

THE ROUTES INTO AND OUT OF THE ZERO LOWER BOUND

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| <i>Year (s)</i> | <i>Output</i> | <i>Productivity</i> | <i>Factor utilization</i> | <i>Capital contribution</i> | <i>Population</i> | <i>Labor-force participation</i> | <i>Employment rate</i> | <i>Hours per week</i> | <i>Labor quality</i> |
|-----------------|---------------|---------------------|---------------------------|-----------------------------|-------------------|----------------------------------|------------------------|-----------------------|----------------------|
| 2007 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 2008 | 95.3 | 99.3 | 97.8 | 99.8 | 99.7 | 100.0 | 99.0 | 99.4 | 100.3 |
| 2009 | 88.2 | 101.6 | 93.9 | 99.0 | 99.5 | 99.3 | 96.2 | 97.8 | 100.7 |
| 2010 | 88.1 | 99.3 | 97.5 | 98.0 | 99.2 | 98.7 | 95.9 | 98.4 | 100.6 |
| 2011 | 87.6 | 98.1 | 98.5 | 97.2 | 98.8 | 98.1 | 96.5 | 99.4 | 100.6 |
| 2012 | 87.7 | 98.1 | 98.3 | 96.7 | 98.9 | 97.8 | 97.1 | 99.6 | 100.6 |
| Through 2010 | 11.9 | 0.7 | 2.5 | 2.0 | 0.8 | 1.3 | 4.1 | 1.6 | -0.6 |
| Through 2012 | 12.3 | 1.9 | 1.7 | 3.3 | 1.1 | 2.2 | 2.9 | 0.4 | -0.6 |

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Low and stable inflation, so that the implied bound on the real interest rate is constraining

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Includes taxes and risk premium

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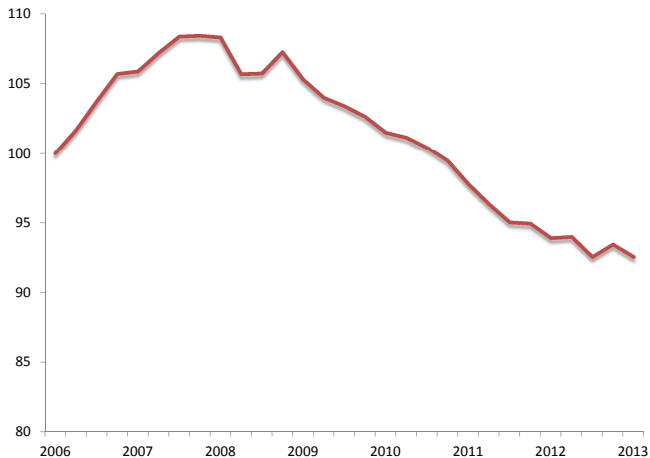
THE FINANCIAL WEDGE



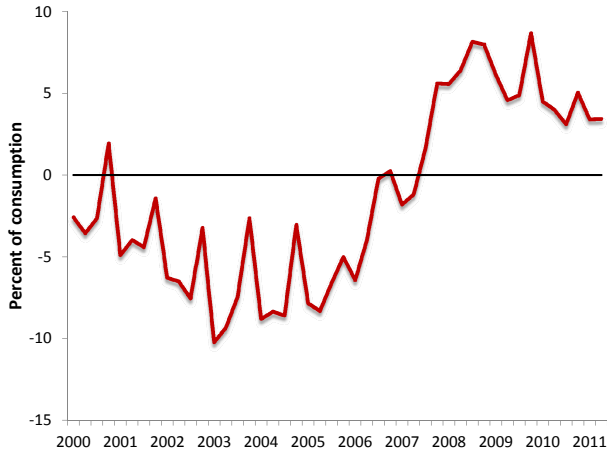
THE RATIO OF CONSUMPTION TO DISPOSABLE INCOME



REAL HOUSEHOLD LIABILITIES



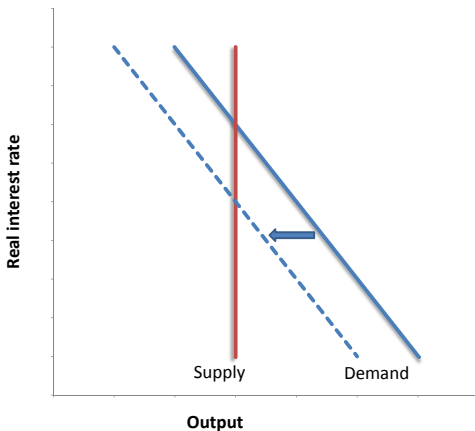
BURDEN OF DELEVERAGING AS A PERCENT OF CONSUMPTION



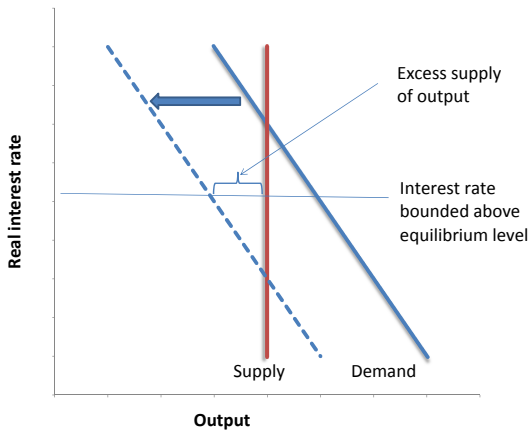
GOOGLE SEARCHES FOR “WITHDRAWAL PENALTY”



