Tracking Small Firm Activity Using Data from Intuit

Susan Woodward

June 12, 2015

Origins: **Paycycle**, developed software to process payroll for small companies

acquired by Intuit, June, 2009

"We think we can see the recession in our data"

Project began in late 2008.

Step 1: Build a "same-stores" index of employment using the Paycycle data

Use only firms who

1) have been customers for at least 4 months,
2) have 1 to 19 ees in the earlier month,
3) and are present in adjacent months

Calculate employment for adjacent months

Data now includes 250,000 companies, 1.1 million ees, just over 5% of all employers and employees in the 1-to-19 category (20.6 million ees).

Features

-modal customer has 4 employees

- 65% are hourly workers

- data includes 5% of all employers and employees (nationwide) in the size category

- does both W-2 and 1099 records (97% are W-2)

- all employers are ***firms*****, NOT** establishments of bigger firms (different from ADP small business index)

- data are over-represented in California (23%), Texas, Florida, New York

- profound seasonality just like other employment data

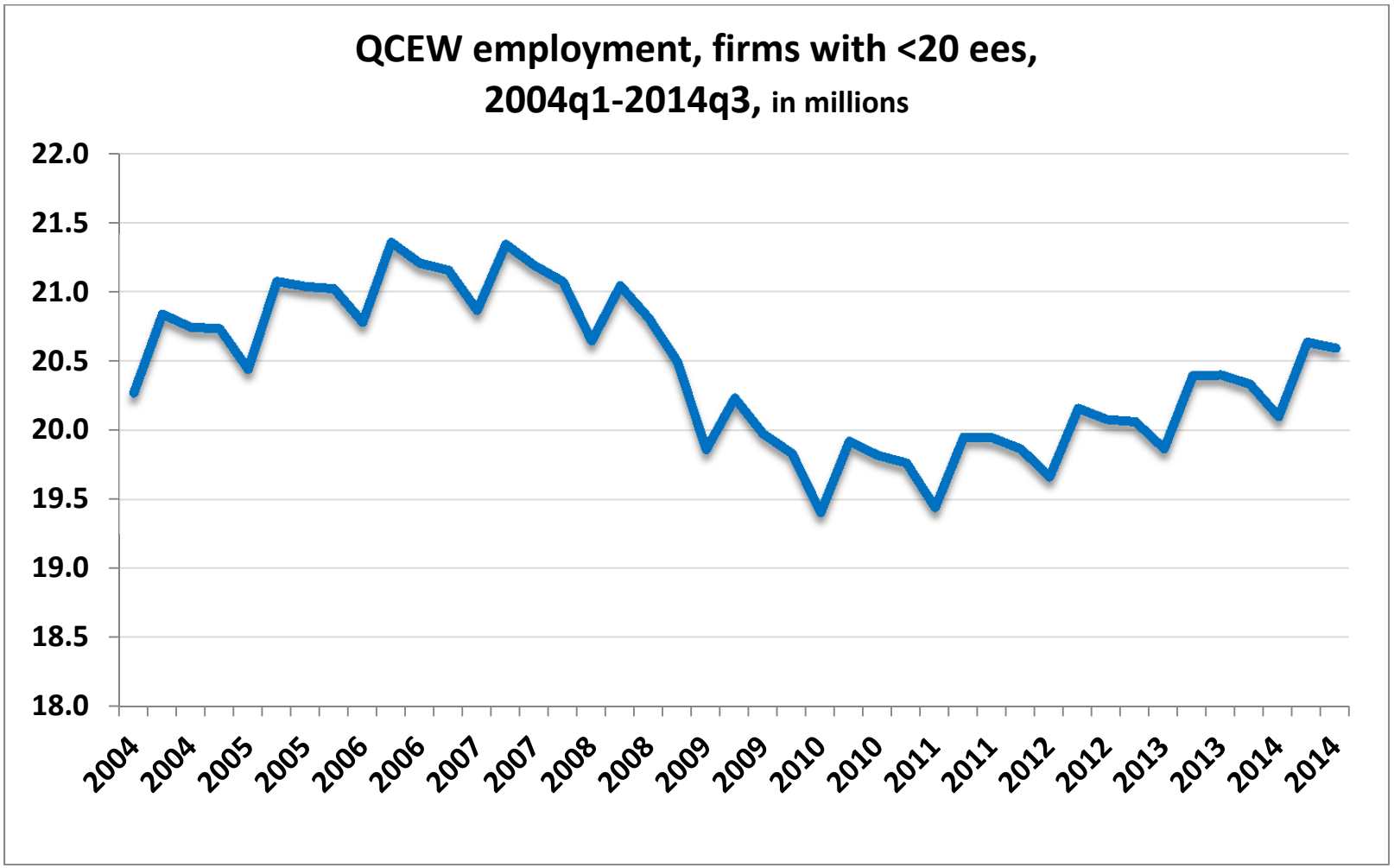
- faster growth than other employment data

