What if labor demand had not shifted after 2007?

TheoryGuru applications

Load Economicreasoning package only if it is not already loaded

```
If[Length@Names["PLTools`*"] < 10,
 Get["http://economicreasoning.com"]]
```

Load other tools by clicking on extras and/or evaluating below
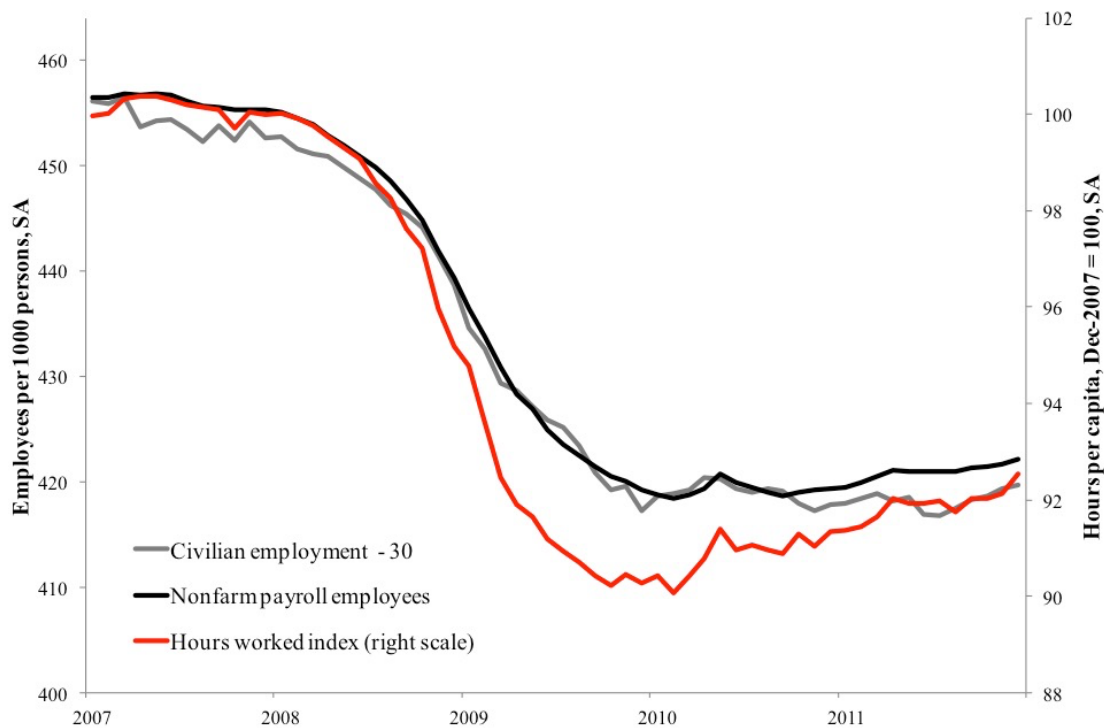
```
If[Not@MemberQ[$ContextPath, "OtherTools`"],
 Get["http://othertools.economicreasoning.com"]]
```

Background

All agree that the quantity of labor fell after 2007 (data from here)

Figure 2.1. Employment and Hours per Person, Jan-2007 to Dec-2011

Civilian employment - 30
Nonfarm payroll employees
Hours worked index (right scale)

Paul Krugman on the operation of supply and demand after 2007

"If you really believe that the problem is that excessive generosity to the downtrodden is reducing the incentive to work,
so that what we really have is a supply problem rather than a demand problem,
you should expect to see upward pressure on wages."

Notes

Interpret all total derivatives (*d*) below as the difference between 2010 and 2007.

Setup

Labor demand is determined by wages *w* and other factors *ad*
Labor supply is determined by wages *w* and other factors *as*.

```
equilibrium = d[w, ad] == q == s[w, as];
```

Actual and hypothetical

act = actual recession: an unknown combination of changes in *as* and *ad*.

hyp = same as *act*, except with no change in *ad*. "Hypothetical"

Result: TheoryGuru disagrees!

