

Where do workers find jobs in good times and bad times?

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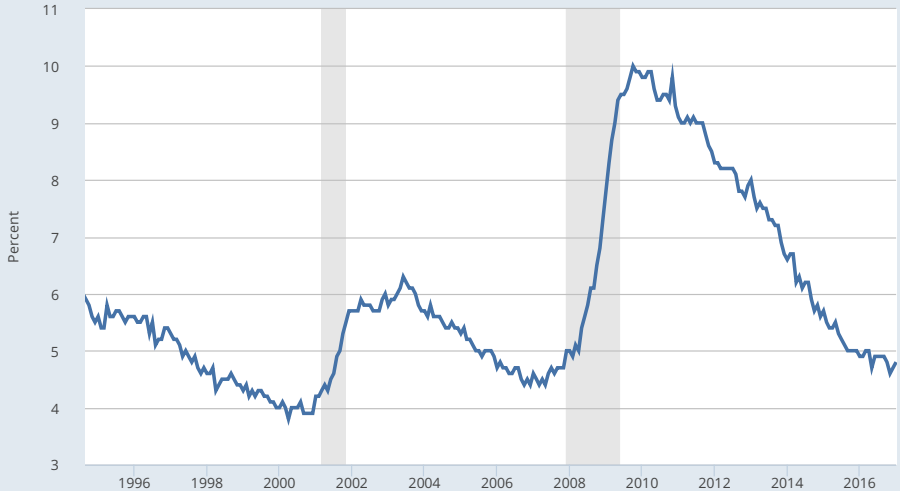
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Motivation

- This is a story about labour markets, and how the actions of workers and firms in the labour market change over time and with the state of the economy.
- In particular, it's a dive into taking different parts of the labour market - different types of workers, jobs, etc - seriously, in terms of understanding the last recession and business cycles more generally.
- Once upon a time (2007-09), there was a bad crash and a recession, and our basic measure of labour market health - unemployment - looked like this.

US Unemployment, 1995-2016

FRED 



Source: U.S. Bureau of Labor Statistics
fred.stlouisfed.org

myf.red/g/cKwM

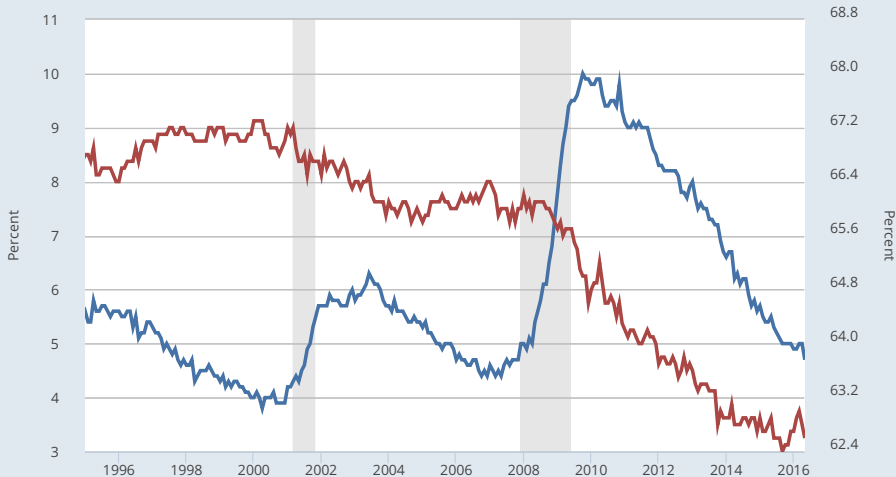
Motivation

- The recovery from the last recession has been historically slow. Reducing the unemployment rate from 10% to 5% took six years.
- By comparison, following the 1948 recession, it took 18 months to go from 8% to 3%, or from 11% to 7% after the 1982 recession.
- This has led to a lot of storytelling about what might have 'gone wrong' in the labour market, and the first piece of evidence often cited there is that a lot of people have just given up on work.

Unemployment Versus Labour Force Participation



— Civilian Unemployment Rate (left)
— Civilian Labor Force Participation Rate (right)



Motivation

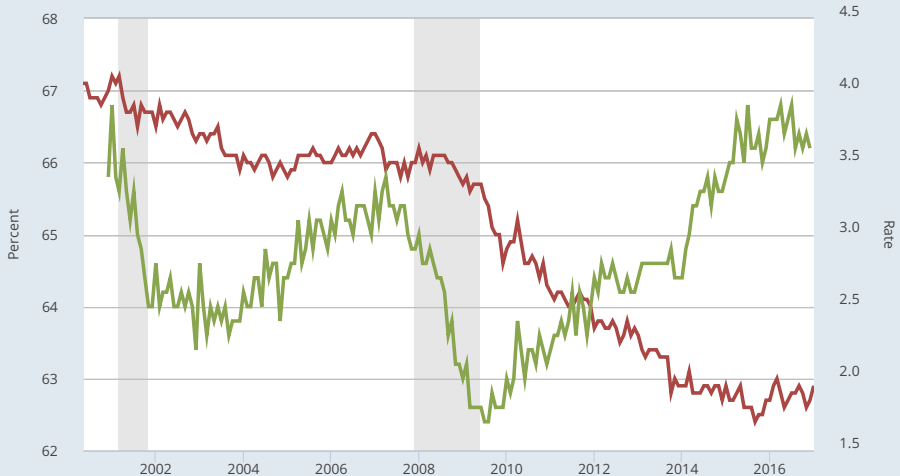
This is a huge problem.

