

Building Indexes of Economic Activity

from

Intuit Online Payroll

Intuit QuickBooks Online

Susan E. Woodward

Sand Hill Econometrics

Origins

PayCycle – founded 1999, acquired by Intuit, June, 2009

- does payroll, online, for tiny companies
- user needs no accountant, no book keeper
- log on, enter SS#, name, hours, hourly rate, or salary, overtime, commissions, etc
- software computes amount due Federal govt, state govt, net to employee, cuts checks, does payroll bookkeeping

*as of December, 2008, Paycycle's engineers and marketing people thought they could "see the recession" in their data, wanted an index of **small biz employment***

Features

- modal customer has 4 employees
- 65% are hourly workers
- most recent data includes > 80,000 firms (out of 4.7 million firms with < 50 ees)
- does both W-2 and 1099 records (97% are W-2)
- all employers are firms, not establishments of bigger firms
- data are over-represented in California (23%), Florida, Texas, New York
- profound seasonality just like other employment data

Strengths

- records support transactions, so data are very clean
- records created in real time when ees are paid
- service is online, roll-upable by Intuit
- firm record has a zip code
- we can measure
 - employment
 - compensation
 - hours worked
 - hourly rate
 - % full time
 - new hire rate

Wish For: industry (no knowledge at present)

Strategy

“Same-stores” 1 to 19 ees, > 4 months of history

> 1 and < 19 ees in prior period and current

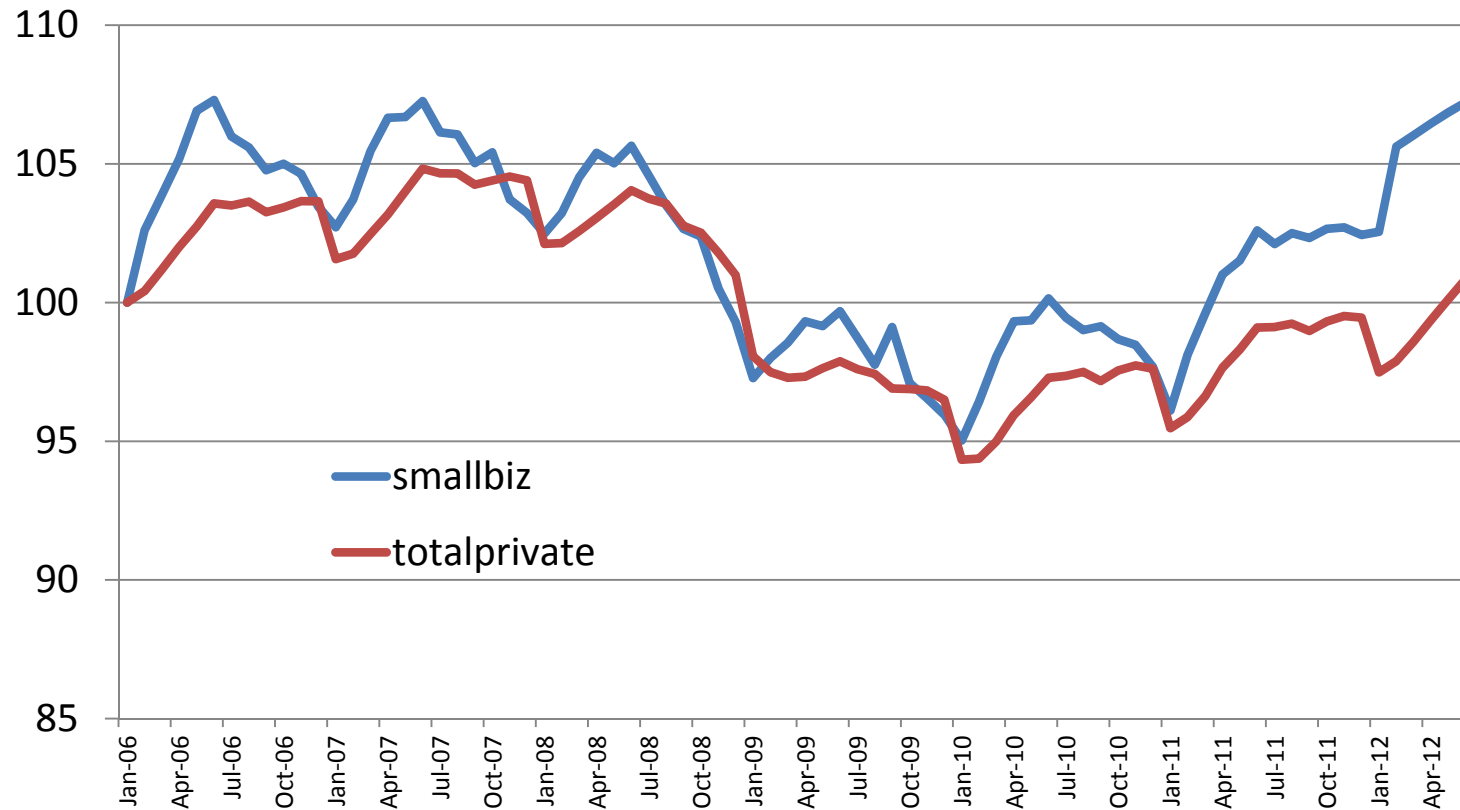
> 20 ees in prior, < 19 (including 0) in current (fell in)

0 in prior period, > 0 (including > 20) in current (zoomed through)

Who is not in?