Strengths

- records support transactions, so data are very clean
- records created in real time, when ees are paid
- service is on-line, roll-upable in real time
- zip codes for all
- we can measure
  - employment
  - compensation
  - hours worked
  - hourly wage
  - % full-time
  - new hire rate

Compare to QCEW employment for same size category


Same-Stores employment index, 2006-2013
Data from Intuit Payroll Service
280
260
240
220
200
180
160
140
120
100
80
Jan-06
May-06
Sep-06
Jan-07
May-07
Sep-07
Jan-08
May-08
Sep-08
Jan-09
May-09
Sep-09
Jan-10
May-10
Sep-10
Jan-11
May-11
Sep-11
Jan-12
May-12
Sep-12
Jan-13
May-13


QCEW employment, firms with <20 ees,
2004q1-2014q3, in millions
22.0
21.5
21.0
20.5
20.0
19.5
19.0
18.5
18.0
2004
2004
2005
2005
2006
2006
2007
2007
2008
2008
2009
2009
2010
2010
2011
2011
2012
2012
2013
2013
2014
2014

Quarterly Census of Earnings and Wages --

from state unemployment insurance records, long lag, but data are counts, not a sample

The raw same-stores series from Intuit Payroll shows faster employment growth, too fast

But the Intuit same-stores series contains a useful signal -- use it plus other factors to forecast QCEW