- The unemployment rate coming down from 10% to 5% is, roughly, about 7.5 million fewer people looking for jobs.
- Labor force participation says that 7.5 million was split between 2 million hires and 5.5 million gave ups.
- In particular, this has been worrisome because employers have actually been looking for new hires.
- Just like we track unemployment by surveying workers, we also track hires, layoffs, and job openings, or vacancies, by surveying firms.

Labour Force Participation Versus Job Openings

FRED 

— Civilian Labor Force Participation Rate (left)
— Job Openings: Total Nonfarm (right)



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myf.red/g/cNlr

Towards A Story

We often attribute recessions to specific chunks of the economy.

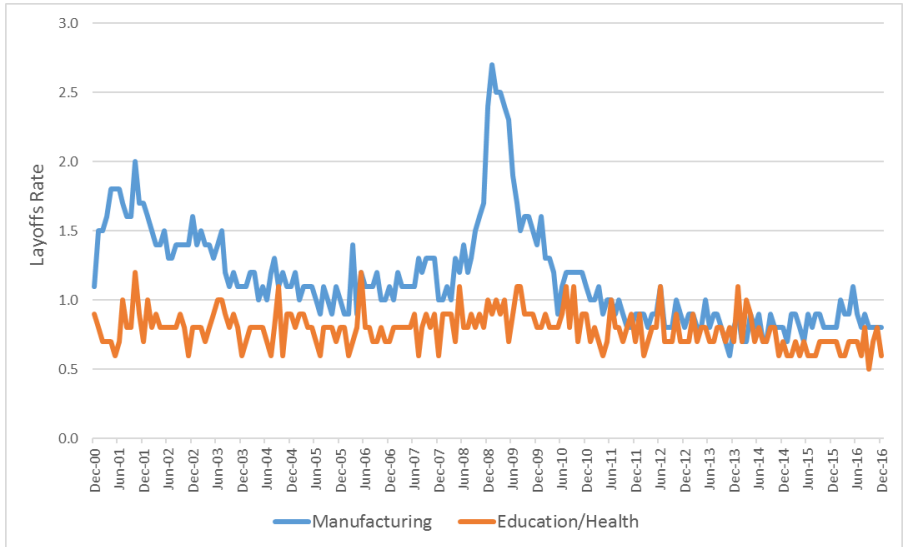
- 2007-09: Housing and finance.
- 2001: Technology.
- 1927: Ford shuts down for six months to switch from the Model T to the Model A.

One story that might explain all these pieces here is something along the lines of 'the jobs don't fit' in some way, which we often call 'skill mismatch'.

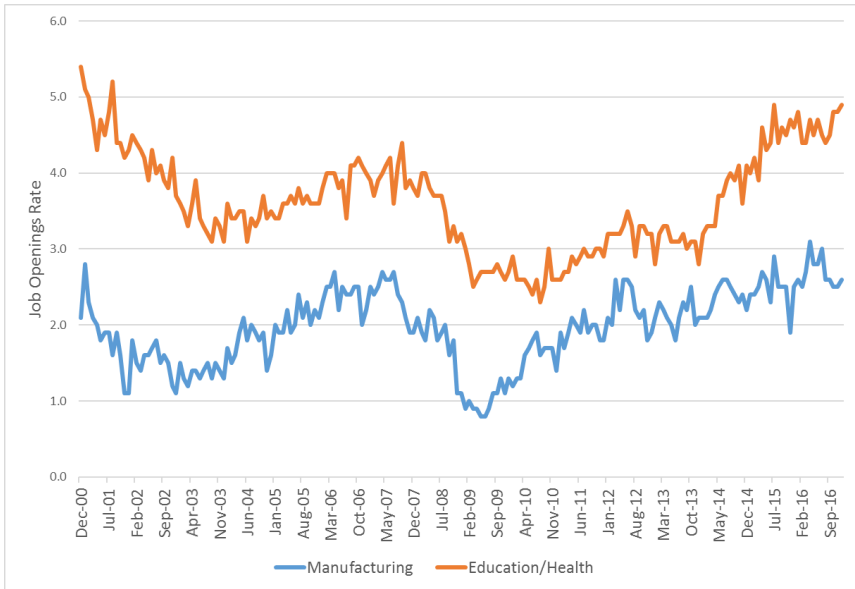
Towards A Story

- We can have a fairly miserable recovery with lots of people dropping out of the labour force simultaneously with lots of available jobs if the skillsets don't really overlap and firms don't want to hire the labour available.
- Is there evidence in favor of this sort of structural change happening during the recession? To examine that, we need to turn away from aggregates and start breaking down the data at an industry or sector level.

