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The Global Standard for Business Research

http://wrds.wharton.upenn.edu

Wharton

University of Pennsylvania

Navigating WRDS:
Overview of Financial Data on WRDS

CRSP, Compustat, and IBES

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WRDS Librarian Colloquium

Washington, D.C., June 15, 2009

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Agenda

- What is WRDS?
- Sources of Financial Data
- Overview of Compustat, CRSP, and IBES Data
- WRDS Tools and Support:
  How to Get the Help You Need?
- How Can Researchers Use WRDS More Efficiently?

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WRDS Overview

- Single and flexible source to extract data from leading research databases
  - Variety of disciplines: Accounting, Finance, Economics, Banking, Insurance, Marketing, Statistics, +
  - Standardized queries: Every database webpage has the same format: query + variable documentation + list of manuals, overviews, & research applications
  - Ideal for Data linking: e.g. CRSP (stock prices, dividends, splits), Linking CRSP and COMPUSTAT, Matching IBES and CRSP Data, + linking sample programs

- Internet-based platform with multiple access options
  - Web queries: compatible with various browsers and operating systems (nothing to install)
    - Standardized, easy-to-use, point-and-click interface, unlimited downloads (~ 2GB size limit per query)
    - Easy variable and company name searches, and other tools
    - Fast extracts and record retrievals through TerraBytes of data
  - PC SAS CONNECT remote libraries
  - UNIX X-Windows and batch job capabilities

- Full-time research and technical support
  - Online help (variable definitions, data sources, equations, manuals, tutorials, sample programs, FAQs), email support, and 24/7 network monitoring
  - Data Overviews, Research Applications, Knowledge Base and Forums@WRDS
  - We are WRDS users too

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WRDS History

- Originally developed for Wharton needs:
  - Centralize data management and research support
  - Provide faculty and PhD candidates with web-based, and interactive research tools
- Grown from 2 subscribers in 1997 to 250+ subscribers in 2009:
  - All top academic and non-profit research institutions
  - We support over 18,000 faculty and other researchers’ accounts
- Data increased from 60 GB to 30+ TB
  - Originally accounting and financial data; now includes economic, banking, insurance and marketing data
  - Several Free Data Sources
- Partnerships with leading data vendors: Grown from 2 to 40+ data providers

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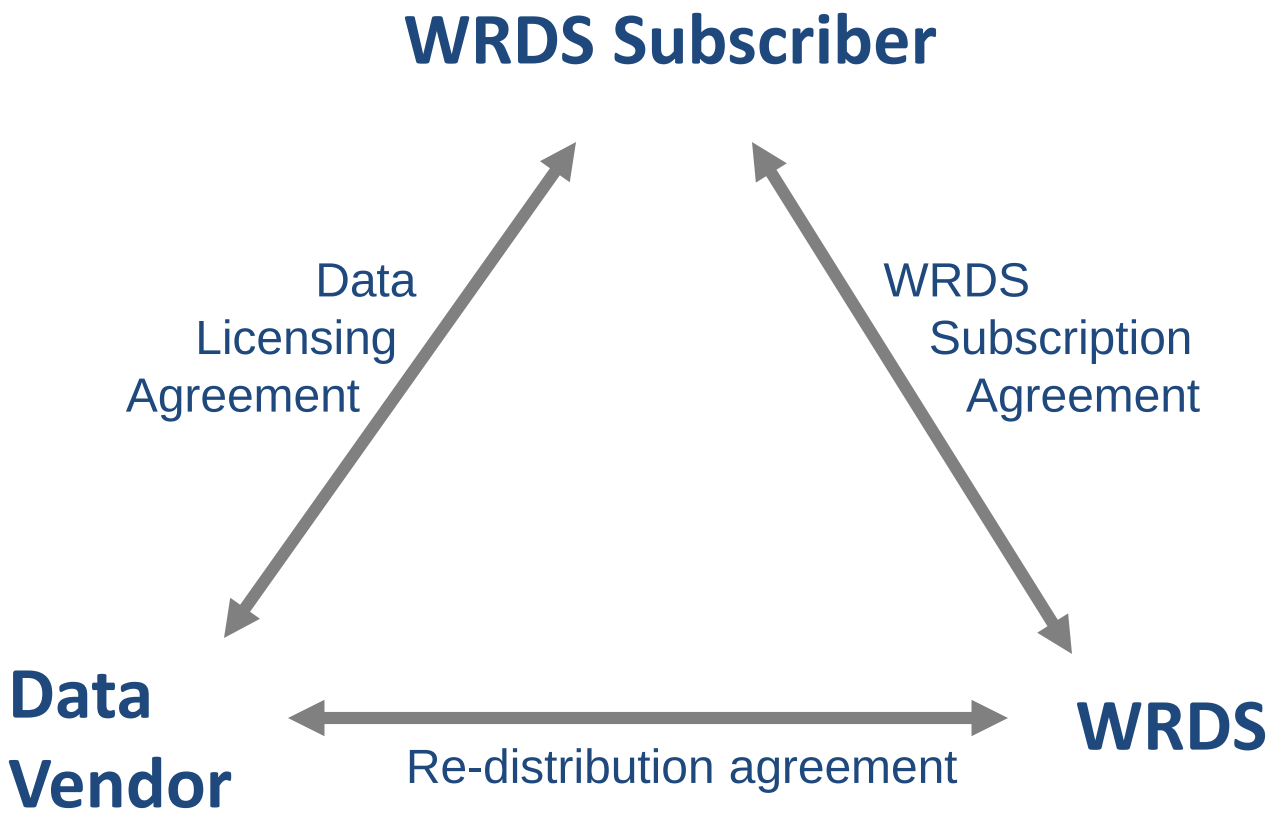
Data Licensing and Access with WRDS