QCEW employment for < 20 is the dependent variable

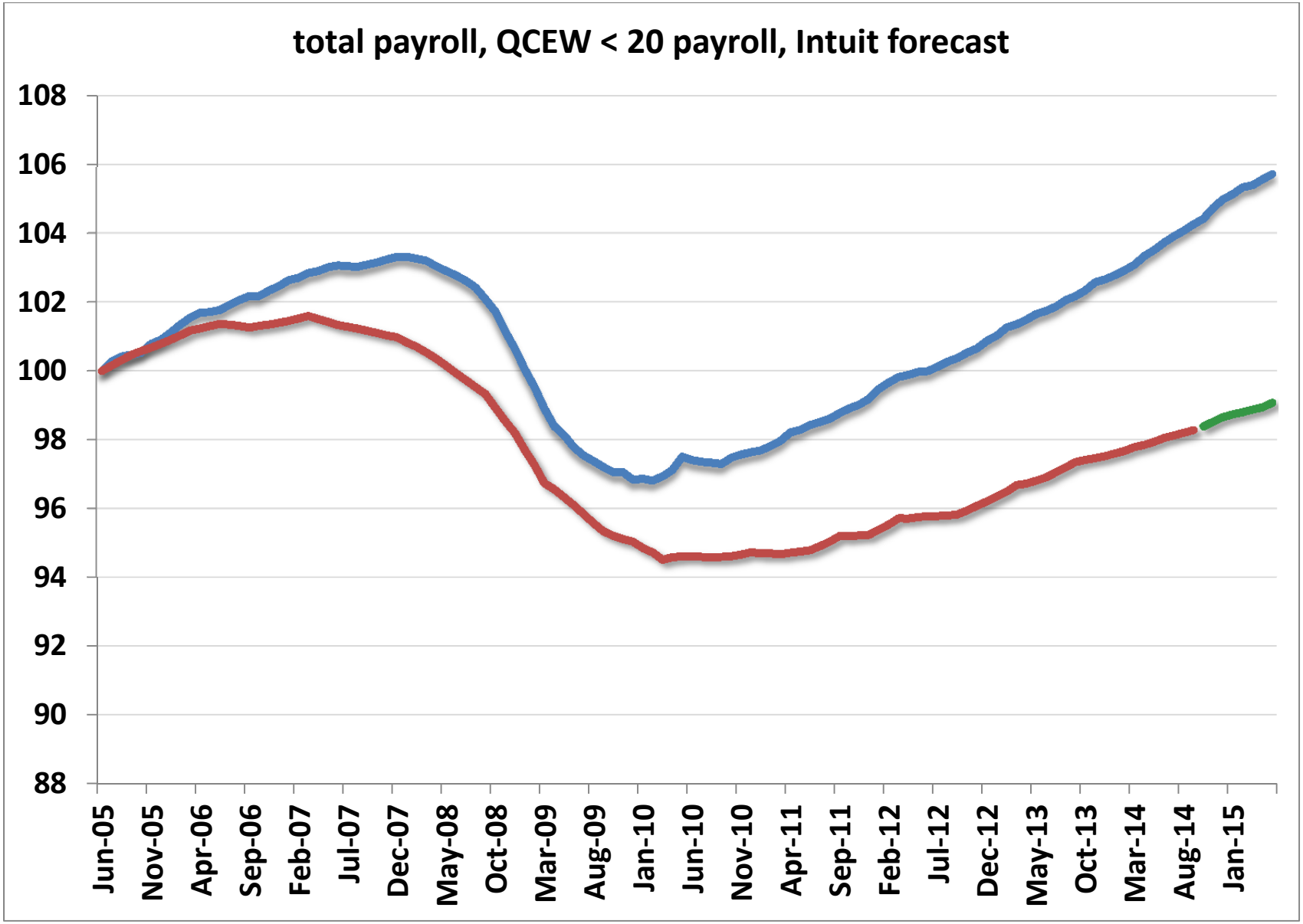
The forecasting model includes

- Total private payroll
- Total construction payroll
- Self-employment (from monthly CPS)
- The Intuit same-stores series

We also calculate

- compensation per employee
- average hourly wage
- hours worked
- % full-time
- the hiring rate

These additional series are not benchmarked to any other data.


total payroll, QCEW < 20 payroll, Intuit forecast
108
106
104
102
100
98
96
94
92
90
88
Jun-05
Nov-05
Apr-06
Sep-06
Feb-07
Jul-07
Dec-07
May-08
Oct-08
Mar-09
Aug-09
Jan-10
Jun-10
Nov-10
Apr-11
Sep-11
Feb-12
Jul-12
Dec-12
May-13
Oct-13
Mar-14
Aug-14
Jan-15

Small business employment has grown more slowly than total private payroll for at least 50 years.

