Keynes and the Euro Crisis: Some Observations

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Motivation

- Euro area: persistently high unemployment, double-dip recession.
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- Recurring calls for structural reforms to make labor markets more flexible

"...Further significant reductions in unit labor costs and excess profit margins are particularly urgent, especially in countries where unemployment is very high. To achieve this, first, **flexibility in the wage determination process has to be strengthened**, for example, where relevant, by relaxing employment protection legislation, abolishing wage indexation schemes, lowering minimum wages and permitting wage bargaining at the firm level..." (ECB, Monthly Bulletin, August 2012)
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- **Question**: Is so much emphasis on wage flexibility justified?
The classical theory of employment
The Classical Theory of Employment: Labor Demand

The diagram illustrates the relationship between wage and employment. The wage is represented on the vertical axis, and employment on the horizontal axis. The downward sloping line represents the labor demand, denoted as $mpn$. The equation $w - p$ is used to determine the equilibrium point, where $w$ is the wage and $p$ is the price level. The point of intersection between the labor demand curve and the $w - p$ line indicates the equilibrium employment level, denoted as $n$. The graph visually demonstrates how changes in wage and price levels affect the demand for labor.
The Classical Theory of Employment: Labor Supply

$w - p$
The Classical Theory of Employment: Equilibrium

\[ n = l \]

Labor supply \((mrs)\)

Labor demand \((mpn)\)

Employment

Labor force

Wage

\[ w - p \]
Unemployment in the Classical Theory of Employment

\[ w - p \]

\[ u \]

Labor demand \((mpn)\)

Labor supply \((mrs)\)

Employment

Labor force
Classical Unemployment Cures (I): Real Wage Reduction

\[ w - p \]

\[ w' - p' \]

\[ n \]

\[ n' \]

\[ l' \]

\[ l \]
Classical Unemployment Cures (II): Employment Subsidy

![Graph showing wage and labor supply and demand curves with employment subsidy impact.](image-url)
Keynes vs the Classics in the General Theory

- The classical theory of employment
- The Keynesian theory of employment
The Keynesian Theory of Employment

Aggregate Demand → Output → Employment

Technology
The Keynesian Theory of Employment

![Graph showing the relationship between Wage and Employment]
Keynes vs the Classics in the General Theory

- The classical theory of employment
- The Keynesian theory of employment

- Price setting by firms:

\[ p_t = \mu^p + (w_t - mpn_t) \]

- Implied wage schedule:

\[ w_t - p_t = mpn_t - \mu^p \]
The Keynesian Theory of Employment

The diagram illustrates the wage schedule in the context of employment. The wage is denoted as $w$ and the price level as $p$. The difference $w - p$ indicates the margin at which the wage and price levels are compared. The employment level is represented by $n$, showing the equilibrium point where the wage schedule intersects with the employment axis.
Unemployment in the Keynesian Theory of Employment

The diagram illustrates the relationship between wage and employment. The wage schedule and labor supply intersect at the equilibrium wage and employment levels. The difference between the wage and price level ($w - p$) is represented by the distance $u$ from the intersection point to the horizontal axis. The intersection point is labeled as $n$, representing employment, and $l$, representing the labor force. The diagram helps to understand the concept of unemployment ($u$) in the Keynesian framework.
Cure for Keynesian Unemployment: Aggregate Demand Expansion

Wage

Labor supply (mrs)

\[ w - p \]

\[ w' - p' \]

\[ u \]

\[ u' \]

Employment

Labor force

Wage schedule
Households/Preferences

\[ E_0 \sum_{t=0}^{\infty} \beta^t U(C_t, N_t; X_t) \]

where

\[ U(C_t, N_t; X_t) = \left( \log C_t - \frac{N_t^{1+\varphi}}{1 + \varphi} \right) X_t \]

\[ x_t = \rho_x x_{t-1} + \varepsilon_t^x \]
The Standard New Keynesian Model: Main Ingredients (I)