IN EQUILIBRIUM, THE REAL INTEREST RATE IS AT THE LEVEL THAT EQUATES OUTPUT DEMAND TO SUPPLY



EXCESS SUPPLY OF OUTPUT WHEN THE ZLB BINDS



REAL AND NOMINAL INTEREST RATES

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Central banks are firmly on the Friedman side, as expressed in the New Keynesian Calvo model

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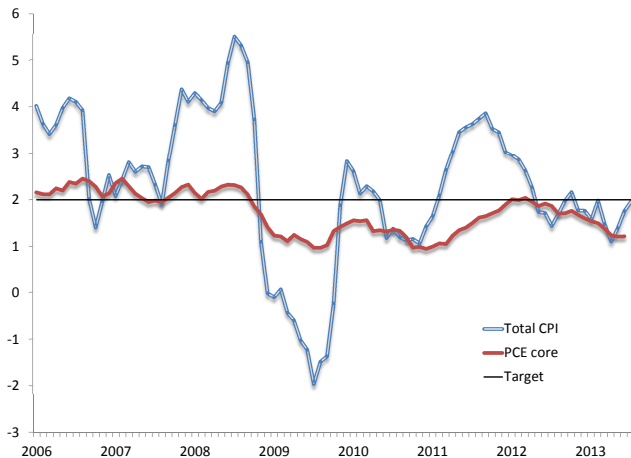
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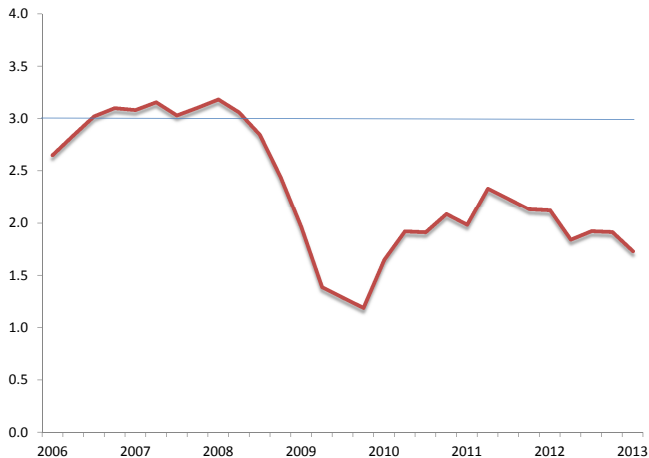
This behavior contrasts to the Great Depression, when extreme deflation occurred

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TWO MEASURES OF U.S. INFLATION



U.S. WAGE INFLATION



DMP MODEL

Focuses on the job-creation decision of the employer

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To reach the point where this gain occurs, the employer expends recruiting effort. The net benefit to the employer is the job value less the cost of recruiting a worker. With free entry to hiring, employers push recruiting effort to the point where the net benefit is zero. Thus the job value controls the amount of recruiting effort

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Unemployment is then low

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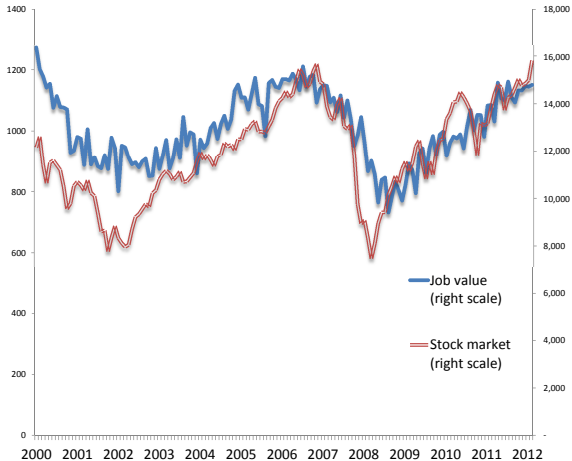
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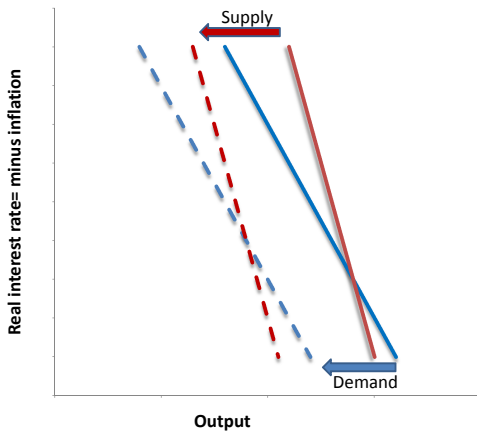
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Hall: In times of high risk premiums, when the stock market is low, the same risk premiums result in low discounted values of the future flow of value from a newly hired worker

JOB VALUE FROM JOLTS COMPARED TO WILSHIRE STOCK-MARKET INDEX



ZLB ANALYSIS WITH SHIFTS IN BOTH DEMAND AND SUPPLY



STOCKS OF BUSINESS, RESIDENTIAL, AND CONSUMER PHYSICAL CAPITAL