Small business employment is still 525,000 ees short of the previous peak

Total payroll employment is now 2.2 % above its peak

Construction is surely part of the story of the feeble small biz recovery

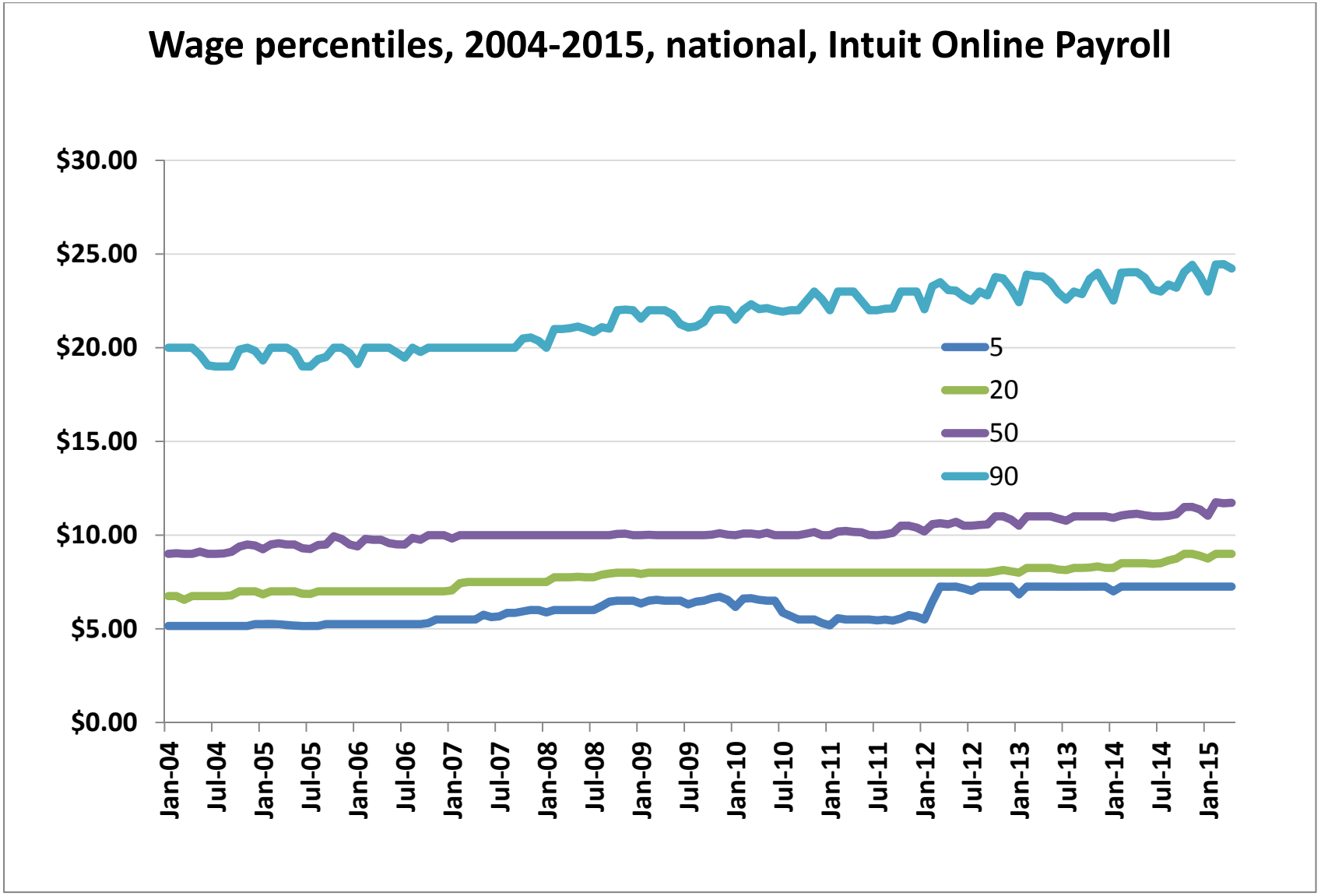
Recent Statistics

	recession	recovery
Total payroll employment	- 6.3%	9.0%
Small biz employment	- 7.0%	4.8%
Self employment	-12.4%	4.5%

There is *much* faster growth in employment in small establishments of larger businesses (Starbucks, etc), good research topic.

Today's bonus: distribution of wages

How hard would small business be hit by a minimum wage of ___ ?


Wage percentiles, 2004-2015, national, Intuit Online Payroll
$30.00
$25.00
$20.00
$15.00
$10.00
$5.00
$0.00
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08
Jan-09
Jul-09
Jan-10
Jul-10
Jan-11
Jul-11
Jan-12
Jul-12
Jan-13
Jul-13
Jan-14
Jul-14
Jan-15
5
20
50
90

Puzzling dip in 5th percentile 2010-2012 – absent in California & New York, present in Texas & Florida

?? (suggestions most welcome!)

Median wage today: $11.75

Average wage today: $16.40

new topic – small business revenues

different data, different customers (companies)

