Macroeconomics

Unemployment

Nicola Viegi

March 2017

Unemployment

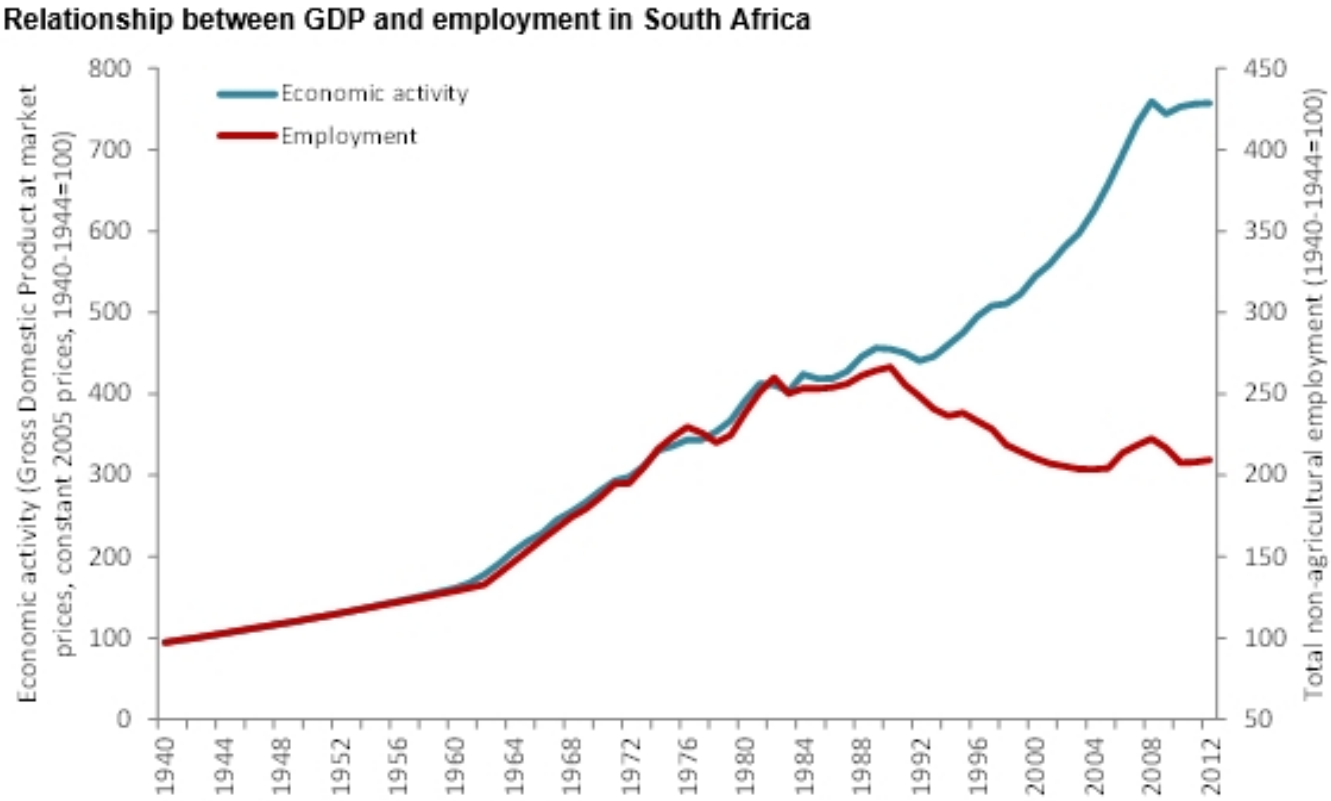
The Defining Charachteristics of the South African Economy