Layoffs: Manufacturing Versus Education/Health



Job Openings: Manufacturing Versus Education/Health



Piecing Together A Story

- In some ways, sectors act very similarly. In some ways, sectors act very differently. Is this compelling evidence for or against mismatch?
- How can we measure someone who's "mismatched"? We can't, really, at least without a lot more detail on what someone is qualified for and what skills employers are looking for.
- Necessity of *modelling* the situation.

A Model of Sectoral Labour Markets

- Model: Bunch of equations describing how different people in the economy act, which are then solved numerically.

The equations need to cover things like:

- When do different firms fire workers?
- Where do workers of different types look for jobs?
- How many job openings do firms in different businesses open?

Goal is to derive more testable implications.

A Model: Unemployed Workers

For example, in my model, unemployed workers each month choose what industry they look for jobs in by solving the following problem.

$$U(i; y) = b + \beta E_c \max_j E_{y'} [(1 - p(\theta_{ij}))U(i; y') + p(\theta_{ij})(x_{ij} - U(i; y)) - c_j]$$

This says an unemployed worker of type i chooses to search for a job in sector of the economy j , where searching in sector j makes them better off than searching in any other sector, considering the wages being paid in different sectors, the chances of finding a job in any given sector, and the state of the overall economy.

A Model: Questions

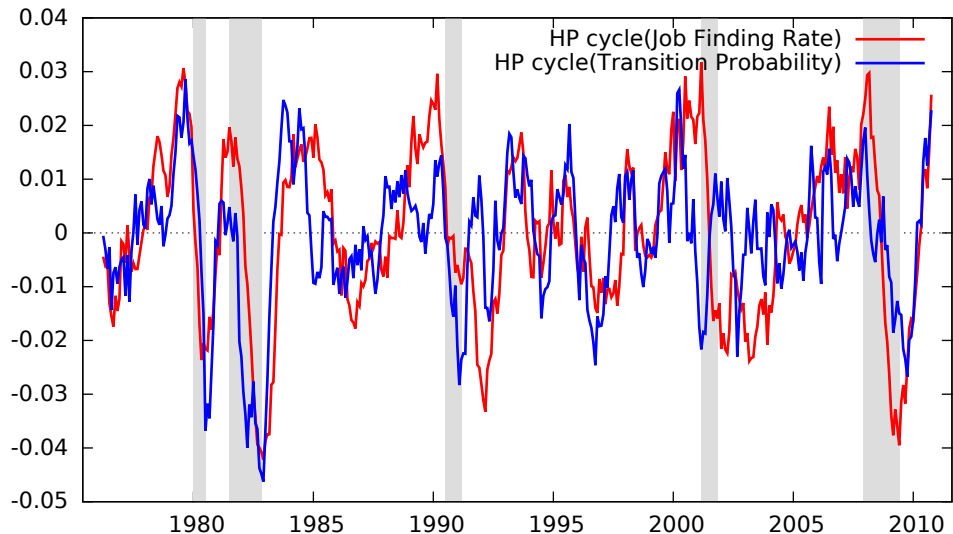
This leads to exercises like the following:

- Suppose we hit the economy with a realistic recession, which means that model firms are getting reduced revenue out of workers.
- Suppose we make it more difficult for workers to search for jobs, or make it more expensive for firms to hire certain workers, or make the skills of some workers less valuable.
- What sort of labour market would we see in the model under different scenarios, and is this consistent with data?

A Model: Results

- Whenever we try to tell a mismatch story, the model runs into a basic problem: it doesn't match up with the workers finding jobs.
- Mismatch stories are like a game of musical chairs. Something changes, and a bunch of workers are left without useful skills, and the labour market takes time to sort workers around, and until things are fixed the economy suffers.
- However, the data says that workers actually switch types of job less when times are bad. (?!?!)

Worker Switching



A Model: Results

- If we think of bad events as very persistent changes in the demand for labor across different sectors, it's really really hard to generate the observed strong correlation in hiring across sectors or this observed switching pattern.

Worker Switching

What other patterns do we observe in terms of worker switching following unemployment?

- Younger workers. (less strongly than historically)
- Long-term unemployed. (extremely strongly)
- Less educated workers. (weakly)

Role of Skills

How can we rationalize less worker reallocation in bad times?

- If all sectors bounce back, then workers hate bailing on their skills and experience to move into new lines of work.
- Firms in other sectors aren't hiring much anyway because it's a recession, and in a recession they can be choosy, so workers double down on finding work they're skilled for.
- In a boom, firms are willing to pay high wages to induce workers to switch sectors.

Caveats

- Defining 'sectors' is not straightforward. Industries? Occupations? Something else? Thankfully, results pretty robust to definitions.
- I could be telling the model to start from the wrong premises and then the resulting data is meaningless.
- Some computational issues are possible.

Takeaways

- We've seen a long, painful, and in some sense incomplete recovery.
- The data seem to tell mixed stories about the nature of the labor market across the business cycle.
- To the extent recessions affect sectors differently, those effects are temporary and hence workers seem to optimally choose not to change jobs.
- The interaction of an increasingly educated and specialized society is likely changing the nature of recessions, but not via structural mismatch.
- To come: worker retraining policy?