QuickBooks Online

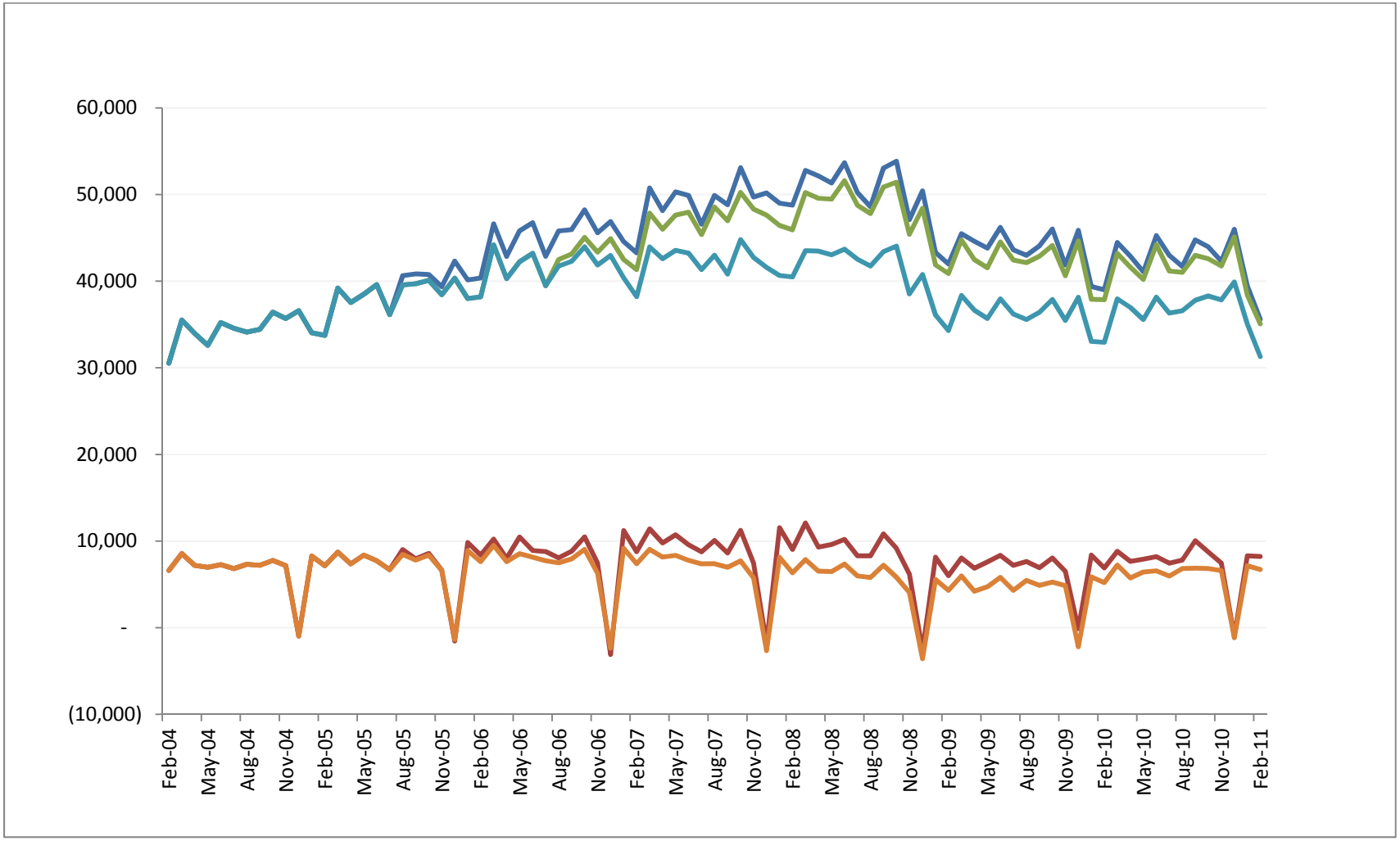
- accounting software
- millions of desktop copies, about 400,000 online users
- ONLY source of *monthly* data on small business revenues, expenses, payables, receivables (similar to IRS annual Statistics of Income, but monthly)
- available much sooner than S o I
- industry designations from Dunn & Bradstreet

Features

low attrition rates (far below BEA small biz survival rates)
average income well above sole proprietors in S o I
heavy in California, Texas, Florida, New York
somewhat timely, but not like payroll data
backfill is stable and forecastable
industry breakouts possible
zip codes too
more typos than Payroll data
average new signups are smaller companies over time

The changing cohort problem – examples from professional services and construction

