |
| Space Know           | TruValue Labs            |                     |
| SpaceKnow            | Tussell                  |                     |
| Spacelist            | TVeyes                   |                     |
| SpaceNet on AWS      | TXN                      |                     |
| Spire Global         | TYR Data                 |                     |
| Spring Pond Partners | Uber Media               |                     |
| Standard Media Index | Umbra Lab                |                     |
| Statistical Survey   | Unacast                  |                     |
| Statlas              | Understory               |                     |
| Stax                 | Unmetric                 |                     |
| Steel Orbis          | Upswell Group            |                     |
| StockTwits           | Ursa                     |                     |
| STR                  | Urthecast                |                     |
| StreetLight Data     | Venpath                  |                     |
| Suburbia             | Verbatim Advisory        |                     |
| SumZero              | Group                    |                     |
| SuperData            | Veronis Suhler           |                     |
| SuperFly             | Stevenson                |                     |
| Superfly insights    | Vertical Knowledge       |                     |
| Sustainalytics       | Verto Analytics          |                     |
| Suzy                 | Vessel Finder            |                     |

Table A1  
Number and Fraction of Firms by Industry:  
Our Sample versus the CRSP/Compustat Universe

In this table we present the numbers of firms in our sample by Global Industry Classification Standard (GICS) industry sector, the fractions of firms that are in the corresponding GICS industry sectors, the numbers of firms in the CRSP/Compustat universe by GICS industry sector, the fractions of firms that are in the corresponding GICS industry sectors, and the combined market values of the firms in our sample as a percentage of the combined market values of all firms in the CRSP/Compustat universe by GICS industry sector. Our sample contains all firms in the Dow Jones Industrial Average Index from June 1 2009 through May 31 2019.

|                        | Our<br>Sample | %   | CRSP/Compustat<br>Universe | %   | $\frac{\sum \text{Market Value}_{\text{Our Sample}}}{\sum \text{Market Value}_{\text{CRSP/Compustat}}}$ |
|------------------------|---------------|-----|----------------------------|-----|---|
| Energy                 | 2             | 6%  | 362                        | 8%  | 17%   |
| Materials              | 2             | 6%  | 261                        | 5%  | 9%  |
| Industrials            | 5             | 14% | 577                        | 12% | 17%   |
| Consumer Discretionary | 3             | 9%  | 519                        | 11% | 11%   |
| Consumer Staples       | 5             | 14% | 166                        | 3%  | 31%   |
| Health Care            | 4             | 11% | 882                        | 18% | 22%   |
| Financials             | 5             | 14% | 816                        | 17% | 13%   |
| Information Technology | 6             | 17% | 632                        | 13% | 40%   |
| Communication Services | 3             | 9%  | 220                        | 5%  | 16%   |
| Utilities              | 0             | 0%  | 107                        | 2%  | 0%  |
| Real Estate            | 0             | 0%  | 234                        | 5%  | 0%  |

Table A2  
Explicitly Drawing from Alternative Data and Earnings Forecast Accuracy:  
Absolute Forecast Error

This table replicates Table 4, but the dependent variable is now the absolute forecast error of analyst  $i$  predicting earnings of firm  $j$ , scaled by the absolute value of the actual earnings, multiplied by (-1). We report  $t$ -statistics in parentheses. Standard errors are double-clustered at the analyst- and the firm level. \*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1% levels.