Databases *à la carte*



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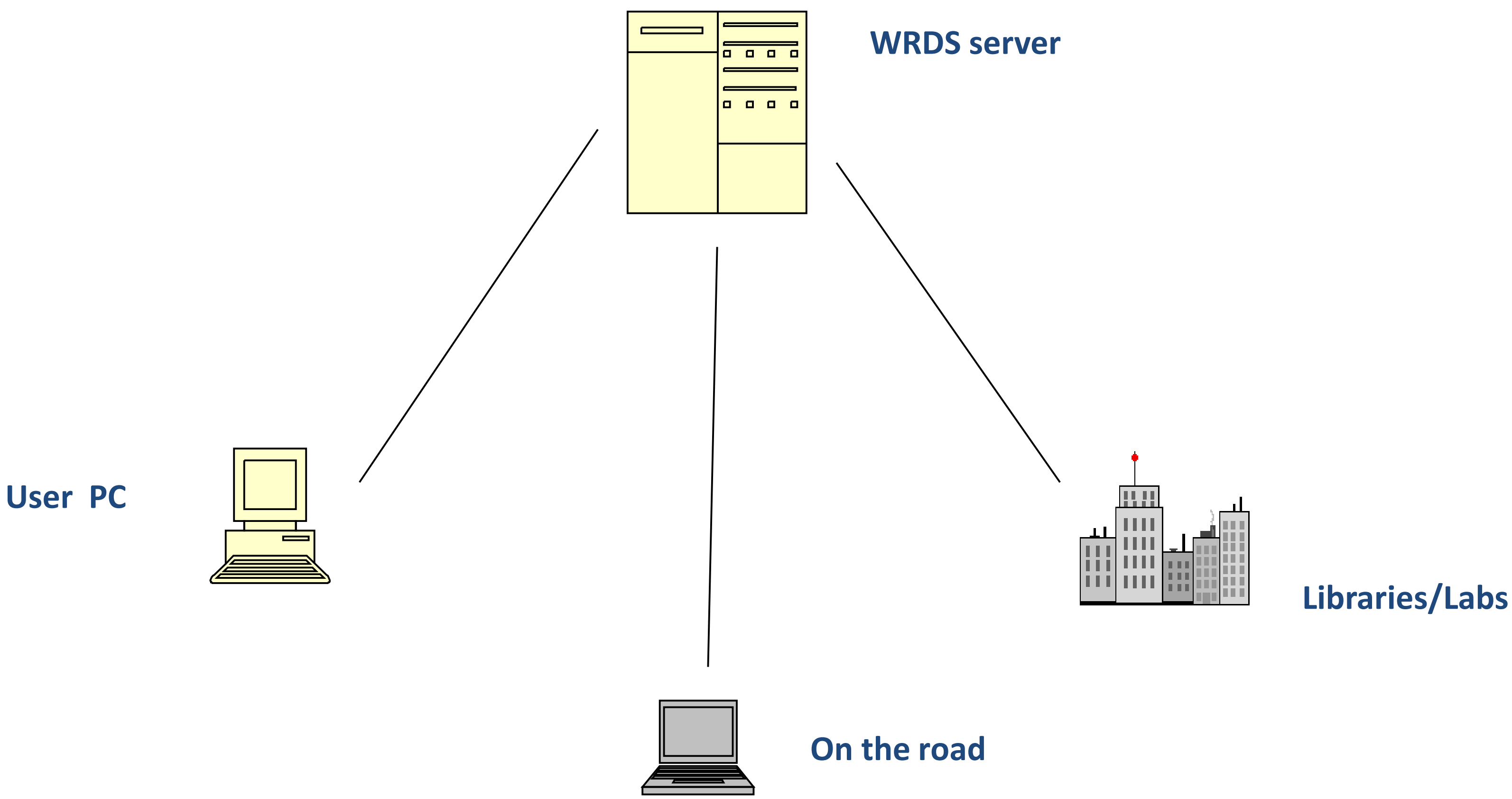
WRDS Technology

Flexibility to Connect and Get Data



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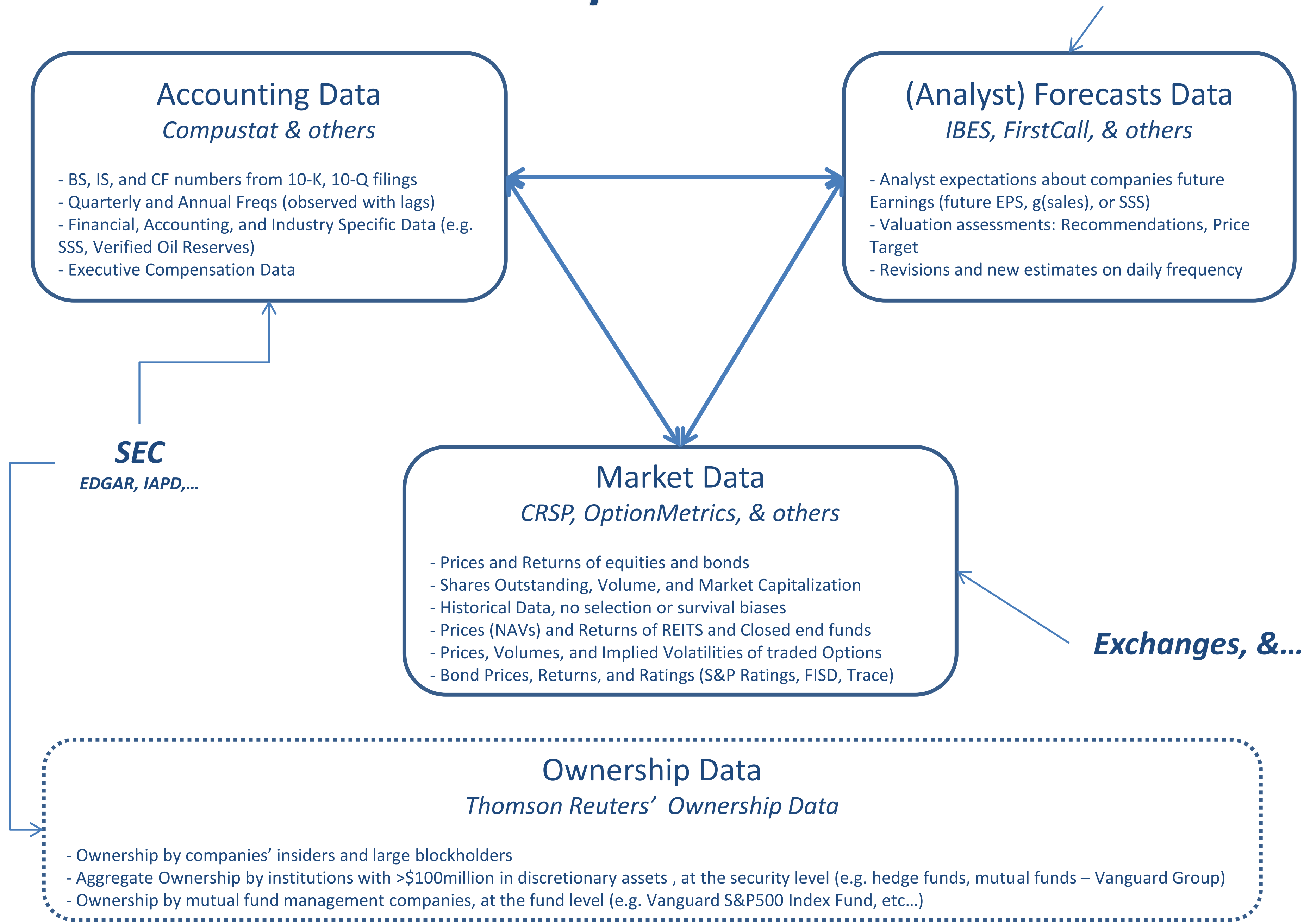
WRDS Account Types

	Web queries	UNIX login**	Expiration dates
Faculty	x	x	
Full time Staff	x	x	
PhD Candidates	x	x	x
Master Students	x		x
Research Assistants	x	x	x
Visitors*	x	x	x
Shared Class Accounts	x		x
Library & IP-based	x		