Typical data by cohort -- professional services



Note

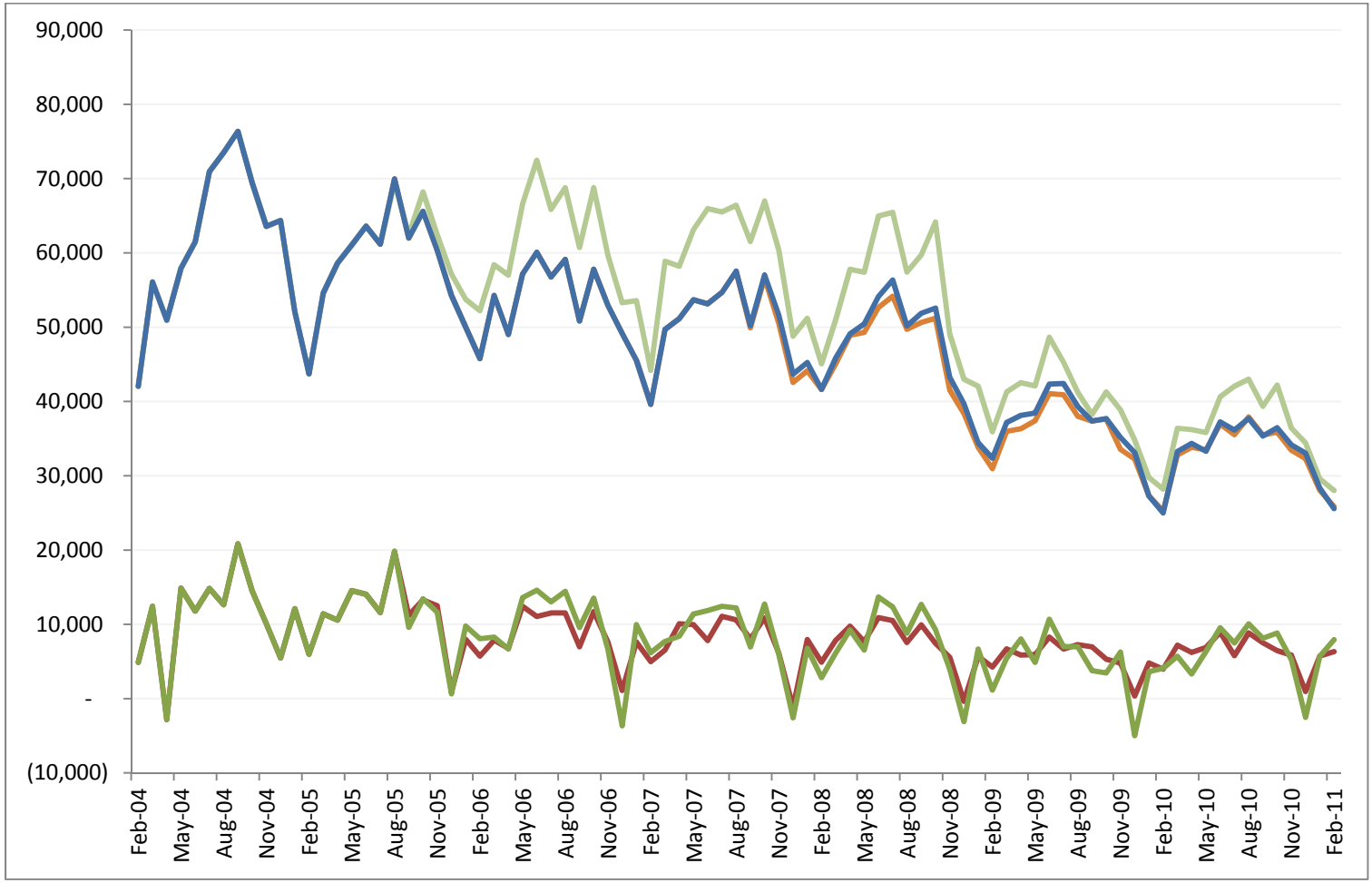
Abrupt decline in revenues for all cohorts in 2008q4

Newer entering cohorts have overall lower revenues

(reflects Intuit marketing strategy)

Strong seasonality in both revenues and income for all cohorts

cohorts for construction



Note

Decline in revenues per business starting 2006

Another decline in 2008

Strong seasonality in revenues and income

Less change in cohort size than in professional services

Measurement strategy

For each industry & cohort pair, Winsorize at 2% and 98% (purge fat fingers)

