

Reflections on US Labour Market Performance

Lawrence F. Katz

1. Introduction

The United States has produced rapid employment growth (almost entirely in the private sector) and an impressive unemployment record relative to most other advanced nations over the past two decades. The contrast of strong US labour market performance to persistent high unemployment throughout much of the OECD has been particularly striking in the 1990s. From 1990 to the fourth quarter of 1997, total employment in the US increased by 10.9 per cent, and the US unemployment rate declined from 5.5 per cent to 4.7 per cent. Over the same period in OECD Europe, total employment actually declined by 1.7 per cent and the unemployment rate increased from 8.0 per cent to 10.2 per cent (OECD 1998, pp. 40–41). Furthermore, the United States has combined strong employment growth with low and declining inflation in the 1990s.

How has the US economy managed to do a much better job at creating private sector jobs to absorb the growth of its working-age population than other advanced nations? The conventional explanation is that the US labour market is relatively flexible, and labour markets in Western Europe and some other OECD nations are relatively rigid (e.g. OECD 1994; Krugman 1994). The US labour market has rather decentralised wage-setting with limited influence of unions and government, and thereby is viewed as exhibiting greater flexibility of real wage levels and of relative wages. US labour market flexibility also arises from unemployment benefits of more limited duration, less stringent employment protection rules, and more geographically mobile workers than in most OECD nations. Although this US model appears to have generated buoyant employment growth in recent decades, the United States has also experienced slow real wage growth and a substantial increase in overall wage inequality and in educational wage differentials. The consequent large declines in the real and relative earnings of less-educated and low-paid workers have been associated with a large rise in the non-employment rate among less-skilled men, increased family income inequality, high and persistent poverty rates, and a wide range of social problems concentrated among those from disadvantaged backgrounds and living in low-income neighbourhoods. The nations of continental Europe have experienced much greater real wage growth and much less increase in wage and income inequality than the United States.

Thus no advanced nation appears to have been able to fully escape rising wage inequality, secular increases in unemployment, or both. Unemployment and/or non-employment rates have increased significantly for the less skilled throughout the OECD. Both adverse macroeconomic events (e.g. oil price increases in the 1970s, a slowdown in total factor productivity growth since 1973, and high real interest rates in the 1980s and 1990s) and strong shifts in labour demand against the less skilled (possibly arising from rapid skill-biased technological change and globalisation pressures) probably

have played important roles in the jobs problems of OECD nations. But, as the comparison of the United States and Europe suggests, the jobs problem manifests itself somewhat differently in different countries. The typically unconventional Paul Krugman (1994, p. 71) has summarised the hard-headed version of the conventional flexibility hypothesis for these patterns by noting that ‘the European unemployment problem and US inequality problem are two sides of the same coin’ in which markets will tend ‘to produce increasingly unequal outcomes, or to produce persistent high unemployment if this tendency is repressed’. While this interpretation probably contains substantial grains of truth, reality appears to be somewhat messier. Unemployment among the unskilled has tended to be lower in some rigid wage nations (e.g. Norway, Germany) than in more flexible Britain and Canada (Nickell 1996). Labour market adjustments to changes in the relative demand for skill also depend on education and training policies, macroeconomic policies and experiences, and wage-setting institutions in a manner possibly more complicated than suggested by a simple diabolical trade-off between inequality and unemployment (Freeman and Katz 1994, 1995).

This paper undertakes two primary tasks. The first is to provide a more detailed assessment of the performance of the flexible US labour market over the past few decades. The second is to attempt to distil the lessons from the US experience for how to improve the labour market outcomes of less-skilled and disadvantaged workers, while maintaining the benefits of labour market flexibility. Section 2 places the evolution of US unemployment in a comparative perspective. Section 3 uses a simple framework for thinking about the determinants of the equilibrium unemployment rate (the ‘natural rate of unemployment’) to examine alternative explanations for divergent unemployment patterns in the United States and other OECD nations. Section 4 documents growing inequality in US labour market outcomes and measures of economic well-being. Section 5 offers some brief concluding remarks on the available evidence on the effectiveness of alternative policies to assist low-wage and disadvantaged workers under the US flexible labour market model.