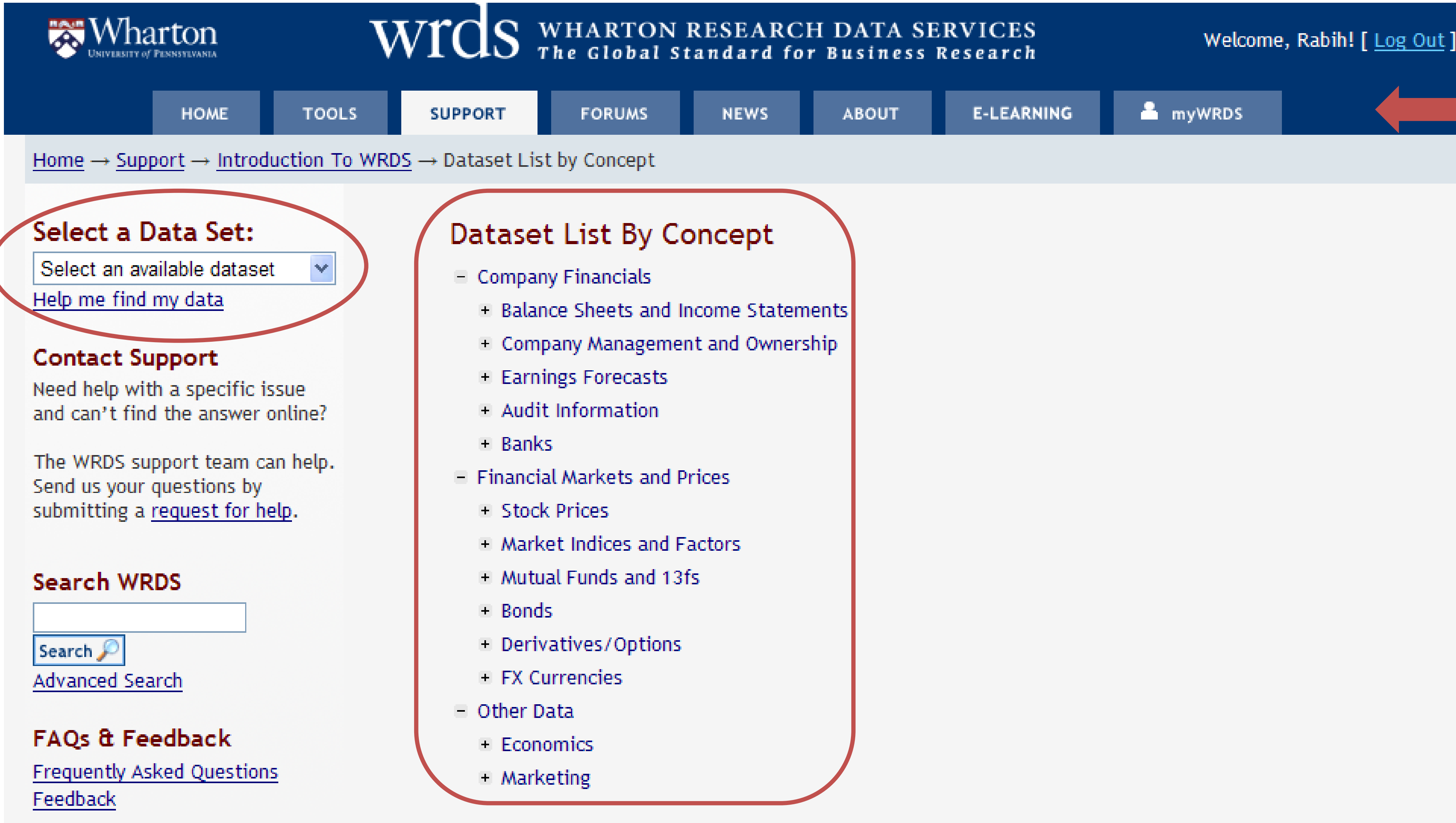
* ‘Visitors’ must have formal, temporary appointment

** Also allows for PC SAS CONNECT sessions

Financial Information by Source



Data on WRDS – Easy and Flexible Extracts



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S&P's Compustat

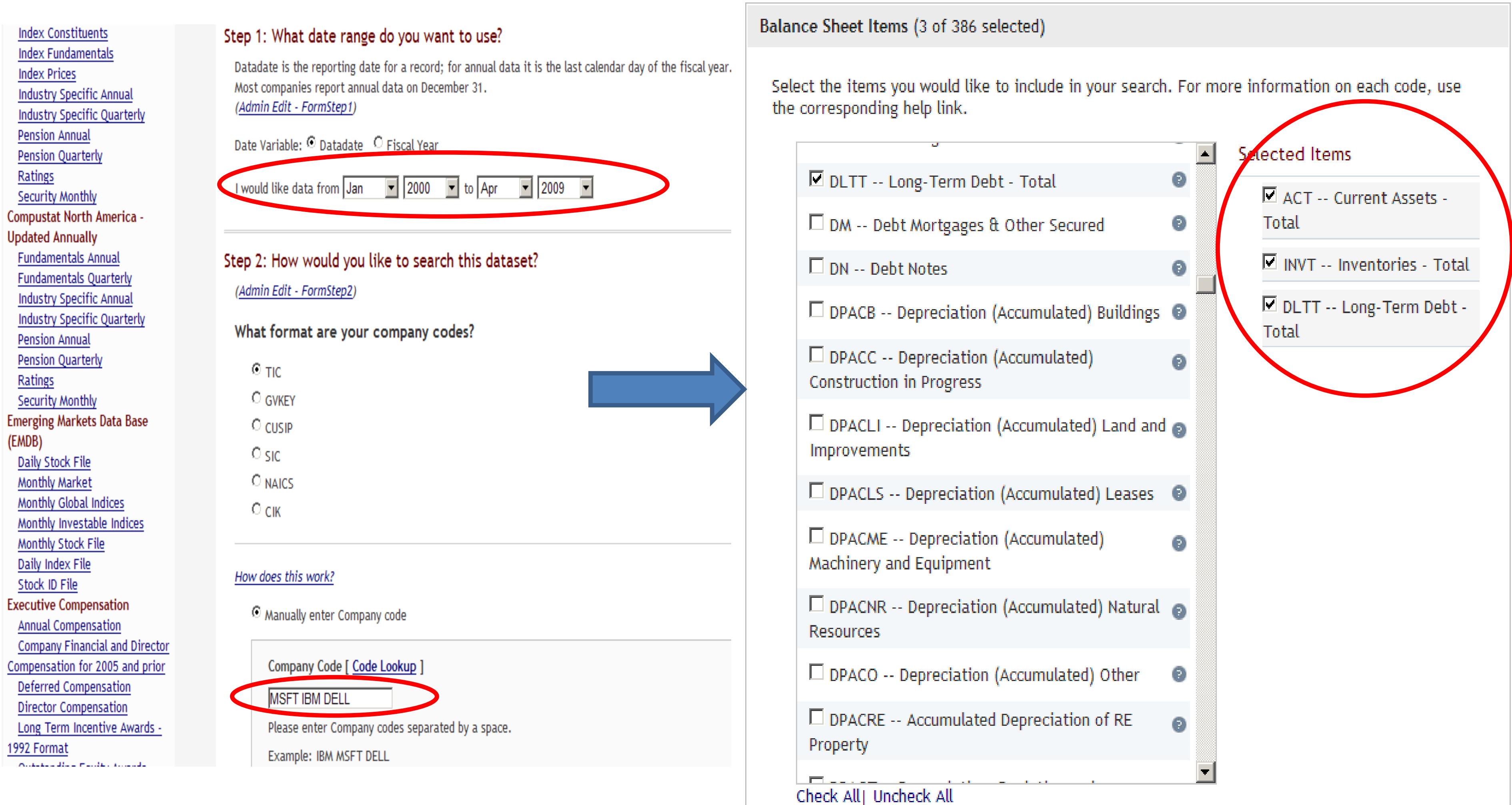
Accounting and Financial Data

- Compustat North-America: U.S. and Canadian fundamental and market information on around 31,000 active and inactive publicly held companies, from 1950-present
- Compustat Global: fundamental, market, and currency data for more than 30,000 publicly traded companies in global markets (>80 countries), from 1988-present
- Fundamental data available on an annual and quarterly frequencies with thousands of Income Statement, Balance Sheet, Statement of Cash Flows, and supplemental & industry-specific data items
- Market data available on a monthly and daily frequencies with Prices, Dividends, Returns, Trading Volume , Shares Outstanding and Short-Interest Information
- Information on Indices, Segments, Banks, Incentive plans, Pension Data Items, as well as: Executive Compensation and S&P Credit Ratings Xpress
- In the summer of 2007, WRDS adopted the Xpressfeed format of Compustat North America, containing more details on a wider array of companies