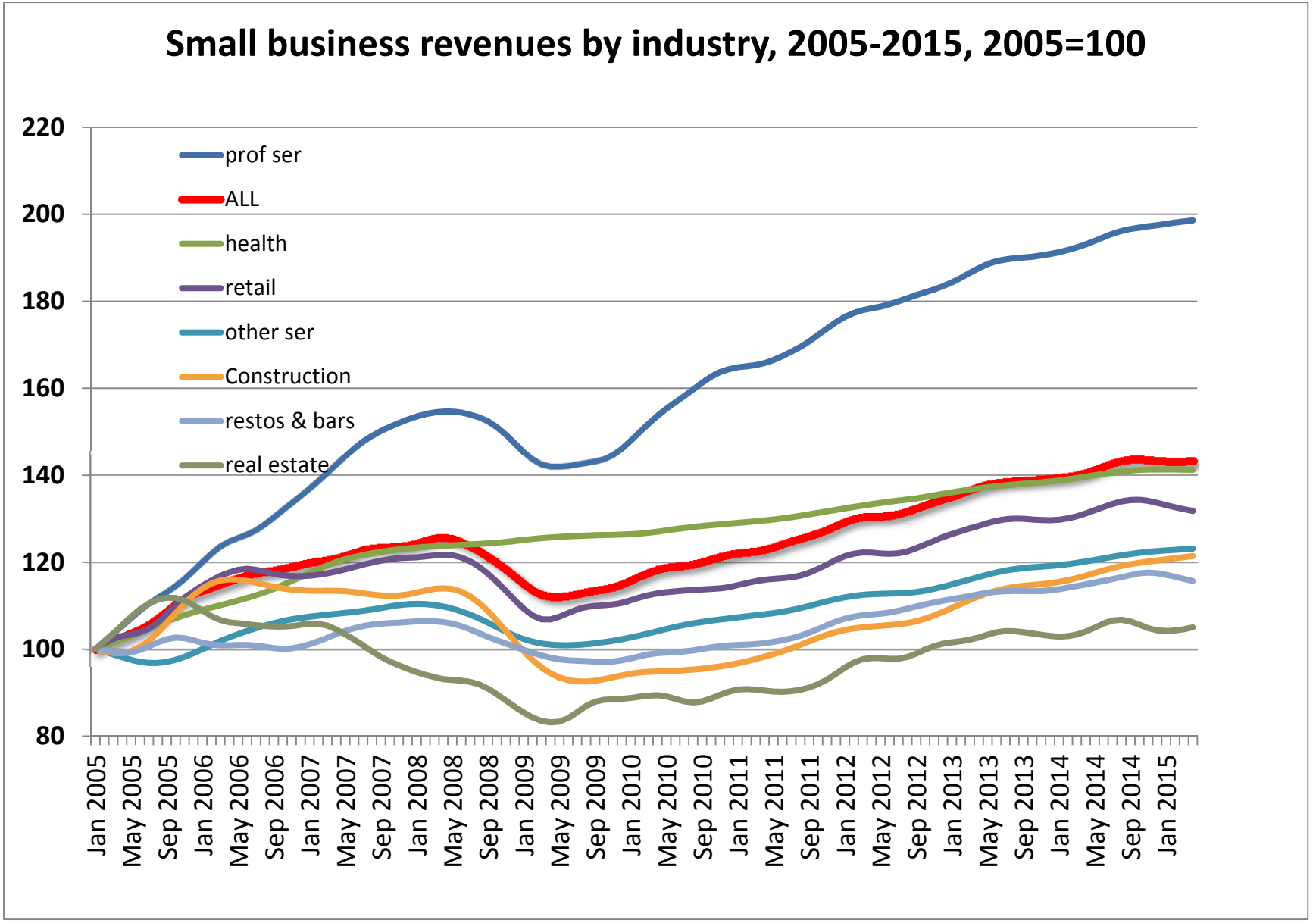
By industry, calculate average income each month for each cohort

For the most recent few months, estimate backfill

By industry, regress average income on dummies for

date (to capture the business cycle),
cohort (to isolate changes idiosyncratic to cohort)
age (sops up a little additional variance)

Take the date dummies, seasonally adjust, and calculate the trend.


Small business revenues by industry, 2005-2015, 2005=100
220
200
180
160
140
120
100
80
prof ser
ALL
health
retail
other ser
Construction
restos & bars
real estate
Jan 2005
May 2005
Sep 2005
Jan 2006
May 2006
Sep 2006
Jan 2007
May 2007
Sep 2007
Jan 2008
May 2008
Sep 2008
Jan 2009
May 2009
Sep 2009
Jan 2010
May 2010
Sep 2010
Jan 2011
May 2011
Sep 2011
Jan 2012
May 2012
Sep 2012
Jan 2013
May 2013
Sep 2013
Jan 2014
May 2014
Sep 2014
Jan 2015

Note:

Two “recessions” –

one starting 2006 with the collapse of construction and real estate services

another in mid-2008 with bank panic

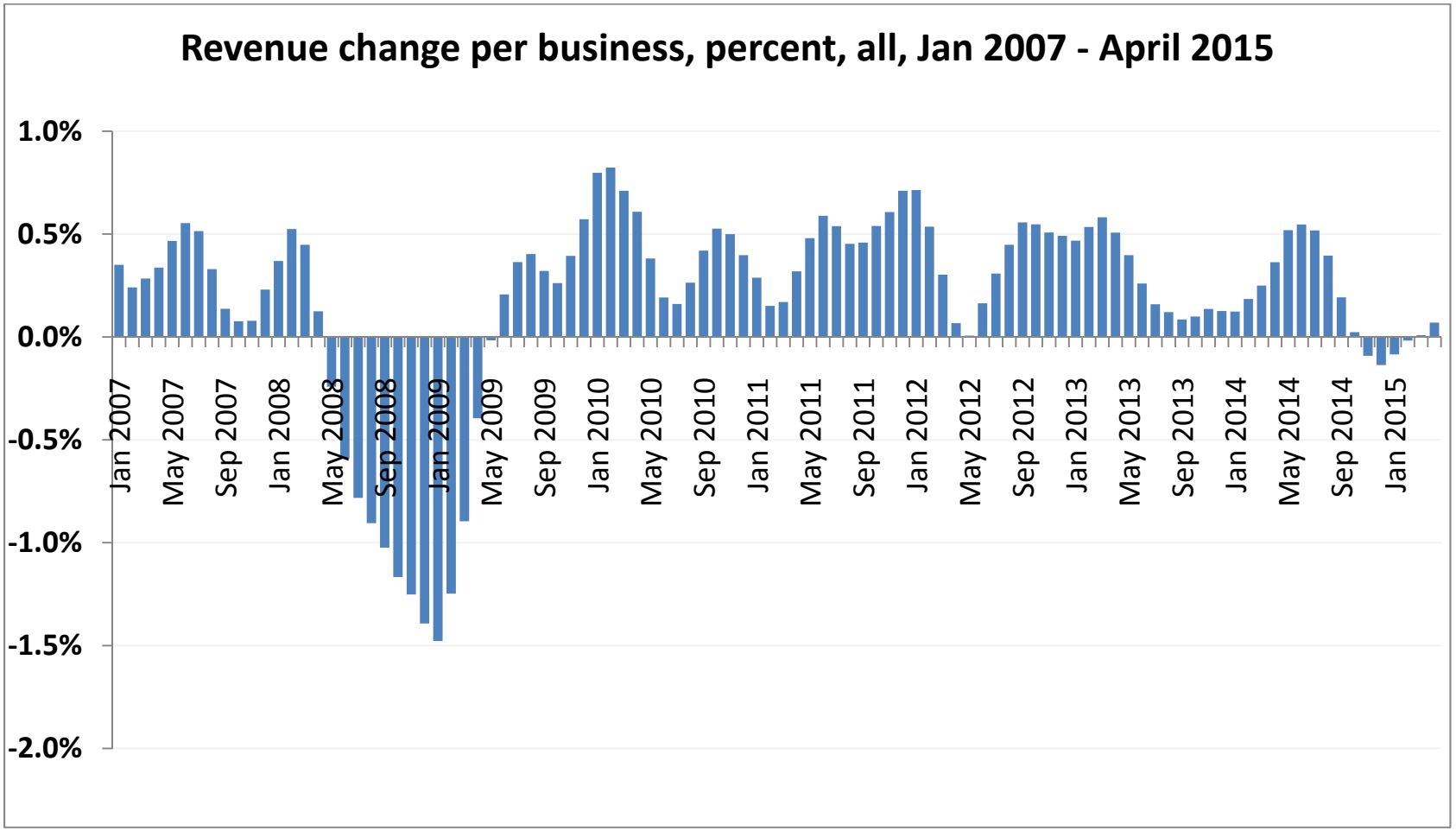
Professional services growing much faster than any other sector

Health cruises through both downturns, but growing more slowly recently

Construction and real estate services growing faster recently

Revenues fell Oct 2014 – Feb 2015,

A closer look at changes, shows the bad winter of 2014-2015



There are also a few sectors we calculate indexes for but don't include in the regular report, eg, non-profits, a major customer for Quickbooks.

Other series we could produce:

Expenses

Payable

Receivables

Income = revenues – expenses

Suggestions are welcome!

Intuit data vs Federal data:

Small Business Employment series is a **forecast of QCEW**

We use Intuit data plus other data to forecast (*nowcast*) QCEW.

Other series – hours worked, hourly wage, % full-time, total compensation, and the hiring rate are averages from the Intuit Online Payroll customers with < 20 ees.

real time

Small Business Revenues

Most comparable data: **IRS Statistics of Income.** The companies using Quickbooks Online have higher income and more volatile income than similar industries in SoI. These businesses are also more sensitive to the business cycle than the average SoI filer.

The ***only*** monthly small business accounting data.

Quickbooks data

captures the 2014-2015 Winter Recession.

shows industry-specific effects of the Great Recession

breaks out some useful categories not in SoI, such as nonprofits

is almost real time

Usefulness? GDP, earlier read on small business, sectors of GDP with scarce data (nonprofits), timely evidence of inflation (in wages and revenues), distribution of wages, information about wage changes (stickiness).

Access? The data sources are services that are alive 24/7.