|   | (1)               | (2)                | (3)               | (4)                |
|---|-------------------|--------------------|-------------------|--------------------|
| <i>I(Alternative Data)</i>                    | 0.013**<br>(2.08) |                    |                   |                    |
| <i>I(Category = App Usage)</i>                |                   | 0.020***<br>(5.19) |                   |                    |
| <i>I(Category = Sentiment)</i>                |                   | 0.011<br>(1.40)    |                   |                    |
| <i>I(Category = Employee)</i>                 |                   | 0.005<br>(0.67)    |                   |                    |
| <i>I(Category = Geospatial)</i>               |                   | -0.011<br>(-1.51)  |                   |                    |
| <i>I(Category = Point of Sale)</i>            |                   | 0.004<br>(0.83)    |                   |                    |
| <i>I(Category = Satellite Image)</i>          |                   | 0.007<br>(1.25)    |                   |                    |
| <i>I(Category = Web Traffic)</i>              |                   | 0.014**<br>(1.99)  |                   |                    |
| <i>I(Category = Others)</i>                   |                   | 0.017***<br>(2.80) |                   |                    |
| $\sum$ Categories                             |                   |                    | 0.011**<br>(2.19) |                    |
| <i>I(Source = In-House Data Science Team)</i> |                   |                    |                   | 0.021***<br>(2.81) |
| <i>I(Source = Data Vendor)</i>                |                   |                    |                   | 0.011*<br>(1.97)   |
| <i>I(Source = Unknown)</i>                    |                   |                    |                   | 0.006<br>(1.04)    |

Table A2. Continued.

|                                | (1)                  | (2)                  | (3)                  | (4)                  |
|--------------------------------|----------------------|----------------------|----------------------|----------------------|
| <i>Forecast Age</i>            | -0.022***<br>(-4.90) | -0.022***<br>(-4.90) | -0.022***<br>(-4.89) | -0.022***<br>(-4.90) |
| <i>Analyst/Firm Experience</i> | -0.003<br>(-0.73)    | -0.003<br>(-0.74)    | -0.003<br>(-0.78)    | -0.003<br>(-0.77)    |
| <i>Analyst Experience</i>      | 0.010*<br>(2.02)     | 0.010*<br>(2.00)     | 0.011**<br>(2.05)    | 0.010*<br>(2.00)     |
| <i>#Firms Covered</i>          | 0.005<br>(1.58)      | 0.005<br>(1.59)      | 0.005<br>(1.52)      | 0.006<br>(1.68)      |
| <i>Forecast Frequency</i>      | 0.004<br>(1.25)      | 0.004<br>(1.21)      | 0.004<br>(1.22)      | 0.004<br>(1.17)      |
| <i>Broker Size</i>             | -0.009<br>(-1.62)    | -0.009<br>(-1.60)    | -0.010<br>(-1.68)    | -0.009<br>(-1.57)    |
| Analyst-Firm Fixed Effects     | Yes                  | Yes                  | Yes                  | Yes                  |
| Firm-Year Fixed Effects        | Yes                  | Yes                  | Yes                  | Yes                  |
| <i>N</i>                       | 64,036               | 64,036               | 5,639                | 64,036               |
| Adjusted $R^2$                 | 0.822                | 0.822                | 0.822                | 0.822                |



Table A3  
Explicitly Drawing from Alternative Data and Earnings Forecast Accuracy:  
Differences Across Industries

This table reports results from repeating the analysis tabulated in column (1) of Table 4, but we now estimate the regression separately for firms in Consumer Discretionary, Communication Services, Health Care, Consumer Staples, and Industrials (column (1)) and firms in Energy, Financials and Materials (column (2)). We report *t*-statistics in parentheses. Standard errors are double-clustered at the analyst- and the firm level. \*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1% levels.