Compustat Example – Live Demo

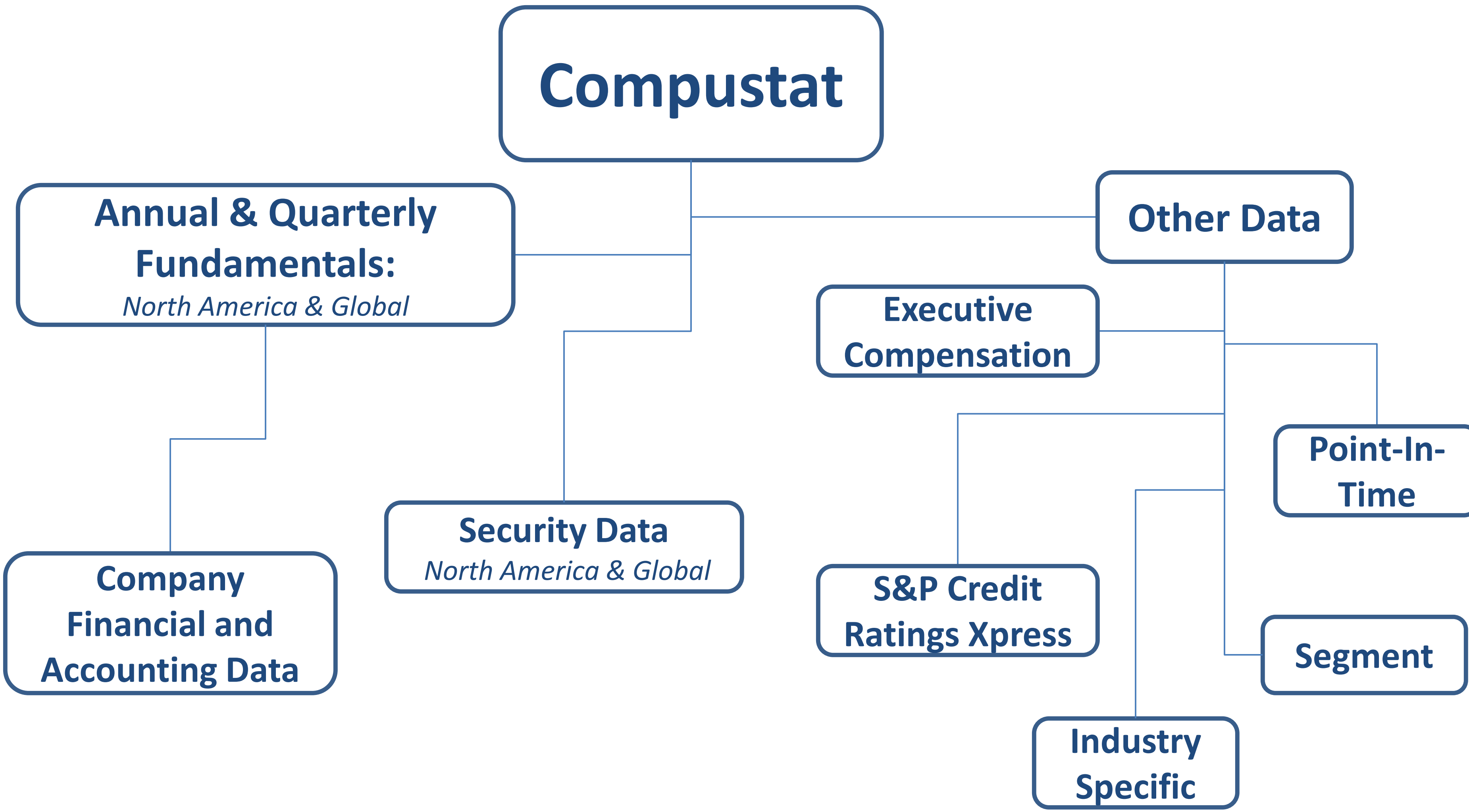
- Get Current Assets, Inventories, and Long-Term Debt for Microsoft, Dell, and IBM between Jan 2000 and April 2009

  http://wrds-web.wharton.upenn.edu/wrds/ds/comp/funda/index.cfm



Basic Compustat Structure

Fundamental Data



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WRDS Support: Compustat

- Overview to Compustat XPressfeed Database, FAQs, and WRDS Reference Materials
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_001Manuals%20and%20Overviews/_001Compustat/index.cfm

  For more about this dataset, see the Variable Descriptions, Dataset List, Manuals and Overviews or FAQs.

- Comprehensive Dataset and Variable List
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_002Dataset%20List.cfm?dataVendor=comp

- Financial Statements, S&P 500 Index Constituents, and other Tools:
  http://wrds-web.wharton.upenn.edu/wrds/aux_/finstate/indexqtr.cfm
  http://wrds-web.wharton.upenn.edu/wrds/ds/comp/spindex/index.cfm

- Sample Programs: extracts, filing dates, portfolios, earnings surprises, # of segments, etc.
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_003Sample%20Programs/Compustat/index.cfm

- Research Applications: book-to-market, linking, etc.
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_004Research%20Applications/index.cfm