- Households/Preferences

\[ E_0 \sum_{t=0}^{\infty} \beta^t U(C_t, N_t; X_t) \]

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- Firms/Technology

\[ Y_t = A_t N_t^{1-\alpha} \]

where

\[ a_t = \rho_a a_{t-1} + \epsilon_t^a \]
Monopolistic competition in goods and labor markets
The Standard New Keynesian Model: Main Ingredients (II)

- Monopolistic competition in goods and labor markets
- Staggered price and wage setting à la Calvo
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- Staggered price and wage setting à la Calvo
- Monetary policy: Taylor rule

\[ i_t = \rho + \phi_\pi \pi_t + \phi_y y_t \]
The Standard New Keynesian Model: Main Ingredients (II)

- Monopolistic competition in goods and labor markets
- Staggered price and wage setting à la Calvo
- Monetary policy: Taylor rule

\[ i_t = \rho + \phi_{\pi} \pi_t + \phi_y y_t \]

- Simplifying assumptions
  - no fiscal sector
  - closed economy
  - no endogenous capital accumulation
Employment Determination in the New Keynesian Model

- Equilibrium employment in the NK model
  \[ n_t = \frac{1}{1 - \alpha} (y_t - a_t) \]

- Equilibrium output in the NK model
  \[ y_t = E_t \{ y_{t+1} \} - (i_t - E_t \{ \pi_{t+1} \}) + (1 - \rho_x) x_t \]
  Equivalently:
  \[ y_t = x_t - E_t \left\{ \sum_{k=0}^{\infty} (i_{t+k} - E_t \{ \pi_{t+1+k} \}) \right\} \]
  Thus,
  \[ n_t = \frac{1}{1 - \alpha} \left( x_t - E_t \left\{ \sum_{k=0}^{\infty} (i_{t+k} - E_t \{ \pi_{t+1+k} \}) \right\} - a_t \right) \]
  \[ \Rightarrow \text{key role for endogenous response of monetary policy} \]
Gains from Wage Flexibility in the New Keynesian Model

- Equilibrium employment in the NK model

\[ n_t = \frac{1}{1 - \alpha} \left( x_t - E_t \left\{ \sum_{k=0}^{\infty} (i_{t+k} - E_t\{\pi_{t+1+k}\}) \right\} - a_t \right) \]

- Under constant real interest rate:

\[ n_t = \frac{1}{1 - \alpha} (x_t - a_t) \]
Gains from Wage Flexibility in the New Keynesian Model

- Equilibrium employment in the NK model

\[ n_t = \frac{1}{1-\alpha} \left( x_t - E_t \left\{ \sum_{k=0}^{\infty} \left( i_{t+k} - E_t\{\pi_{t+1+k}\} \right) \right\} - a_t \right) \]

- Under constant real interest rates:

\[ n_t = \frac{1}{1-\alpha} \left( x_t - a_t \right) \]

- Key message:
  - no direct impact of wage adjustments on labor demand and employment
  - indirect effect:

\[ \downarrow w \Rightarrow \downarrow \pi \Rightarrow \downarrow i \Rightarrow \downarrow r \Rightarrow \uparrow y \Rightarrow \uparrow n \]

\[ \Rightarrow \text{importance of endogenous monetary policy response ("policy rule")} \]
Gains from Wage Flexibility in the New Keynesian Model

- Equilibrium employment in the NK model
  \[ n_t = \frac{1}{1 - \alpha} \left( x_t - E_t \left\{ \sum_{k=0}^{\infty} (i_{t+k} - E_t\{\pi_{t+1+k}\}) \right\} - a_t \right) \]

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    \Rightarrow importance of endogenous monetary policy response (policy rule)

- Illustration: Effects of a payroll tax shock on employment
  \[ \tau_t = \rho \tau_{t-1} + \varepsilon_t \]
Dynamic Responses of Employment to a Payroll Tax Shock