- > 20 in both prior and current
- = 0 in both prior and current

employment, Jan 2006- June 2012



rebenchmarking underway, still under construction

QuickBooks Online

- accounting software
- millions of desktop copies, 150,000 users online
- new customers assign themselves to industry
- geography (zip code)
- ONLY source of *monthly* data on small business revenues, expenses, payables, receivables, ... (similar to IRS Sol, but monthly, not annual)

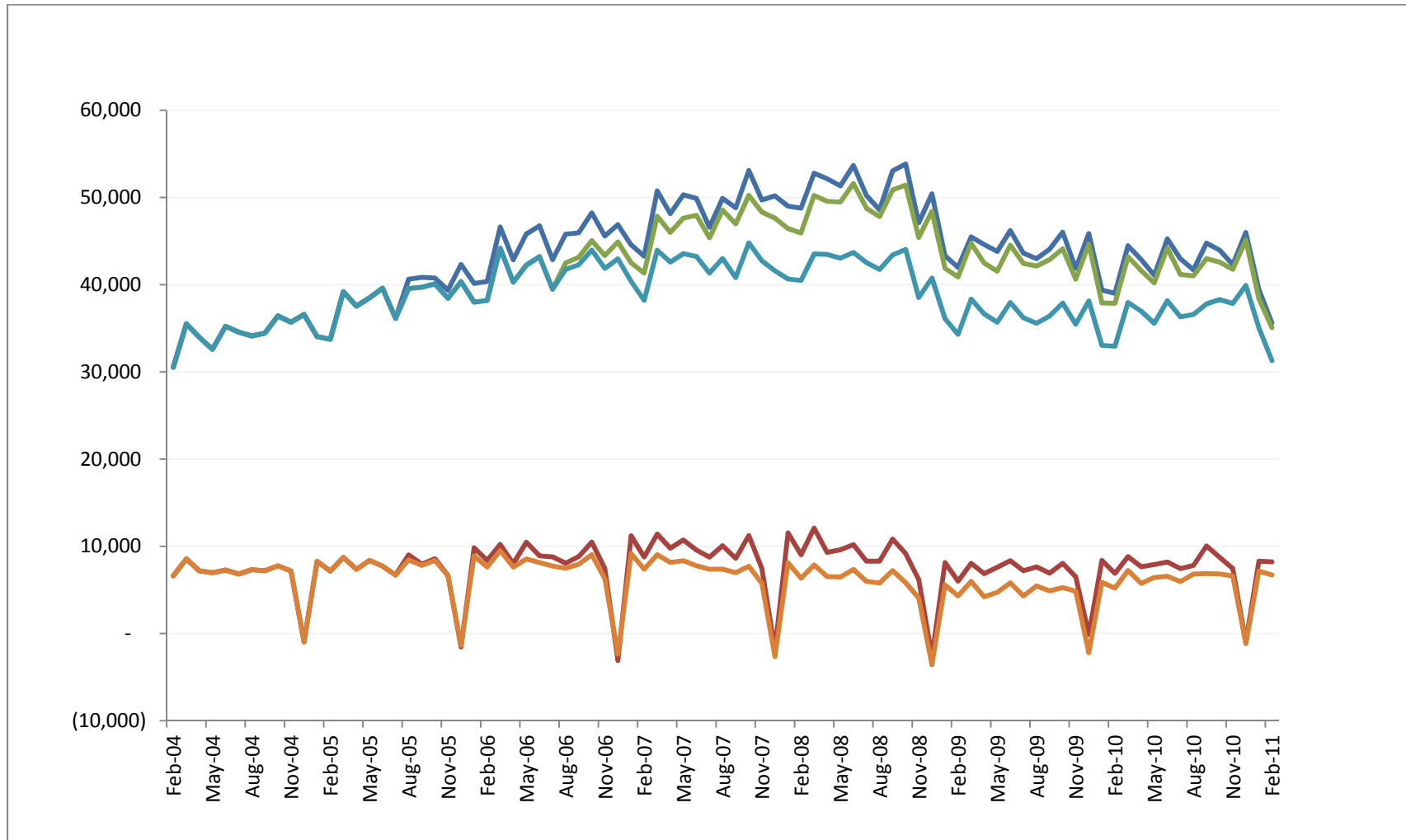
Features

- Low attrition rates (far below BEA small business survival rates, not typical)
- average income well above sole proprietors in Statistics of income, even by industry
- heavy in California, Florida, Texas, etc.
- Somewhat timely (but not like payroll data)
- good industry breakouts (good list, rolls up to high-level categories in Sol), and zip codes
- more typos than Online Payroll data
- average customer smaller over time