Unemployment

The Defining Charachteristics of the South African Economy

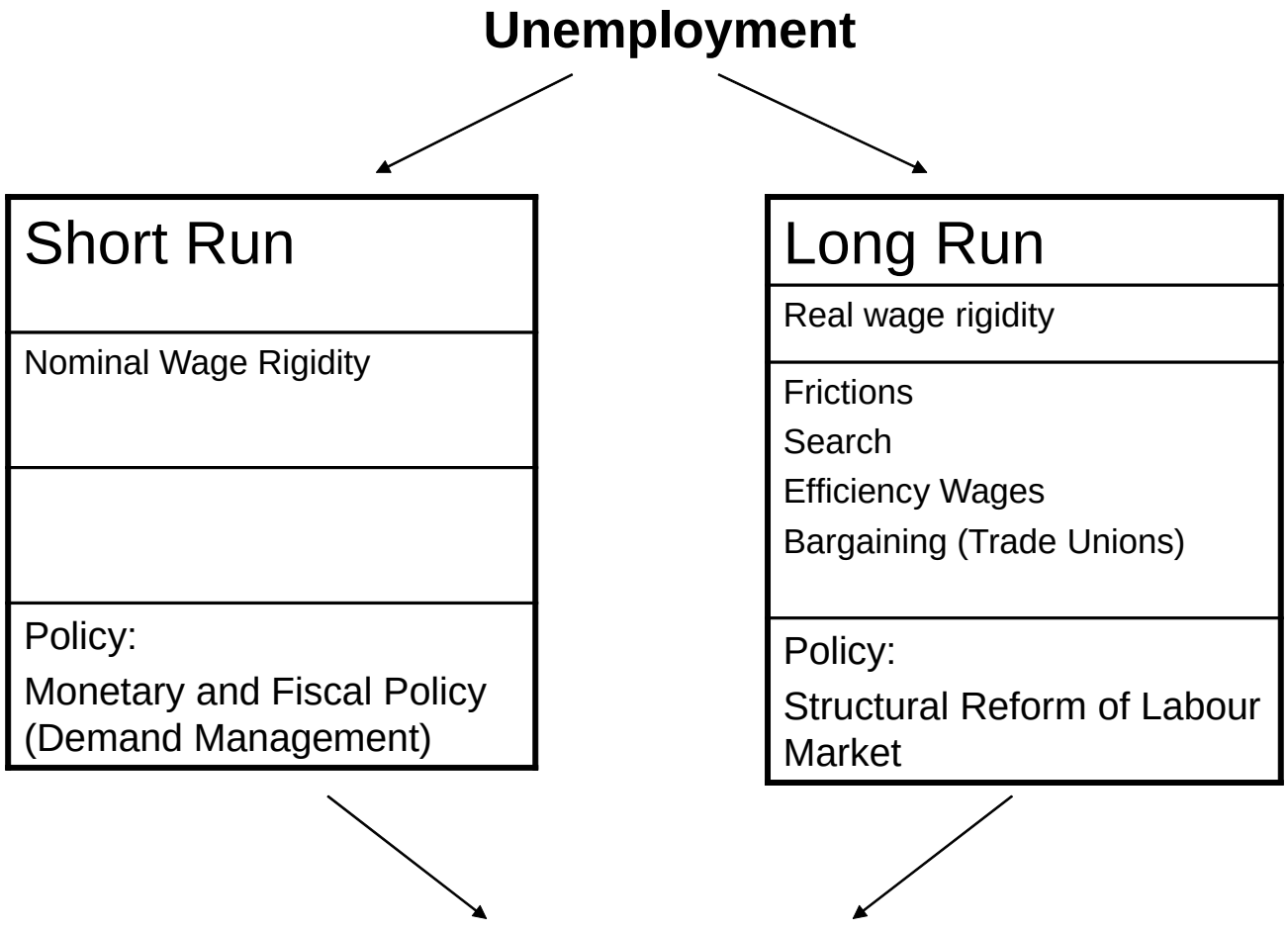
2a

28112016



2.*pdf* *Source: SA Reserve Bank and Stats SA*

Unemployment



Hystereris (Blanchard and Summers 1987) –
Permanence of Demand Shocks

Unemployment

- With Full Competitive Wage Flexibility - No Involuntary Unemployment
- Unemployment: Real Wage Do Not Adjust to Equalize Demand and Supply of Labour
- To Have Unemployment there Must Be Some Wage Rigidity
  - Short Run - Cyclical Unemployment (Correlated with GDP Fluctuations - Wages Adjust slowly - Nominal Wage Rigidity)
  - Long Run - Structural Unemployment - Long Run REAL wage rigidity (The market does not clear)

Theories of Equlibrium Unemployment

- "Search" Models - Voluntary Waiting To Maximise the Probability to Find a "Good" Job
- "Frictional Unemployment" - Time Lag in moving between Jobs

No Effect on Real Wage - Labour Market Perfectly Competitive, But in a Dynamic Setting Unemployment as Steady State Transition of workers Between Jobs