CRSP

Stock Market Data

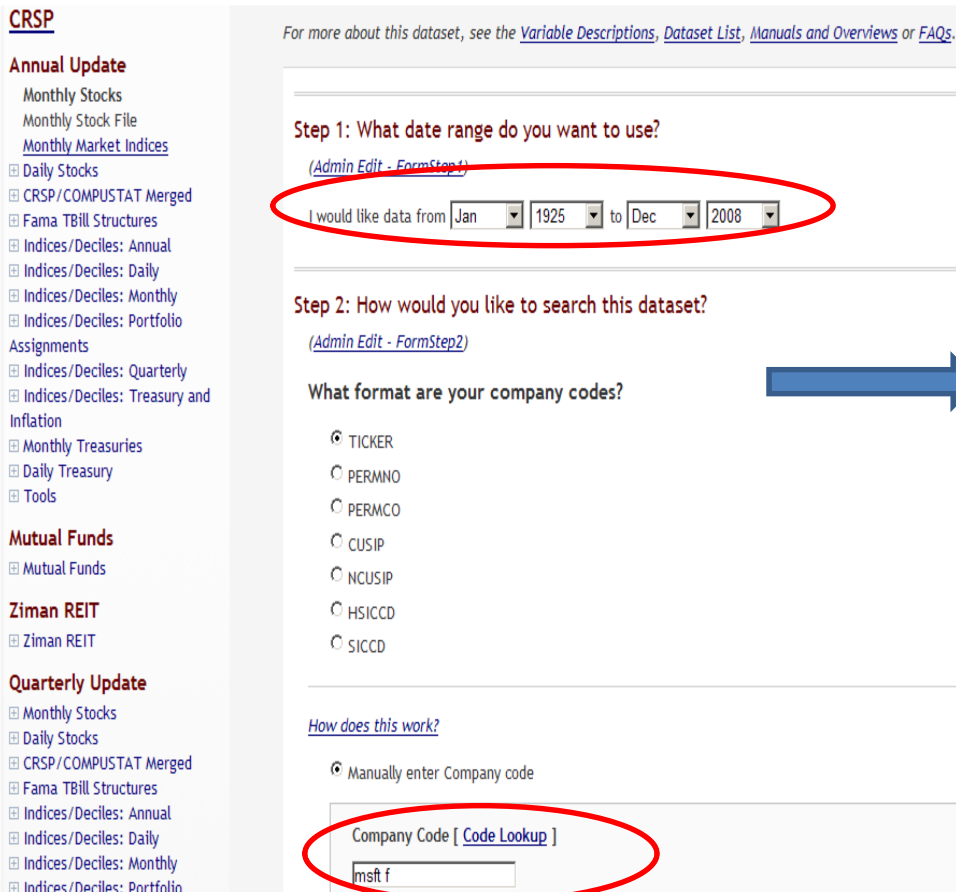
- Center for Research in Security Prices (CRSP) is a research center at the Booth School of Business of the University of Chicago
- Comprehensive collection of daily and monthly security price, return, and volume data for the NYSE, AMEX and NASDAQ stock markets
- Daily and Monthly data for roughly 28,000 securities of Domestic companies and ADRs traded on major exchanges (no OTC), from 1925–present
- Complete historical information (bias-free):
  - Accurate accounting of special distributions and stock splits in return calculation
  - Keep delisting companies (pre-M&A or bankruptcies), and delisting returns
- Additionally provide stock indices, beta- and cap-based portfolios, treasury bond and risk-free rates, CRSP/Compustat Merged Database, REITs, and mutual fund databases

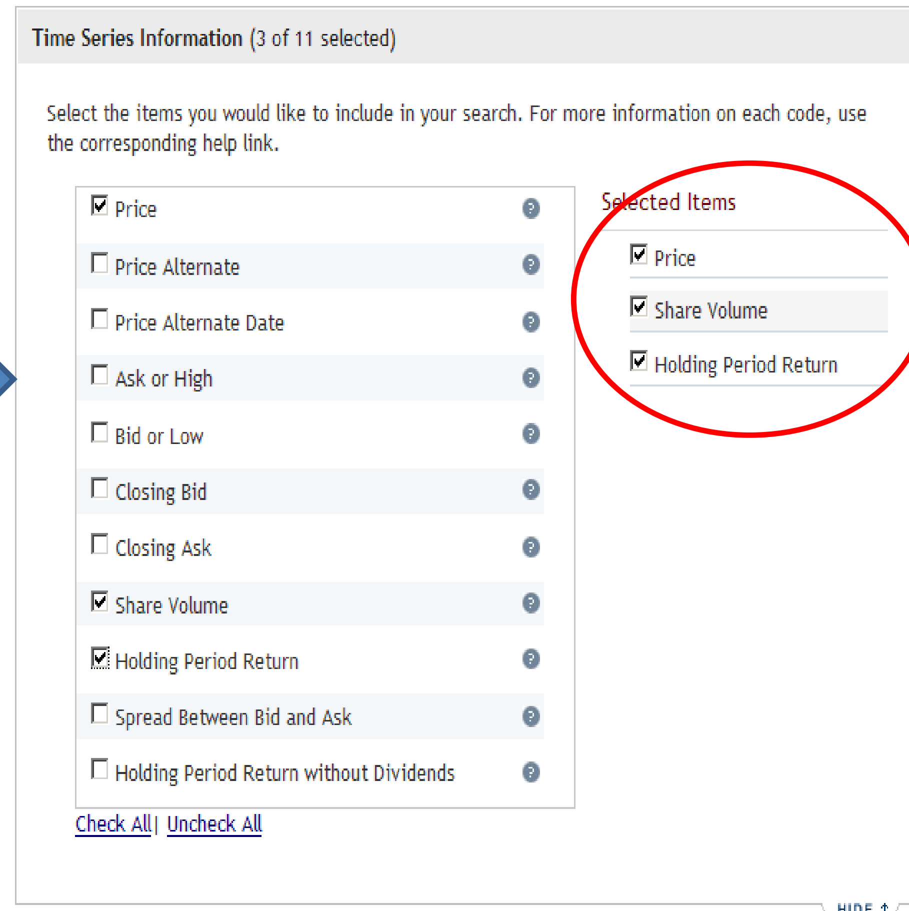
CRSP Example – Live Demo

1. Get monthly prices, return and volume information for Microsoft and Ford from 1925 to 2008

2. Find all stocks that were trading in NYSE at the end of November 1929, and get their month-end prices, return and volume information