|                                | Wide Use of Alternative Data<br>(1) | Infrequent Use of Alternative Data<br>(2) |
|--------------------------------|-------------------------------------|---|
| <i>I(Alternative Data)</i>     | 0.208***<br>(3.24)                  | 0.059<br>(0.59)                           |
| <i>Forecast Age</i>            | -0.249***<br>(-7.72)                | -0.211***<br>(-11.63)                     |
| <i>Analyst/Firm Experience</i> | 0.122***<br>(2.64)                  | 0.037**<br>(2.44)                         |
| <i>Analyst Experience</i>      | 0.055<br>(0.94)                     | 0.023<br>(0.48)                           |
| <i>#Firms Covered</i>          | 0.059<br>(0.74)                     | -0.026<br>(-0.27)                         |
| <i>Forecast Frequency</i>      | 0.035<br>(1.11)                     | -0.037<br>(-0.71)                         |
| <i>Broker Size</i>             | -0.126**<br>(-2.09)                 | -0.021<br>(-0.43)                         |
| Analyst-Firm Fixed Effects     | Yes                                 | Yes                                       |
| Firm-Year Fixed Effects        | Yes                                 | Yes                                       |
| <i>N</i>                       | 50,656                              | 13,380                                    |
| Adjusted R <sup>2</sup>        | 0.243                               | 0.203                                     |

Table A4  
Explicitly Drawing from Alternative Data and Earnings Forecast Accuracy:  
Results by Alternative Data Category

This table reports results from repeating the analysis tabulated in column (2) of Table 4, but we now estimate separate regressions for each indicator variable,  $I(\text{Category} = \_)$ . We report  $t$ -statistics in parentheses. Standard errors are double-clustered at the analyst- and the firm level. \*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1% levels.

|   | (1)                | (2)               | (3)              | (4)             | (5)                | (6)             | (7)                | (8)                |
|---|--------------------|-------------------|------------------|-----------------|--------------------|-----------------|--------------------|--------------------|
| $I(\text{Category} = \textit{App Usage})$       | 0.385***<br>(4.83) |                   |                  |                 |                    |                 |                    |                    |
| $I(\text{Category} = \textit{Sentiment})$       |                    | 0.216**<br>(2.52) |                  |                 |                    |                 |                    |                    |
| $I(\text{Category} = \textit{Employee})$        |                    |                   | 0.222*<br>(1.70) |                 |                    |                 |                    |                    |
| $I(\text{Category} = \textit{Geospatial})$      |                    |                   |                  | 0.066<br>(1.32) |                    |                 |                    |                    |
| $I(\text{Category} = \textit{Point of Sale})$   |                    |                   |                  |                 | 0.207***<br>(3.50) |                 |                    |                    |
| $I(\text{Category} = \textit{Satellite Image})$ |                    |                   |                  |                 |                    | 0.133<br>(1.33) |                    |                    |
| $I(\text{Category} = \textit{Web Traffic})$     |                    |                   |                  |                 |                    |                 | 0.183***<br>(2.62) |                    |
| $I(\text{Category} = \textit{Others})$          |                    |                   |                  |                 |                    |                 |                    | 0.201***<br>(5.58) |

Table A4. Continued.

|                                | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   | (7)                   | (8)                   |
|--------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Forecast Age</i>            | -0.247***<br>(-10.58) | -0.248***<br>(-10.34) | -0.247***<br>(-10.45) | -0.248***<br>(-10.28) | -0.247***<br>(-10.36) | -0.248***<br>(-10.32) | -0.247***<br>(-10.54) | -0.247***<br>(-10.31) |
| <i>Analyst/Firm Experience</i> | 0.058***<br>(4.61)    | 0.059***<br>(4.62)    | 0.061***<br>(4.39)    | 0.059***<br>(4.60)    | 0.059***<br>(4.61)    | 0.059***<br>(4.59)    | 0.058***<br>(4.65)    | 0.059***<br>(4.59)    |
| <i>Analyst Experience</i>      | 0.067<br>(1.40)       | 0.066<br>(1.36)       | 0.064<br>(1.31)       | 0.067<br>(1.38)       | 0.065<br>(1.35)       | 0.067<br>(1.39)       | 0.067<br>(1.40)       | 0.067<br>(1.39)       |
| <i>#Firms Covered</i>          | 0.047<br>(0.72)       | 0.040<br>(0.62)       | 0.045<br>(0.69)       | 0.042<br>(0.66)       | 0.039<br>(0.63)       | 0.041<br>(0.65)       | 0.042<br>(0.65)       | 0.037<br>(0.59)       |
| <i>Forecast Frequency</i>      | 0.026<br>(0.84)       | 0.027<br>(0.89)       | 0.027<br>(0.86)       | 0.027<br>(0.87)       | 0.029<br>(0.95)       | 0.027<br>(0.87)       | 0.026<br>(0.85)       | 0.030<br>(0.96)       |
| <i>Broker Size</i>             | -0.085**<br>(-2.07)   | -0.084**<br>(-2.13)   | -0.078**<br>(-2.05)   | -0.082**<br>(-2.07)   | -0.081**<br>(-2.08)   | -0.082**<br>(-2.06)   | -0.083**<br>(-2.07)   | -0.083**<br>(-2.08)   |
| Analyst-Firm Fixed Effects     | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   |
| Firm-Year Fixed Effects        | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   |
| <i>N</i>                       | 64,036                | 64,036                | 64,036                | 64,036                | 64,036                | 64,036                | 64,036                | 64,036                |
| Adjusted <i>R</i> <sup>2</sup> | 0.229                 | 0.229                 | 0.228                 | 0.228                 | 0.229                 | 0.228                 | 0.229                 | 0.229                 |