- Efficiency Wage Models - Productivity of Labour funtion of Wage Levels
- Bargaining Models - Monopoly Power in the Labour Supply, Trade Unions

Equilibrium Unemployment: Efficiency Wage Models

- Labour Productivity depends on the real wage paid by firms
- Firms may find unprofitable to cut wages in presence of involuntary unemployment, to keep productivity up

  attract higher quality applicants
  reduce turnover
  improve health of workers

- If wage cuts harm productivity, cutting wages may end up raising labour costs - wages could be set above-equlibrium resulting in unemployment

Basic Efficiency Wage Relationship

Single Firm Chooses Wage Offer and number of Employees to Maximise Profits

$$\max \pi = zR\left(a\left(w\right)L\right) - wL$$

where $a\left(w\right)$ shows that productivity of labour is a function of the real wage w and the revenue function $R\left(a\left(w\right)L\right)$ could be anything (in a competive market it will be $pY\left(a\left(w\right)L\right)$.

$$\begin{aligned} \frac{\delta\pi}{\delta L} &= zR'\left(a\left(w\right)L\right)a\left(w\right) - w = 0 \\ \frac{\delta\pi}{\delta w} &= zR'\left(a\left(w\right)L\right)a'\left(w\right)L - L = 0 \end{aligned}$$

The wage rate should be set so that:

$$\frac{wa'\left(w\right)}{a\left(w\right)} = 1$$

Basic Efficiency Wage Relationship

A Profit Maximising Firm which is unconstrained in hiring will offer a real wage w^* which satisfies the condition that the elasticity of effort with respect to the wage is unity

$$w^* = \text{Efficiency wage}$$

- Labour Demand for the individual firm - where marginal productivity of labour $zR'\left(a\left(w^*\right)L^*\right)a\left(w^*\right)$ equal the efficiency wage $w^{*.}$
- If aggregate $L^*\left(w^*\right) < L^s\left(w^*\right)$ - Some unemployed workers willing to work are unable to find a job - Equlibrium Unemployment

Efficiency Wage Relationship

Shapiro and Stiglitz Model

Equilibrium Unemployment as a Worker Discipline Device

- Monitoring workers effort is costly
- Real wage as incentive to work
- Workers Effort affected by cost and probability of Unemployment
- The Market Equilibrium shows involuntary unemployement

Shapiro and Stiglitz Model

Workers

- N number of workers, L number of workers employed, $\frac{N-L}{N} = u$ unemployment rate
- Workers choose the level of effort e, equal to 0 or some fix positive value, that maximises the intertemporal utility function $U\left(w\left(t\right), e\left(t\right)\right)$.
- Worker faces a constant probability of unemployment b, which provide an unemployment benefit $\overline{w}$. If worker shirks, the probability of being caught and fired is q

Shapiro and Stiglitz Model

Workers

The choice of effort will be based on the comparison between:

- V_E^N = *Expected* Utility of Being Employed and Non Shirking
- V_E^S = *Expected* Utility of Being Employed and Shirking
- V_u = *Expected* Utility of Being Unemployed

Expected Utility of a Non-Shirker Worker

$$rV_E^N = w - e + b\left(V_u - V_E^N\right) \rightarrow V_E^N = \frac{(w-e) + bV_u}{r+b}$$

Expected Utility of a Shirker Worker

$$rV_E^s = w + (b+q)\left(V_u - V_E^s\right) \rightarrow V_E^s = \frac{w + (b+q)\,V_u}{r+b+q}$$

Shapiro and Stiglitz Model

NO SHIRKING CONDITIONS

$$V_E^N \geq V_E^s$$

$$q\left(V_E^s - V_u\right) \geq e$$

$$w \geq rV_u + \left(r + b + q\right) e/q \equiv \widetilde{w}$$

- Critical wage is a funtion of V_u and probability of unemployment
- More costly monitoring implies higher non-shirking wage
- if no monitoring - anybody shirks

Shapiro and Stiglitz Model

Employers

The Firm has to decide the wage and the quantity of labour that maximise productivity of labour, given cost of monotiring q
Aggregate Production Function

$$Q = F(L)$$

Aggregate Labour Demand

$$F' = \widetilde{w}$$

Market Equilibrium

- High Wages, High Unemployment, High Effort
- Low Wages, Low Unemployment, Low Effort