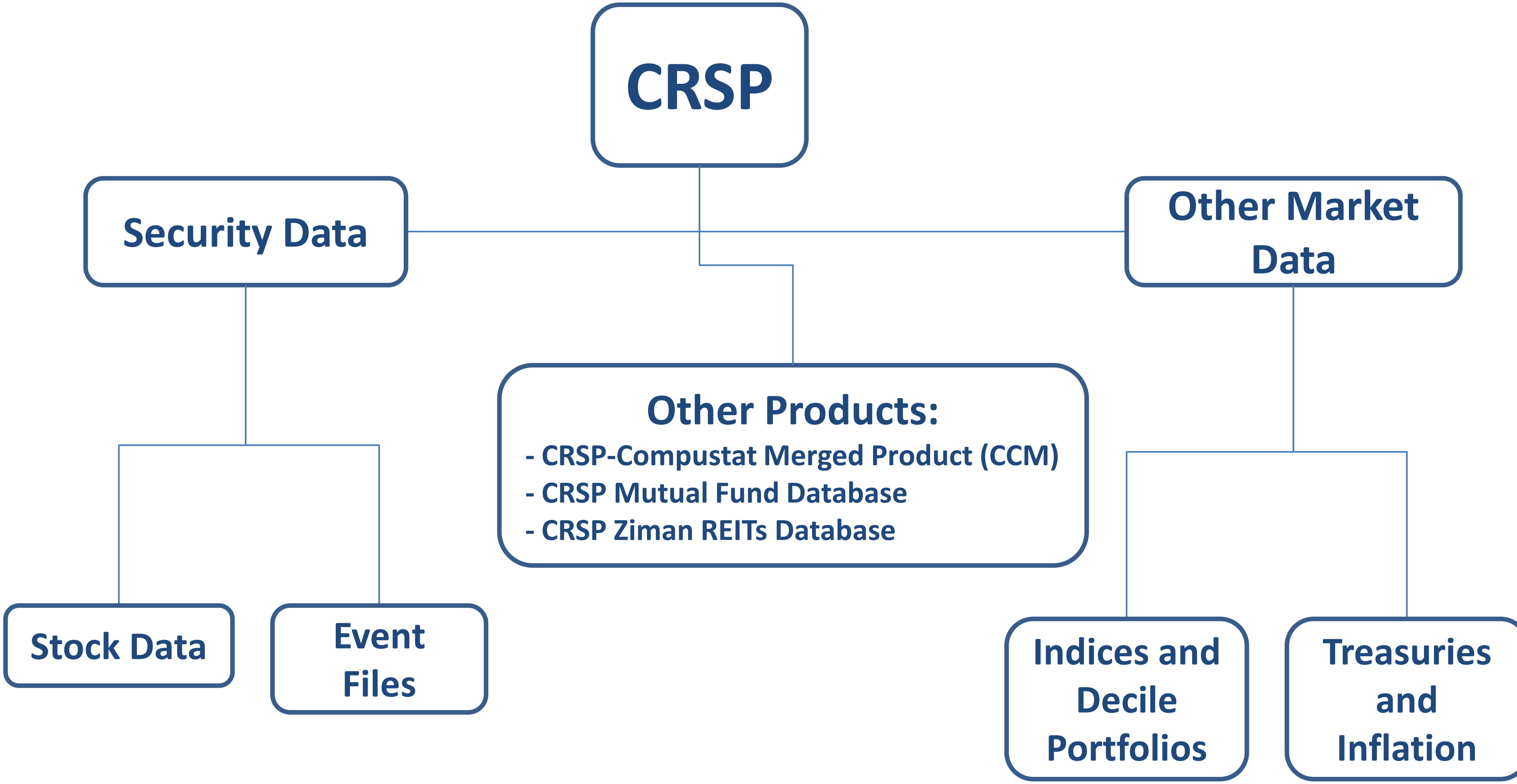
   http://wrds-web.wharton.upenn.edu/wrds/ds/crsp/mstk/index.cfm?navGroup=AnnualUpdateMonthlyStocks





Basic CRSP Structure

Monthly Security Data



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WRDS Support: CRSP

- Comprehensive Dataset and Variable Lists, FAQs, Manuals & Data Guides
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_002Dataset%20List.cfm?dataVendor=crsp
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_001Manuals%20and%20Overviews/_002CRSP/index.cfm

- Linking CRSP-Compustat Data (with and without CCM Product)
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_001Manuals%20and%20Overviews/_002CRSP/index.cfm

- Tools: Returns + Decile Assignments , Translate to PERMNO/PERMCO , Mutual Fund Returns & Fama-French , Market Indices , Events and Names
  http://wrds.wharton.upenn.edu/home/tools.shtml

- Sample Programs: Data Extracts, CCM and merging by CUSIP, Calculate CAPM beta, Excess returns, Portfolio formations, plots, Event studies, Mutual fund data
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_003Sample%20Programs/CRSP/index.cfm

- Research Applications: Compounded returns, Momentum and Governance Portfolios, Rolling Regressions, Beta Estimation, Event Studies etc.
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_004Research%20Applications/index.cfm

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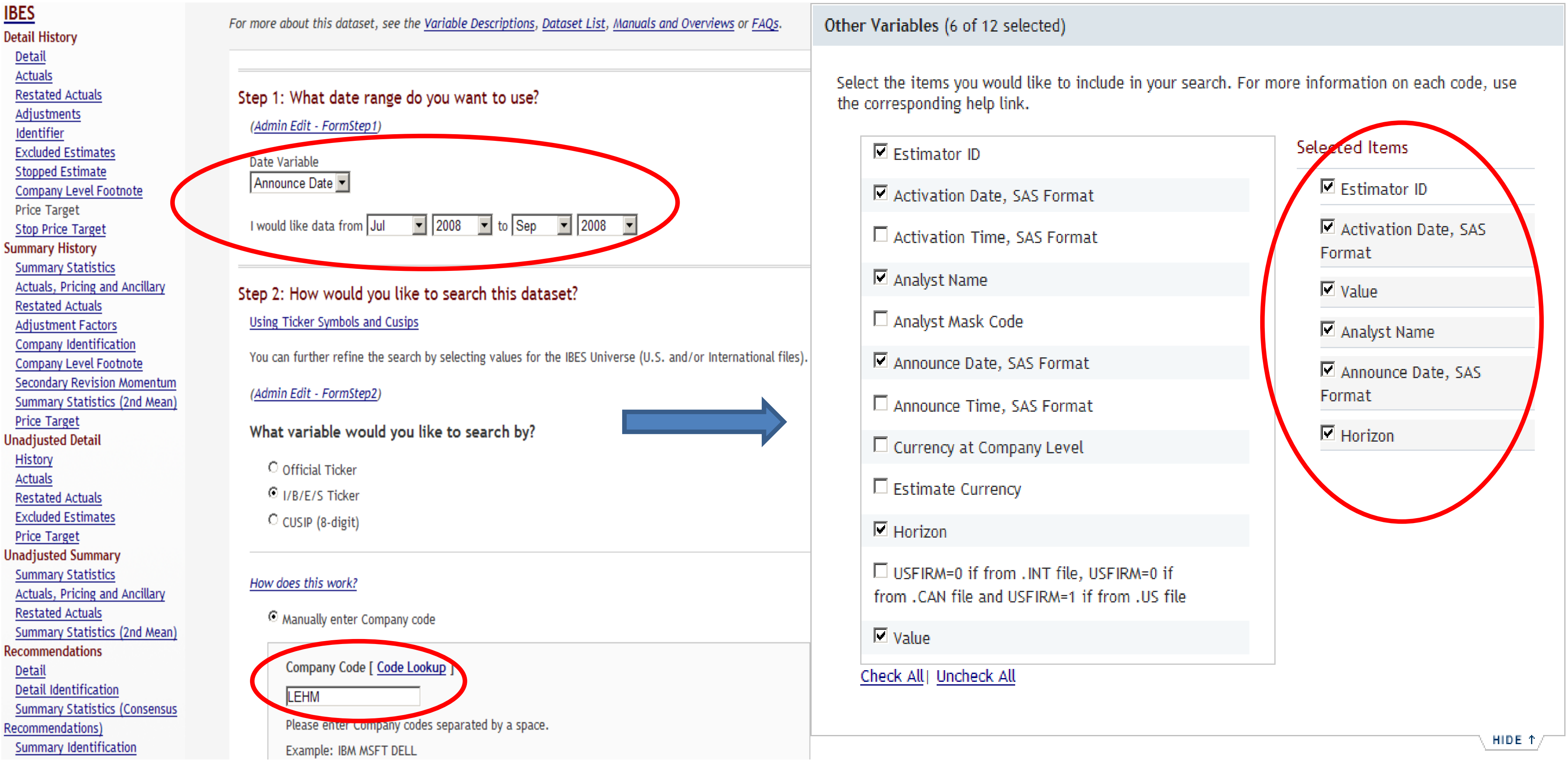
Thomson Reuters' IBES