Table A5  
Explicitly Drawing from Alternative Data and Earnings Forecast Accuracy:  
The Role of Learning by Alternative Data Category

This table reports results from repeating the analysis tabulated in column (1) of Table 5, but we now compute the number of forecasts revisions explicitly supported by alternative data from a particular category,  $\sum Revisions_{Category}$ . We report  $t$ -statistics in parentheses. Standard errors are double-clustered at the analyst- and the firm level. \*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1% levels.

|                                    | (1)                | (2)             | (3)                | (4)               | (5)               | (6)                | (7)                | (8)             |
|------------------------------------|--------------------|-----------------|--------------------|-------------------|-------------------|--------------------|--------------------|-----------------|
| $\sum Revisions_{App Usage}$       | 0.127***<br>(7.73) |                 |                    |                   |                   |                    |                    |                 |
| $\sum Revisions_{Sentiment}$       |                    | 0.047<br>(0.98) |                    |                   |                   |                    |                    |                 |
| $\sum Revisions_{Employee}$        |                    |                 | 0.121***<br>(3.61) |                   |                   |                    |                    |                 |
| $\sum Revisions_{Geospatial}$      |                    |                 |                    | -0.127<br>(-1.60) |                   |                    |                    |                 |
| $\sum Revisions_{Point of Sale}$   |                    |                 |                    |                   | 0.072**<br>(2.42) |                    |                    |                 |
| $\sum Revisions_{Satellite Image}$ |                    |                 |                    |                   |                   | 0.256***<br>(6.10) |                    |                 |
| $\sum Revisions_{Web Traffic}$     |                    |                 |                    |                   |                   |                    | 0.034***<br>(2.74) |                 |
| $\sum Revisions_{Others}$          |                    |                 |                    |                   |                   |                    |                    | 0.040<br>(1.63) |

Table A5. Continued.