"Equilibrium Occurs when each firm,..,finds it optimal to offer the going wage ($\widetilde{w}$) rather than a different wage. The key market variable which determines individual firms behaviour is V_u, the expected utility of an unemployed worker"

Shapiro and Stiglitz Model

Equlibrium

Expecte Utility for an Employed Worker $(=V_E^N)$

$$rV_E = w - e + b\left(V_u - V_E\right)$$

Expected Utility of an Unemployed Worker

$$rV_u = \overline{w} + a\left(V_E - V_U\right)$$

Solving Simultaneously

$$rV_E = \frac{\left(r+a\right)\left(w-e\right) + b\overline{w}}{r+a+b}$$

$$rV_u = \frac{\overline{w}\left(b+r\right) + a\left(w-e\right)}{\left(r+a+b\right)}$$

Substituting in the NSC $w \geq rV_u + \left(r+b+q\right)e/q \equiv \widetilde{w}$ and knowing that in steady state the flow of workers in employment $a\left(N-L\right)$ should be equal to the flow of workers made redundant bL, we obtain the Aggregate NSC

Shapiro and Stiglitz Model

Aggregate Non Shirking Condition

$$w \geq e + \overline{w} + (e/q)(b/u + r) \equiv \widetilde{w}$$

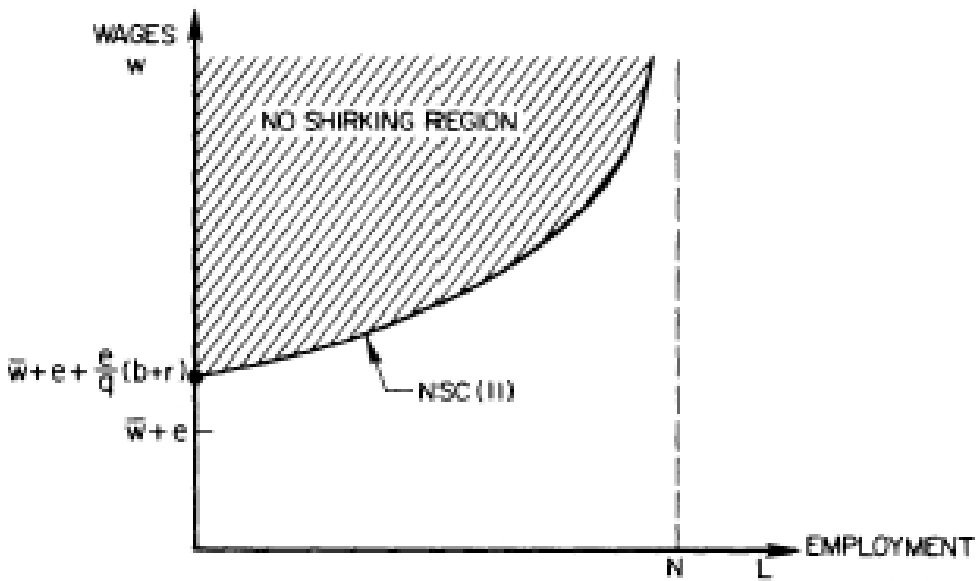


FIGURE 1. THE AGGREGATE NO-SHIRKING CONSTRAINT

Shapiro and Stiglitz Model

Equlibrium

$$F'(L) = e + \overline{w} + (e/q)(b/u + r)$$

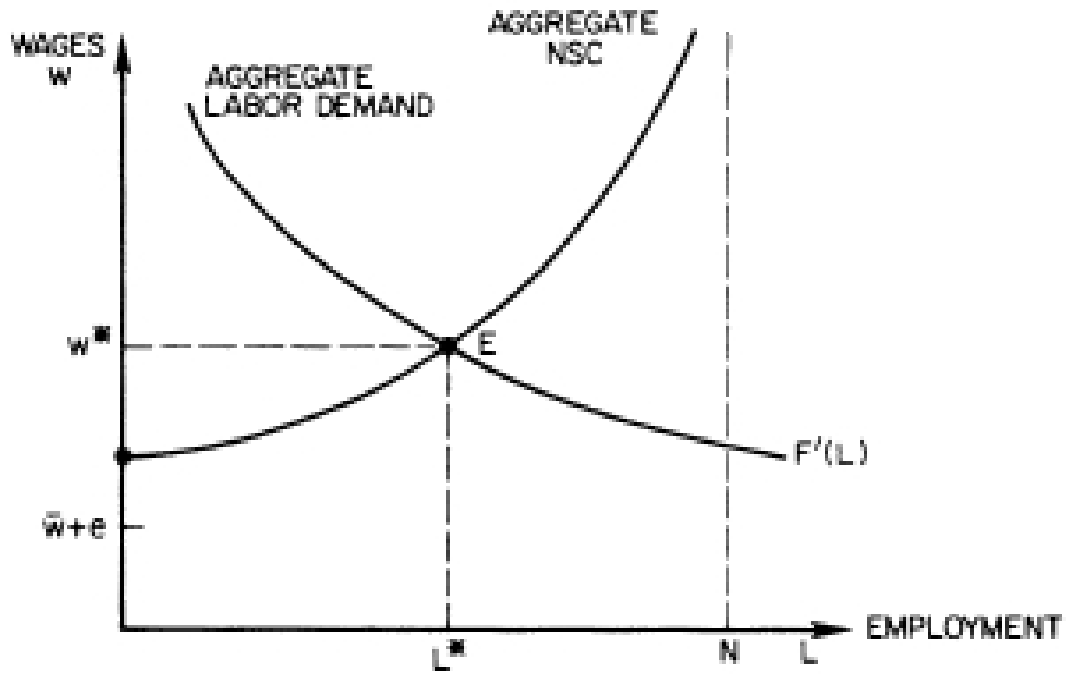


FIGURE 2. EQUILIBRIUM UNEMPLOYMENT

Shapiro and Stiglitz Model

In Equlibrium Unemployment is NECESSARY to discipline workers (Old Karl Marx Idea)
Unemployment and Equilibrium real wage will be higher for:

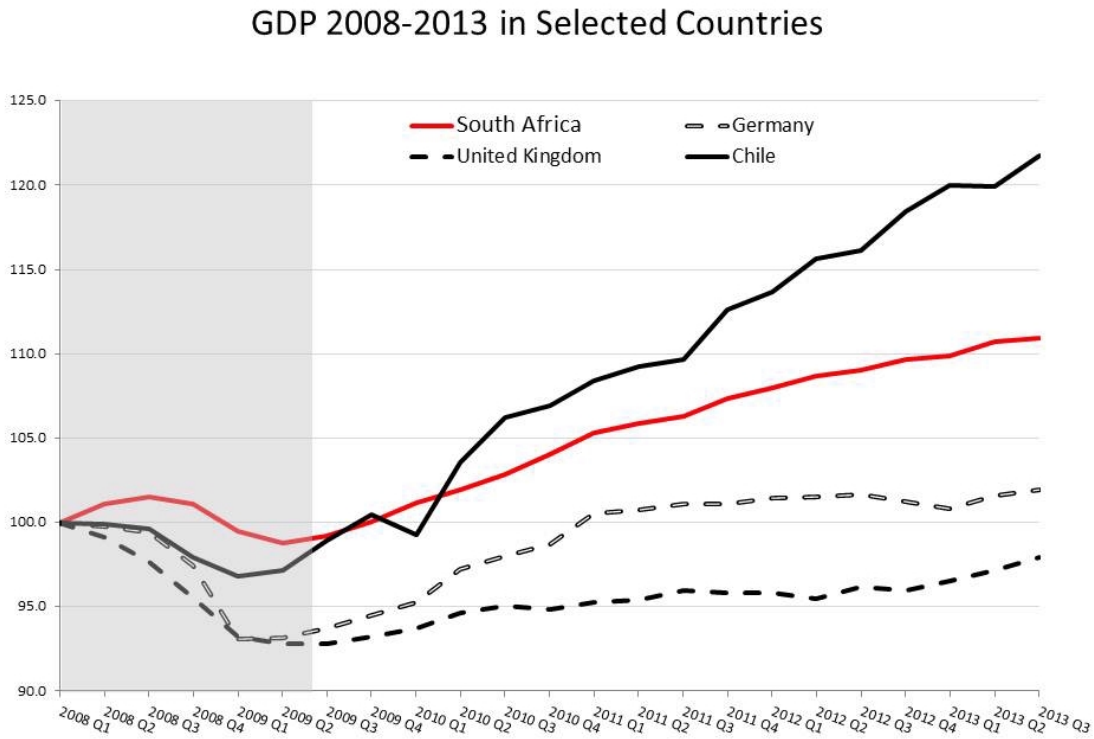
- Higher Unemployment Benefits $\overline{w}$
- Lower Detection rate q
- Higher quit rate b

Long Term Involuntary Unemployement is a Product of Structural Inefficiency of Monitoring, Rate of Job Turnover and Labour Market Institutions (Minimum Wage, Job Security Measures, etc.)