Analyst Forecast Data

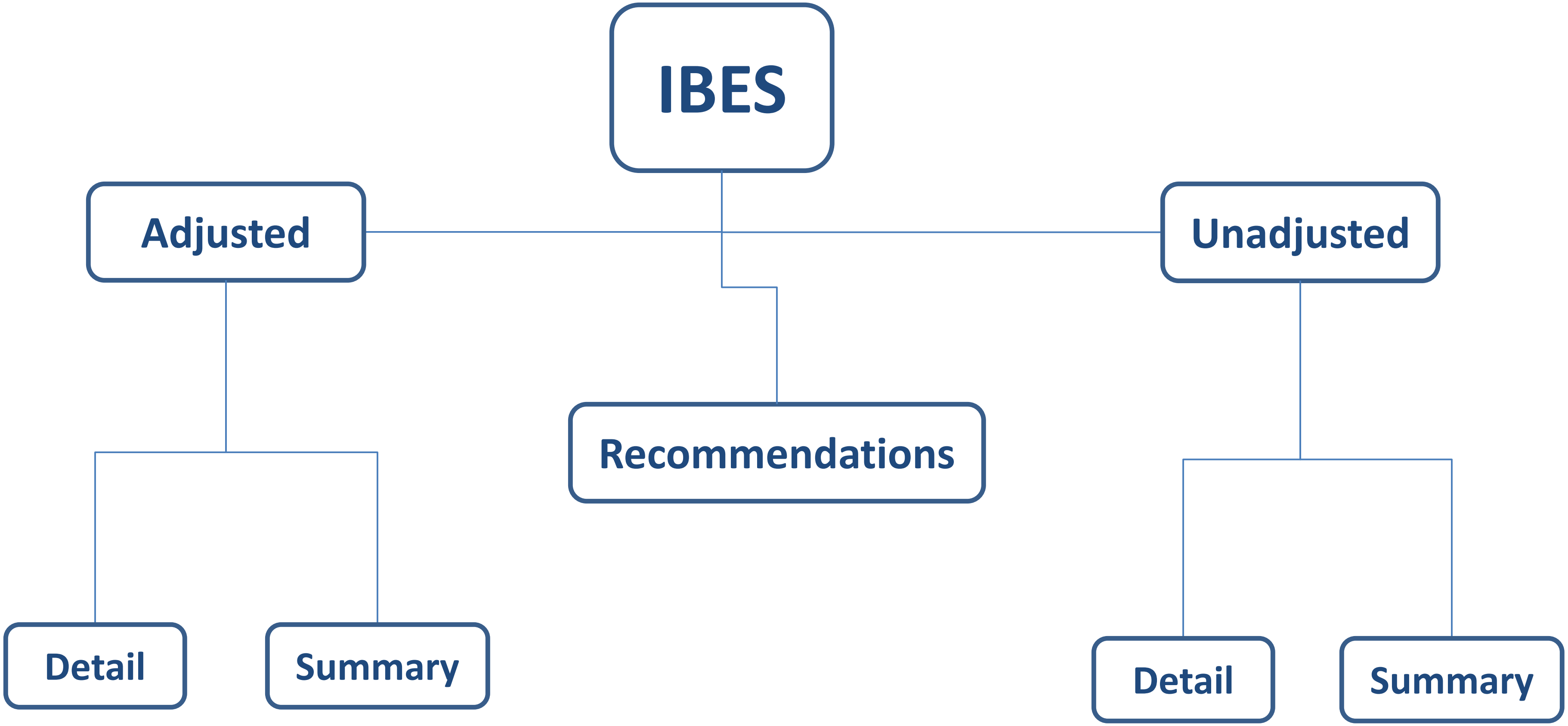
- Analysts earnings and sales forecasts (+), consensus estimates, and Buy/Hold/Sell Recommendations
- Comprehensive Global Coverage: Domestic and International public companies from 1980–present
- Features up to 26 forecast measures including GAAP and pro-forma EPS, revenue/sales, net income, ROA, ROE, pre-tax profit and operating profit, EBIDTA, etc.
- Company indentifying information and exchange rates
- **NEW** data on price targets, company level footnotes and restated actuals (all in detailed and summary formats)

IBES Example – Live Demo

- Get price target data for Lehman Brothers between July -Sep 2008 (e.g., value, horizon, announcement date, analyst name) http://wrds-web.wharton.upenn.edu/wrds/ds/ibes/ptgdet/index.cfm



Basic IBES Structure



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WRDS Support: IBES

- Detailed overview of IBES and empirical issues
  http://wrds-web.wharton.upenn.edu/wrds/support/Additional%20Support/WRDS%20Presentations/_000user2007/analyst_data.pdf

- Linking IBES and CRSP
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_005Linking%20Databases/_000Linking%20IBES%20and%20CRSP%20Data.cfm

- Important updates on data quality and changes to IBES vintages
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_001Manuals%20and%20Overviews/_003I-B-E-S/index.cfm

- Sample programs and Research Applications: Calculate earnings surprises, work with unadjusted data, link recommendations and estimates, and many more
  http://wrds-web.wharton.upenn.edu/wrds/support/Data/_003Sample%20Programs/I-B-E-S/index.cfm

Other Popular Databases on WRDS

- NYSE's Trades And Quotes (TAQ) Database:
  - High-frequency data
  - Intraday trades and quotes for all securities on Major US Exchanges

- Thomson Reuters Ownership Databases: 13F, Mutual Funds, Insiders

- RiskMetrics' Governance, and KLD Social Rating datasets:
  - Governance Provisions: Dual Class, Poison Pills, and other antitakeover provision dummies
  - Board of Directors: list of board members, with additional information (ownership, bio,…)
  - Shareholder Proposals and voting records: NEW Datasets on types of proposals by shareholders and votes garnered during annual meetings
  - KLD Social and Environmental Records: criteria to measure corporate social responsibility, such as environment, employee relations, human rights, governance, community issues …

- S&P Credit Ratings Xpress, TRACE and FISD Bond Data

- Free Datasets (CBOE Indexes, DJ Averages, Fama-French, Liquidity factors)