Inflation Coefficient

Employment Response to Payroll Tax Shock

Periods
Gains from Wage Flexibility in the New Keynesian Model: Some Simulations

- Two "exogenous factors":
  - Wage stickiness: $\theta_w \in (0, 1)$
  - Policy responsiveness to inflation: $\phi_{\pi} \in (1, 2]$

- Effects on employment volatility $[\sigma(n_t)]$
- Effects on welfare

$$\Pi \sim (1 + \varphi) \text{var}(n_t) + \left(\frac{\epsilon_p}{\lambda_p(1 - \alpha)}\right) \text{var}(\pi^p_t) + \left(\frac{\epsilon_w}{\lambda_w}\right) \text{var}(\pi^w_t)$$

- Conditional analysis:
  (i) technology shocks
  (ii) preference shocks
Wage Flexibility, Monetary Policy and Employment Volatility (I): Technology Shocks

![3D Graph showing the relationship between Wage Stickiness, Inflation Coefficient, and Std. deviation of employment.](image-url)
Wage Flexibility, Monetary Policy and Welfare (I): *Technology Shocks*
Decomposition of Welfare Losses (I): Technology Shocks

(i) Employment

(ii) Price Inflation

(iii) Wage Inflation
Wage Flexibility, Monetary Policy and Employment Volatility (II): *Preference Shocks*
Wage Flexibility, Monetary Policy and Welfare (II): *Preference Shocks*
Decomposition of Welfare Losses (III): Preference Shocks

(i) Employment

(ii) Price Inflation

(iii) Wage Inflation
Some Caveats

Closed economy assumption: no room for "competitiveness channel"

\[ \downarrow w \Rightarrow \downarrow p \Rightarrow \uparrow q \Rightarrow \uparrow y \Rightarrow \uparrow n \]
Some Caveats

- Closed economy assumption: no room for "competitiveness channel"

\[
\downarrow w \Rightarrow \downarrow p \Rightarrow \uparrow q \Rightarrow \uparrow y \Rightarrow \uparrow n
\]

However:
- impact on terms of trade not invariant to monetary policy response
- beggar-thy-neighbour policy
- effectiveness depends on degree of pass-through (if pricing to market)
Some Caveats

- Closed economy assumption: no room for "competitiveness channel"
  \[ \downarrow w \Rightarrow \downarrow p \Rightarrow \uparrow q \Rightarrow \uparrow y \Rightarrow \uparrow n \]

- Offsetting channel (I): if no interest rate response (e.g. exchange rate peg):
  \[ \downarrow w \Rightarrow \downarrow \pi \Rightarrow \uparrow r \Rightarrow \downarrow y \Rightarrow \downarrow n \]
Some Caveats

- Closed economy assumption: no room for "competitiveness channel"

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- Offsetting channel (I): if no interest rate response (e.g. exchange rate peg):

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- Offsetting channel (II): additional channel with non-Ricardian households:

\[ \downarrow w \Rightarrow \downarrow c \Rightarrow \downarrow y \Rightarrow \downarrow n \]
Concluding Remarks

- Euro area: persistently high unemployment, double-dip recession
- Recurring calls for structural reforms to make labor markets more flexible
- **Main lesson:** impact of such reforms on employment likely to be limited, unless accompanied by an expansion of aggregate demand.
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However:
- *Monetary policy:* zero lower bound (US, UK, Japan, euro area) or unavailable (euro area countries)
- *Fiscal policy:* emphasis on fiscal consolidation, especially in countries with worse employment performance
- *External demand:* global slowdown
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- **Challenge:** how to stimulate aggregate demand in high unemployment countries without amplifying existing imbalances (public and private debt, external,...)
Wage Flexibility and Welfare under the Optimal Monetary Policy

![Graph showing the relationship between wage stickiness and welfare loss under optimal policy.]
Components of Welfare Loss under Optimal Policy

Decomposition of Welfare Losses under the Optimal Monetary Policy

- employment
- wage inflation
- price inflation