Strategy

- Build model trained on past data, by industry, to forecast what revenues will be when complete
- Winsorize at 2% and 98%
- regress average monthly revenues by cohort on dummies for
 cohort
 date
 age
- take date dummies, seasonally adjust, and calculate trend

Typical data by cohort -- professional services



Note

- abrupt decline in 2008q4
- newer cohorts have lower revenues and income
- strong seasonality in income, coming from expenses (dip in December)

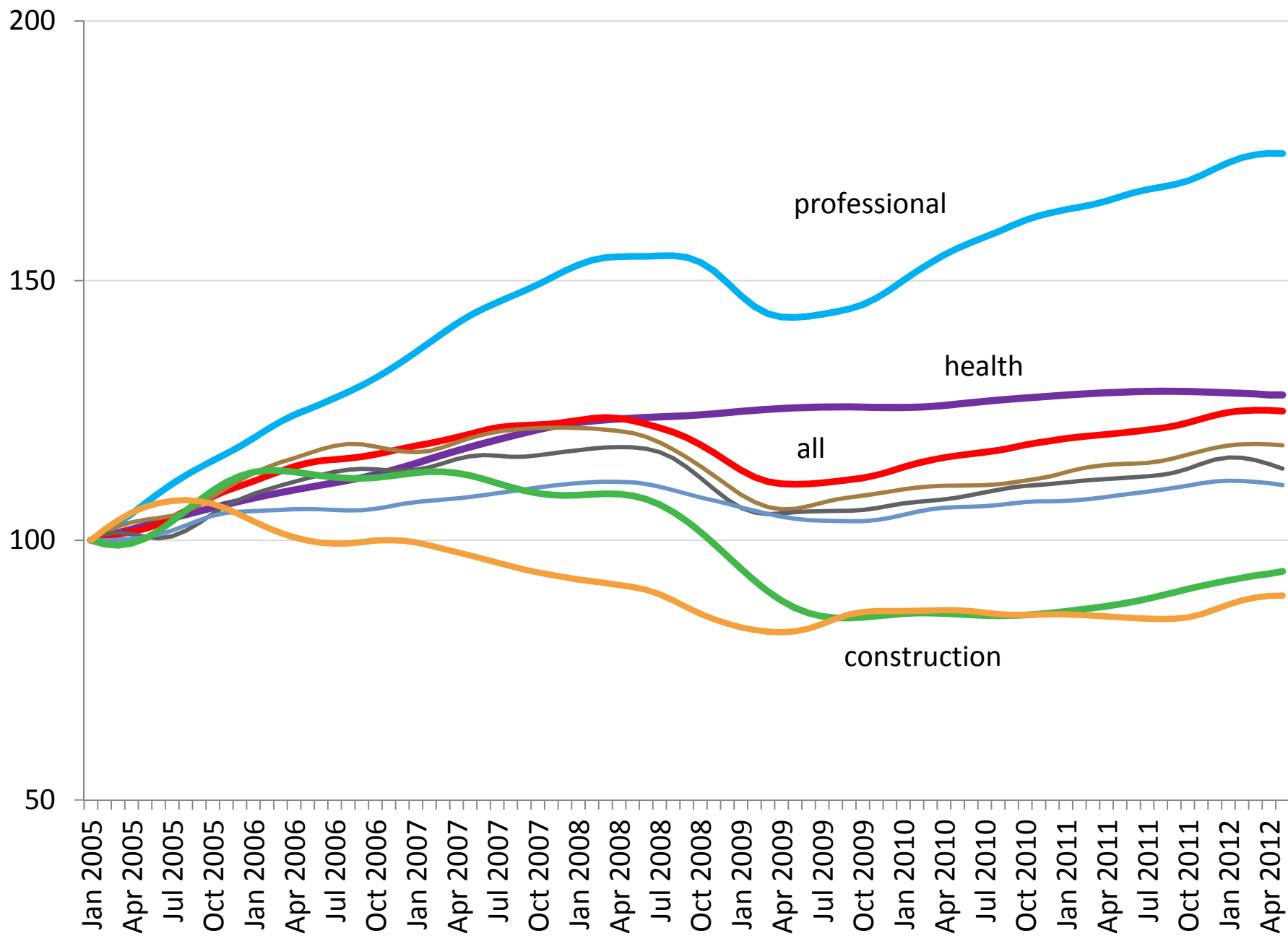
cohorts for construction



Note

- Decline starting in 2005
- Lower revenue and income for newer cohorts
- Strong seasonality, lowest revenues in January, lowest income in December

The story



Two recessions

- one starts in 2006 with collapse of construction
- another in 2008q4 with bank panic
- health sails through both, but has falling revenues starting 2011

Are updates boring?

NO! Revenue index update

sector	change April to May, 2012
Construction	0.51%
Real estate and rental and leasing	0.10%
Health care and social assistance	-0.01%
Professional, scientific, and technical services	-0.03%
All	-0.12%
Retail trade	-0.16%
Accommodation, food, drinking	-0.32%
Other services	-0.78%

The revenue index a la Sufi and Mian – did revenues decline more in the counties that had bigger property value booms and busts?

Revenue index