|   | (1)                   | (2)                  | (3)                  | (4)                 | (5)                  | (6)               | (7)                | (8)                 |
|---|-----------------------|----------------------|----------------------|---------------------|----------------------|-------------------|--------------------|---------------------|
| $\Sigma$ <i>Alternative Data Categories</i> | 0.013<br>(0.82)       | -0.142<br>(-1.53)    | 0.055<br>(0.48)      | 0.003<br>(0.02)     | 0.347***<br>(6.19)   | 0.000<br>(0.00)   | 0.008<br>(0.07)    | -0.273**<br>(-2.12) |
| <i>Forecast Age</i>                         | 0.149***<br>(6.48)    | 0.117***<br>(3.43)   | 0.118*<br>(2.10)     | 0.024<br>(0.52)     | 0.033<br>(0.43)      | 0.025<br>(0.64)   | 0.205***<br>(3.13) | 0.071**<br>(2.08)   |
| <i>Analyst/Firm Experience</i>              | 3.018***<br>(7.73)    | 7.792***<br>(4.31)   | 0.893***<br>(12.83)  | 1.001<br>(1.03)     | -2.021***<br>(-3.59) | 0.013<br>(0.11)   | 2.144*<br>(1.77)   | 0.023<br>(0.03)     |
| <i>Analyst Experience</i>                   | -1.885***<br>(-4.03)  | -6.211***<br>(-4.41) | 0.041<br>(0.15)      | -0.032<br>(-0.05)   | 2.882***<br>(5.96)   | 0.585<br>(0.81)   | 0.238<br>(0.18)    | 1.229*<br>(1.81)    |
| <i>#Firms Covered</i>                       | 0.127<br>(1.20)       | -0.512<br>(-1.59)    | -4.533***<br>(-5.78) | 1.466**<br>(2.56)   | 0.016<br>(0.02)      | -2.656<br>(-1.38) | -0.214<br>(-0.49)  | 3.781**<br>(2.14)   |
| <i>Forecast Frequency</i>                   | -0.757***<br>(-13.78) | 0.344<br>(1.63)      | 0.773***<br>(7.16)   | -0.257**<br>(-2.45) | 0.025<br>(0.05)      | 0.159<br>(1.16)   | 0.027<br>(0.16)    | -0.774*<br>(-2.04)  |
| <i>Broker Size</i>                          | -2.014***<br>(-10.71) | 0.193<br>(0.99)      | -1.110***<br>(-6.60) | -2.169*<br>(-2.29)  | 0.159<br>(0.64)      | 0.380<br>(0.92)   | 0.970<br>(1.56)    | -1.264<br>(-1.00)   |
| <i>Analyst-Firm Fixed Effects</i>           | Yes                   | Yes                  | Yes                  | Yes                 | Yes                  | Yes               | Yes                | Yes                 |
| <i>Firm-Year Fixed Effects</i>              | Yes                   | Yes                  | Yes                  | Yes                 | Yes                  | Yes               | Yes                | Yes                 |
| <i>N</i>                                    | 468                   | 1,055                | 534                  | 252                 | 1,069                | 170               | 1,932              | 1,301               |
| <i>Adjusted R<sup>2</sup></i>               | 0.526                 | 0.549                | 0.688                | 0.694               | 0.542                | 0.792             | 0.531              | 0.497               |

Table A6  
Explicitly Drawing from Alternative Data and Earnings Forecast Accuracy:  
The Role of Preferential Access to Management

This table reports results from repeating the analysis tabulated in column (1) of Table 4, but we now include the following main independent variables:  $I(\text{Alternative Data Within Executive Purview})$ , which equals one if the corresponding analyst's earnings forecast is explicitly supported by alternative data from any of the following alternative data categories: app usage, sentiment, employee (manager sentiment and job postings), point of sale, satellite image, or web search; and  $I(\text{Alternative Data Outside Executive Purview})$ , which equals one if the corresponding analyst's earnings forecast is explicitly supported by alternative data from any of the following alternative data categories: employee (employee sentiment), geospatial or others. In column (1), we only consider observations for which, over the previous three years, the corresponding firm participated in a conference hosted by analyst  $i$ ' broker. In column (2), we only consider observations for which this was not the case. We report  $t$ -statistics in parentheses. Standard errors are double-clustered at the analyst- and the firm level. \*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1% levels.