2. The US Unemployment Experience in Comparative Perspective

Table 1 summarises the unemployment experiences of the United States, selected other countries, and the OECD as a whole from 1950 to 1997.¹ The OECD unemployment rate averaged about 3 per cent during the 1950s and 1960s. Unemployment throughout the OECD increased sharply in the aftermath of the oil shocks of the 1970s and continued rising in the worldwide recession of the early 1980s. The overall OECD unemployment rate more than doubled from 2.8 per cent in the 1960s to 7.0 per cent in the 1980s, and has remained at an even higher rate in the 1990s.

1. The data, for the most part, represent OECD standardised unemployment rates which should be more comparable between countries than the published unemployment rates from national sources.

Table 1: Unemployment Rates in Selected OECD Countries^(a)
Unemployment as a per cent of total labour force

	1950s	1960s	1970s	1980s	1990s ^(b)	1997
United States	4.4	4.7	6.1	7.2	6.0	4.9
Canada	3.8	4.7	6.6	9.3	9.9	9.2
Japan	2.1	1.3	1.7	2.5	2.7	3.4
OECD Europe	–	–	4.5	8.8	10.0	10.4
France	1.5	1.7	3.8	9.0	11.1	12.4
Germany ^(c)	4.9	0.6	1.9	5.7	6.5	7.7
Italy	7.2	3.8	4.7	7.5	10.2	12.1
Netherlands	1.5	0.9	4.0	9.6	6.9	5.2
Norway	1.7	1.7	1.6	2.8	5.3	4.1
Portugal	2.2	2.4	4.6	7.3	5.8	6.8
Spain	2.1	2.3	4.2	17.5	20.3	20.8
Sweden	1.7	1.5	1.8	2.2	7.0	10.2
United Kingdom	1.7	2.0	4.4	10.1	8.7	7.1
Australia	1.5	2.0	3.9	7.5	9.1	8.7
New Zealand	0.9	0.9	1.5	4.1	8.1	6.7
OECD	3.5	2.8	4.3	7.0	7.3	7.3

Notes: (a) The reported numbers are OECD standardised unemployment rates.

(b) The average for 1990 to 1997.

(c) West Germany, data for the 1990s are from Council of Economic Advisers (1998).

Sources: Martin (1994, Table 1) and OECD (1997, 1998).

Table 1 indicates that most major OECD nations shared a pattern of rising unemployment from the 1960s to the 1970s to the 1980s. But the magnitudes of the increases vary widely across countries, with the largest increase in Spain, and unemployment experiences have diverged somewhat in the 1990s, with continued increases from the 1980s in most European countries and Australia, but unemployment declines in the United States, United Kingdom, and Portugal.

The table highlights the distinctive aspects of the evolution of US unemployment. The United States has moved from having a consistently higher unemployment rate than the OECD as a whole in the 1950s, 1960s and 1970s to having a much lower rate in the 1990s. The United States is the only major OECD economy with a lower average unemployment rate in the 1990s (from 1990 to 1997) than in the 1970s: 6.0 per cent in the 1990s versus 6.1 per cent in the 1970s. In fact, the current US unemployment rate of 4.3 per cent in April 1998 is the lowest experienced since 1970.

The composition of US unemployment also differs substantially from many other OECD nations. The United States has much larger month-to-month flows into and out of unemployment than most OECD economies (OECD 1994) and a much lower

incidence of long-term unemployment than any advanced OECD economy. Long-term unemployment (six months and over) as a percentage of total unemployment in 1996 stood at 17.4 per cent in the United States as compared with 27.7 per cent in Canada, 48.7 per cent in Australia, 61.5 per cent in France, 66.7 per cent in Portugal, and 72.2 per cent in Spain (OECD 1996). US unemployment rates for the working-age population are particularly low (and employment/population ratios are particularly high) for young workers (those aged 16 to 24), women and older workers (those aged 55 to 64). But the non-employment rate for US prime-aged men increased from the early 1970s to the mid 1990s, with a rise in persistent withdrawal from the labour force among less-educated and low-wage males (Juhn 1992; Murphy and Topel 1997). Long-term joblessness in the United States tends to show up in non-employment, but not in unemployment. In fact, the non-employment rate of males aged 25 to 54 was higher in the United States in 1996 than in the OECD as a whole (12.1 per cent versus 11.9 per cent), despite a lower US unemployment rate among this group: 4.3 per cent versus 5.5 per cent (OECD 1997). Overall, the US labour market does a relatively good job of moving new entrants and women into employment. European labour market institutions (especially employment protection laws) seem geared to keeping married males in work, but appear to make it tougher for new entrants to gain steady employment.