TheoryGuru$\left[\left\{"\dfrac{\partial d[w, ad]}{\partial w}" < 0\,(*\text{ dmd slopes down }*),\right.\right.$

$\qquad "\dfrac{\partial s[w, as]}{\partial w}" > 0\ (*\text{ supply slopes up }*),$

$\qquad "\dfrac{\partial d[w, ad]}{\partial ad}" == 1,\ "\dfrac{\partial s[w, as]}{\partial as}" == 1\ (*\text{ normalize shifters }*),$

$\qquad \dfrac{d\,\text{equilibrium}}{d\,\text{act}}\,(*\text{ actual equilibrium }*),$

$\qquad \dfrac{d\,\text{equilibrium}}{d\,\text{hyp}},\ \dfrac{d\,\text{as}}{d\,\text{act}} == \dfrac{d\,\text{as}}{d\,\text{hyp}},\ \dfrac{d\,\text{ad}}{d\,\text{hyp}} == 0\,(*\text{ hypothetical equilibrium }*),$

$\qquad \dfrac{d\,q}{d\,\text{hyp}} < \dfrac{1}{2}\dfrac{d\,q}{d\,\text{act}} < 0\Big\},\ (*\text{ quantity actually fell MOSTLY because of supply }*)$

$\qquad \dfrac{d\,w}{d\,\text{act}} > 0\,(*\text{ wages actually increased }*)\Big]$
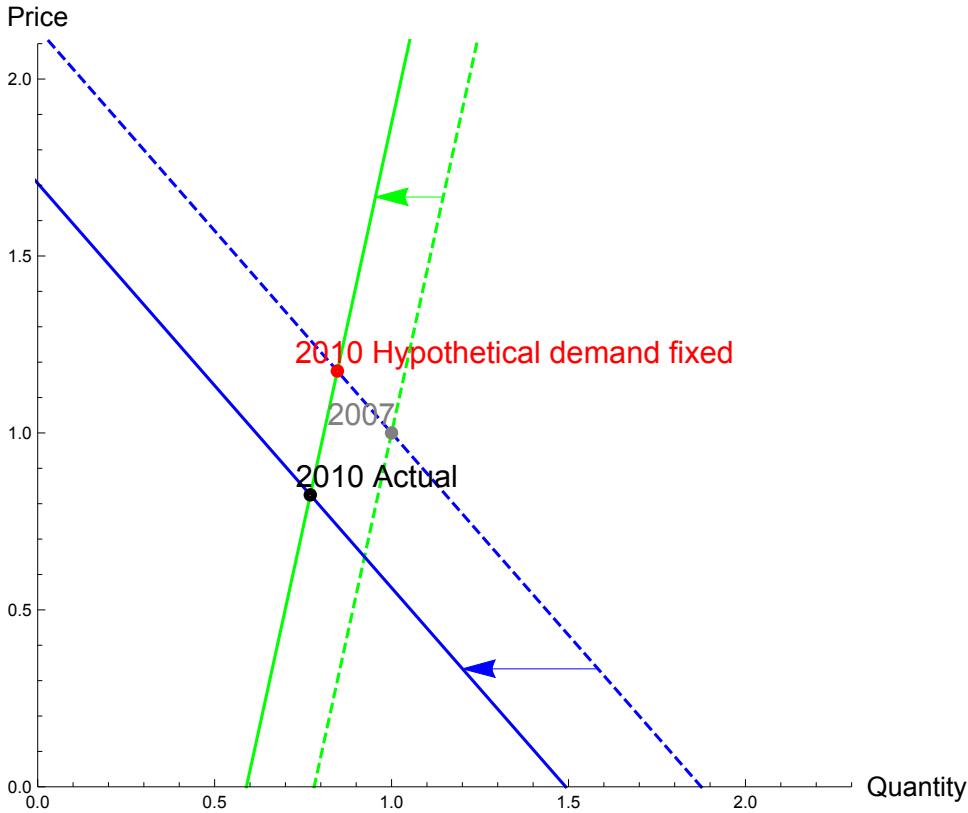
True for some, False for others

Graph a counterexample to Krugman's claim

Namely, an example with
(a) most of the quantity change coming from the supply shift and
(b) the equilibrium wage falls.

```
SupplyDemandDiagram @@
```

$$\left(\left\{\frac{\text{d}\,as}{\text{d}\,act}, \frac{\text{d}\,ad}{\text{d}\,act}, \frac{\partial s(w, as)}{\partial w}, \frac{\partial d(w, ad)}{\partial w}, \text{True}, 1/5, \text{"2007"}, \text{"2010 Actual"},\right.\right.$$

```
       "2010 Hypothetical demand fixed"} /.
```

$$\left.\left(\text{rexample} = \text{TheoryInstanceR}\left[\text{MostRecentAssumption}, \frac{\text{d}\,w}{\text{d}\,act} < 0\right]\right)\right)$$


```
Example scaled to total change of −10
```

Due to supply	**−6.7**
Due to demand	−3.3
Total	−10.
Addendum: total wage change	−7.6

Variable interpretations