Connecting Long Run and Short Run Unemployment - Hysteresis

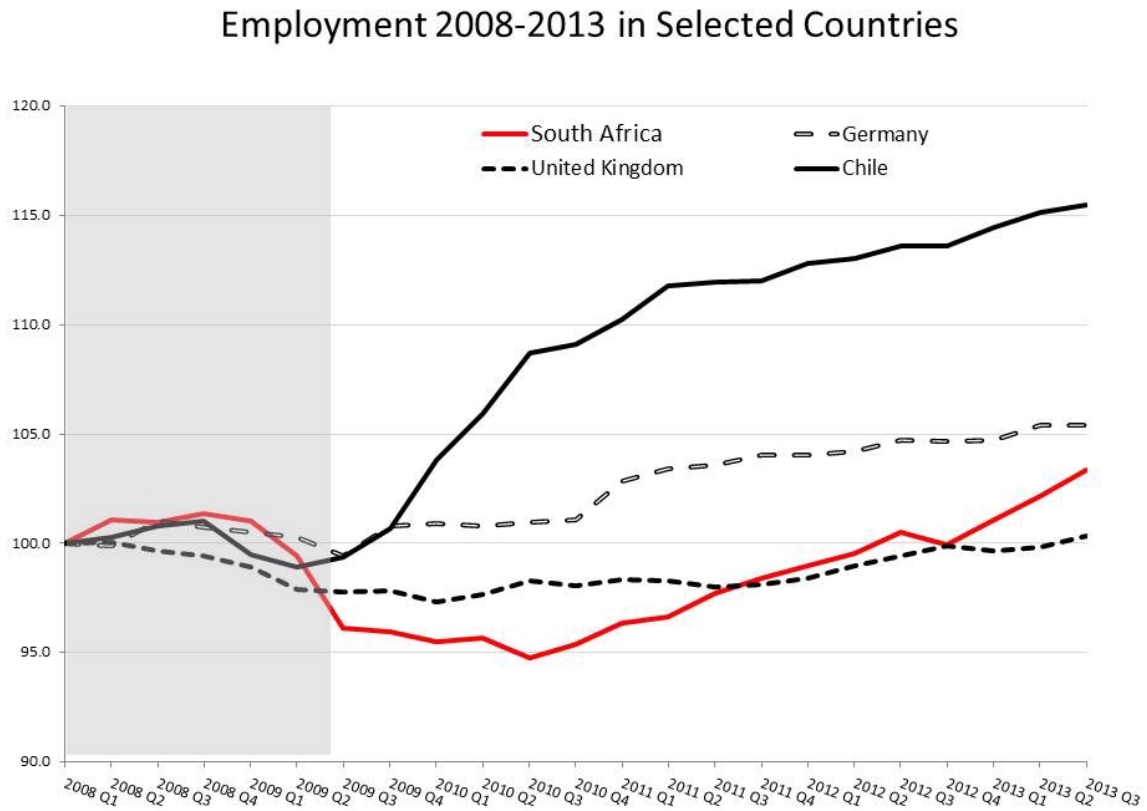
- Hysteresis implies that an economy does not return to its original equilibrium after it has been exposed to some exogenous - but temporary shock.
- The reason: those who have the power to determine wages are different from the overall labour force.
  - Insiders - Outsiders (Membership Theories)
  - Short Term - Long Term Unemployed (Duration Theories)