|  | With Preferential<br>Access<br>(1) | Without<br>Preferential Access<br>(2) | $F$ -Test of Equality<br>in Coefficient<br>Estimate |
|--|------------------------------------|---------------------------------------|---|
| $I(\text{Alternative Data Within Executive Purview})$  | 0.059<br>(1.01)                    | 0.163***<br>(4.48)                    | 4.75**  |
| $I(\text{Alternative Data Outside Executive Purview})$ | 0.146**<br>(2.47)                  | 0.117**<br>(2.06)                     | 0.08  |
| <i>Forecast Age</i>                                    | -0.263***<br>(-19.57)              | -0.274***<br>(-10.21)                 |   |
| <i>Analyst/Firm Experience</i>                         | 0.002<br>(1.16)                    | 0.001<br>(0.49)                       |   |
| <i>Analyst Experience</i>                              | 0.000<br>(0.04)                    | 0.001<br>(0.65)                       |   |
| <i>#Firms Covered</i>                                  | -0.018<br>(-0.29)                  | -0.027<br>(-1.11)                     |   |
| <i>Forecast Frequency</i>                              | 0.081*<br>(1.79)                   | 0.047***<br>(3.16)                    |   |
| <i>Broker Size</i>                                     | -0.022<br>(-0.90)                  | -0.032*<br>(-1.79)                    |   |
| Analyst-Firm Fixed Effects                             | No                                 | No                                    |   |
| Firm-Year Fixed Effects                                | Yes                                | Yes                                   |   |
| $N$  | 21,641                             | 42,395                                |   |
| Adjusted $R^2$   | 0.187                              | 0.165                                 |   |

Table A7  
Explicitly Drawing from Alternative Data and Earnings Forecast Accuracy:  
Predicting Revenues versus Costs

This table reports results from repeating the analysis tabulated in column (1) of Table 4, but we now measure forecast accuracy with regards to future revenue (column (1)) and future cost (column (2)). We obtain revenue forecasts directly from IBES and we measure revenue forecast accuracy in the same manner as we measure earnings forecast accuracy. Given that not all analysts have revenue forecasts in the IBES database, our sample size drops to 27,661. The IBES database does not contain cost forecasts. Instead, we compute “residual forecasts” by taking the difference between revenue-per-share forecasts and earnings-per-share forecasts and we construct a measure of accuracy based on these residual forecasts. The resulting measure may be seen as a measure of cost forecast accuracy. Alternatively, it may be seen as capturing any improvement in earnings forecast accuracy that cannot be tied to more accurate revenue forecasts. We report *t*-statistics in parentheses. Standard errors are double-clustered at the analyst- and the firm level. \*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1% levels.

|                                | Revenue Forecast<br>Accuracy<br>(1) | Cost Forecast<br>Accuracy<br>(2) | <i>F</i> -Test of Equality<br>in Coefficient<br>Estimate |
|--------------------------------|-------------------------------------|----------------------------------|--|
| <i>I(Alternative Data)</i>     | 0.148**<br>(2.15)                   | 0.107<br>(1.49)                  | 7.68***  |
| <i>Forecast Age</i>            | -0.119***<br>(-4.55)                | -0.107***<br>(-4.85)             |  |
| <i>Analyst/Firm Experience</i> | 0.032<br>(0.29)                     | 0.055<br>(0.72)                  |  |
| <i>Analyst Experience</i>      | 0.979***<br>(4.99)                  | 0.756***<br>(4.70)               |  |
| <i>#Firms Covered</i>          | -0.070<br>(-0.73)                   | -0.024<br>(-0.34)                |  |
| <i>Forecast Frequency</i>      | 0.076**<br>(2.12)                   | 0.020<br>(0.65)                  |  |
| <i>Broker Size</i>             | -0.014<br>(-0.22)                   | -0.047<br>(-0.73)                |  |
| Analyst-Firm Fixed Effects     | Yes                                 | Yes                              |  |
| Firm-Year Fixed Effects        | Yes                                 | Yes                              |  |
| <i>N</i>                       | 27,661                              | 27,661                           |  |
| Adjusted <i>R</i> <sup>2</sup> | 0.336                               | 0.391                            |  |