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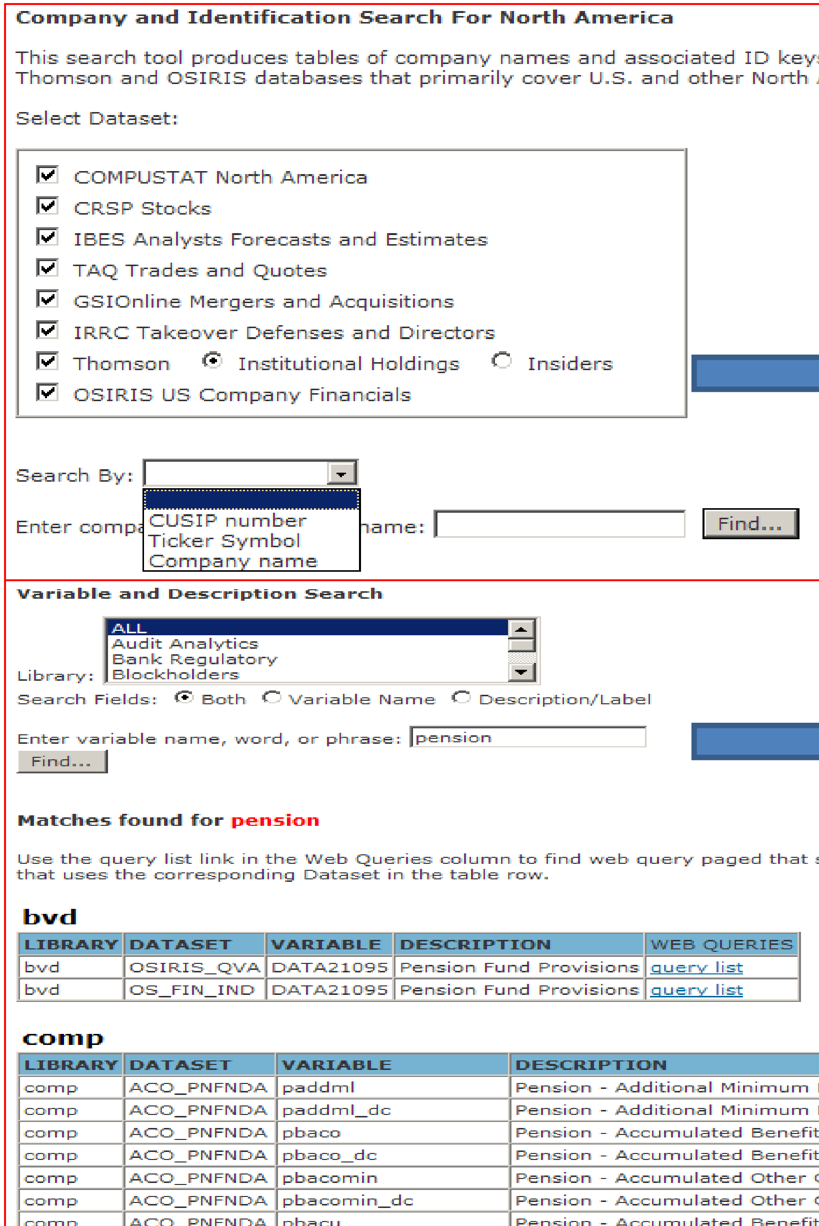
WRDS Tools: Company & Variable Search



Company search tool

http://wrds.wharton.upenn.edu/cgi-bin/tools/lookupcomp.cgi

Allows users to search for a company by CUSIP, Ticker or company name across a host of different databases on WRDS (CRSP, Compustat, Thomson, TAQ, Insiders, etc)

Variable search tool

http://wrds.wharton.upenn.edu/cgi-bin/tools/lookupvar.cgi

Allows users to search for a given variable within either variable name or label or both across a wide range of various databases on WRDS (CRSP, Compustat, IBES, TAQ, Global Insight, etc)

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How to Get Support

Research and Technical Support

- Online Help (24/7)
  - Database Manuals plus additional support documentation
  - Data Overviews: http://wrds.wharton.upenn.edu/support/dataoverview.shtml
    e.g. *OptionMetrics Overview*
  - Research Applications: http://wrds.wharton.upenn.edu/support/researchapp.shtml
    e.g. *Portfolio Construction, Event Studies*
  - Sample Programs: http://wrds.wharton.upenn.edu/support/dslist/dsl.shtml
    e.g. *Merging CRSP and Compustat*
  - Variable Search: http://wrds.wharton.upenn.edu/cgi-bin/tools/lookupvar.cgi
    e.g. *Compensation*
  - Company Search: http://wrds.wharton.upenn.edu/cgi-bin/tools/lookupcomp.cgi
    e.g. *Microsoft*

- WRDS Knowledge Base: FAQ archive of answers to common user questions
  http://wrds.wharton.upenn.edu/cgi-bin/mywrds/knowledgebase.cgi
  e.g. *How to find IPO data*

- FORUMS@WRDS: Interactive users' questions and suggestions
  http://forum.wharton.upenn.edu/forums/
  e.g. *Fama and MacBeth Regressions*

- Email support at wrds-support@wharton.upenn.edu (Monday-Friday, 9a-5p EST)
  Researchers and Technical Experts ready to assist with:
  - Data extraction, merging, and management.
  - Programming and technical problems
  - Other research concerns

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Advanced WRDS Features

Access Data Remotely on WRDS Server

- What if a web query does not do all that you need it to do?
  Example: Find all companies in 1997 with sales greater than 1 billion, total assets greater than 5 billions, and with more than 30 years of publicly reported financial statements.

	Advantages	Disadvantages
Unix	Simple set up.	Line-based editing. Only batch runs.
PC-SAS/Connect	Interactive runs.	Limited UNIX commands.

- Each method can perform a basic data extract, combining different variables from various datasets, and serve as the first step in a full-fledged statistical program. There is no need to download and import data into a separate system or even a second program to complete the analysis.

- SAS Connect makes use of both SAS menus and windows (program/log/output) for batch-style sessions with extras. Can alternate between server and PC processing.

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PC-SAS / Connect – Concept

- SAS Windows software installed on your desktop
  - Standalone: your dataset in your PC
  - Remote access WRDS data by connecting to "wrds.wharton.upenn.edu" data server
    - Use WRDS powerful Unix server processing resources
    - Access Unix permanent (750MB) & temp (4.5TB) disk spaces
- Steps:
  1. Connect to WRDS server

```
%let wrds = wrds.wharton.upenn.edu 4016;
options comamid = TCP remote = WRDS;
signon username = _prompt_;
```

  2. Remote Submit

```
rsubmit;
  {Program}
endrsubmit;
```

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PC-SAS / Connect – Example

Find all companies in Compustat in 1997, with sales greater than 1 billion, total assets greater than 5 billions, and more than 30 years of publicly reported financial statements as of fiscal year 1997

Compustat Variables: http://wrds.wharton.upenn.edu/ds/compq/funda/doc.shtml

PC-SAS Solution:

```
%let wrds = wrds.wharton.upenn.edu 4016;
options comamid=TCP remote=WRDS;
signon username=_prompt_;

libname home remote "~" server=wrds;

rsubmit;
libname home "~";

proc sql;
create table home.demo (where=(fyear=1997 and sale>=1000 and at>=5000 and firm_age>=30))
as select fyear, conm, tic, gvkey, sale, at, (fyear - min(fyear)) as Firm_Age
from comp.funda where not missing(at) and
    consol="C" and indfmt="INDL" and datafmt="STD" and popsrc="D"
group by gvkey;
quit;

endrsubmit;
```

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PC-SAS / Connect – WRDS Support

Support

SAS Programming

- Getting Started With SAS
- Recommended Texts on SAS
- SAS FAQs
- SAS Viewer (Downloads)
- SAS v9 Online Documentation
- The SAS Institute

Accessing and Manipulating the Data - Unix Access

Unix Access

- Introduction to the WRDS Unix System
- PC Logins using Client-Server Software
- Remote Access to WRDS using SSH
- Remote Connections to the WRDS Unix System
- SCP (Secure Copy)
- UNIX Quick Reference Sheet
- Unix Disk Space
- Unix and Remote Server Terminology

PCSAS Connect

- Special Issues with PC SAS CONNECT
- Unix and PC SAS Connect
- Using PC SAS CONNECT -- Secure Port Configuration

Support

Data

- Manuals and Overviews
- Dataset List
- Sample Programs
- Research Applications
- Linking Databases

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We are happy to assist you with all your inquiries.

For questions, please to contact us at: wrds-support@wharton.upenn.edu