Example - Effect of Financial Crisis in South Africa



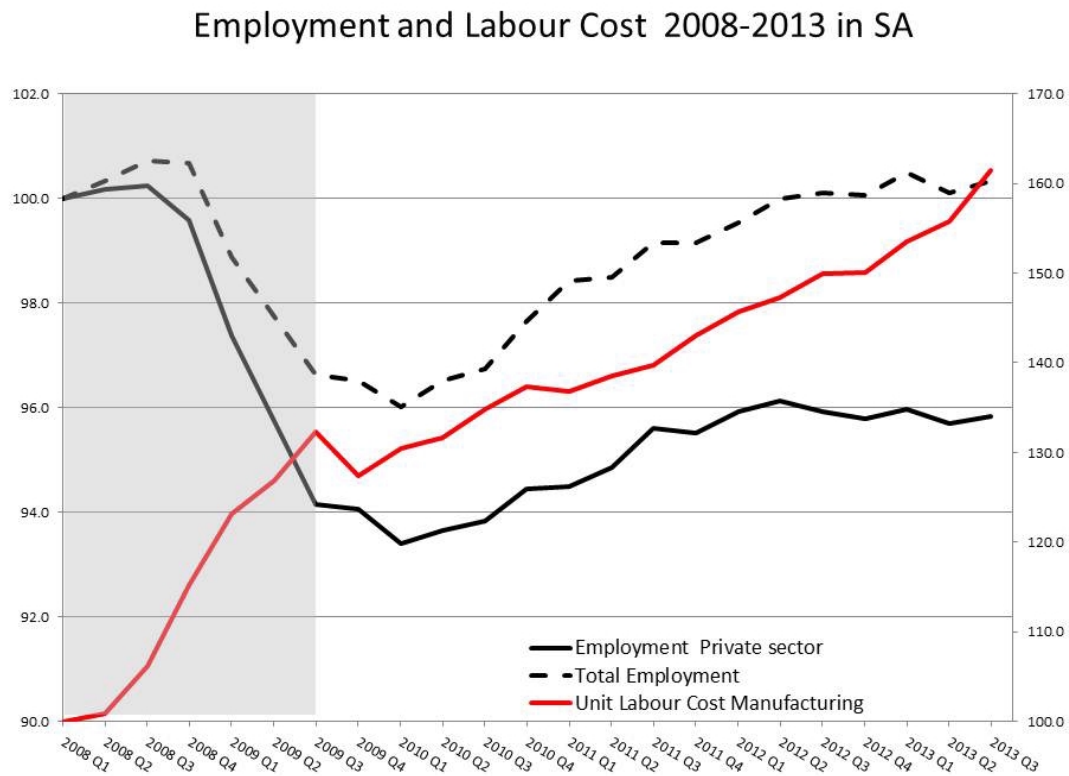
GDP Effect Relitively Mild

Example - Effect of Financial Crisis in South Africa



Effect on Employment: A Disaster

Example - Effect of Financial Crisis in South Africa



Labour Cost Increased even When Demand for Labour Weakened

Hysteresis

Blanchard and Summers model

- Many firms in the economy (identical)
- Wage bargaining determine the nominal wage
- Firms set employment
- Demand for firm i

$$y_i = (m - p) - a\,(p_i - p)$$

- Demand for labour by firm i

$$n_i = (m - w) - a\,(w_i - w)$$

- Employment depends on the process of wage setting

Hysteresis

Blanchard and Summers model

- **Pure Insider Model**
  - Employees in firm i set wages such that:

$$En_i = n_i^*$$

-
  - where n_i^* = number of insiders
  - This implies:

$$(Em - Ew) - a\,(w_i - Ew) = n_i^*$$

  - At the aggregate level this implies:

$$n = n^* + (m - Em)$$

If the number of insiders is given by the number of employed in the previous period, we have

$$n = n_{-1} + (m - Em)$$

Hysteresis

Blanchard and Summers model

- After an adverse shock that reduces employment, workers who are still employed, have no desire to cut nominal wages to increase employment
- Implications
  - equilibrium unemployment is equal to last period's value of unemployment
  - no tendency to return to any fixed equilibrium
- Same results for Duration: Long Term Unemployed as Outsiders

Policy Implications

- Left to themselves, Unemployment does not decrease
  - Monetary Policy (and any stabilization policy) Helps
  - Reduction of the Power of Insiders
  - Re-franchising the Unemployed
- European Unemployment Seems to Follow This Picture.
- SA Unemployment: maybe, but the model does not need to be interpreted literally (Who are the insiders and the outsiders in SA?).
- The point is – Short Run Shocks and Long Run Outcomes are not necessarily separated