2.1 Cyclical versus structural unemployment

Most analytical discussions of unemployment since Friedman (1968) and Phelps (1968) start with the hypothesis that at any given time, a national economy is characterised by a 'natural rate of unemployment' (also denoted the non-accelerating inflation rate of unemployment or NAIRU). Aggregate demand expansions can (at least temporarily) push the economy below this rate of unemployment, but only at a cost of accelerating inflation. Shocks that raise unemployment above the natural rate similarly lead to decelerating inflation. As long as policy avoids explosive inflation or deflation, the economy cannot remain persistently above or below the natural rate of unemployment, but it may fluctuate around it.

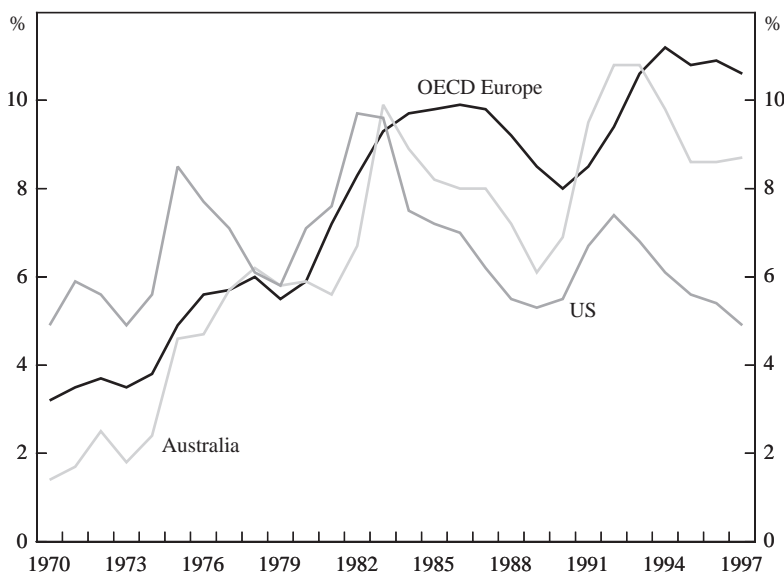
This hypothesis suggests separating changes in unemployment into 'cyclical' fluctuations around the natural rate, and 'structural' movements in the natural rate itself. In an influential but extremely long sentence, Milton Friedman (1968, p. 8) explained: 'The natural rate of unemployment is the level which would be ground out by the Walrasian system of general equilibrium equations, provided that there is imbedded in them the actual structural characteristics of the labour and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labour availabilities, the costs of mobility, and so on'. Thus, changes in labour market institutions, changes in unemployment benefits policies, demographic changes and Friedman's catch-all category of 'so on' are potential structural sources of changes in unemployment.

Figure 1 illustrates the time patterns of the unemployment rates for the United States, OECD Europe, and Australia from 1970 to 1997.² The figure suggests cyclical

2. See Debelle and Swann (1998) for a detailed assessment of the recent evolution of unemployment and employment in Australia.

unemployment fluctuations around a relatively stable natural rate in the United States, and a possible upward drift in the natural rate in Europe and Australia. The unemployment rates appear to have ratcheted upward in Europe and Australia with each successive business cycle. The acceleration in inflation in most European economies in the late 1980s, despite much higher unemployment rates than in the 1960s or early 1970s, strongly indicates a large rise in natural rate of unemployment. The deceleration of inflation in the early 1990s suggests some additional cyclical component has played a role in recent high European unemployment.

Figure 1: Unemployment in the US, OECD Europe and Australia



2.2 Unemployment and inflation in the United States and OECD Europe

I next explore in a bit more depth, the extent to which a relatively stable natural rate of unemployment since 1970 or so is consistent with the experience of the flexible US labour market, and inconsistent with the experience of less flexible OECD labour markets (proxied by OECD Europe). The standard framework for estimating the natural rate of unemployment (u_n) is the expectations-augmented (or accelerationist) Phillips curve in which the rate of growth of price inflation (or more generally the difference between current inflation and expected inflation) depends on the deviation of the unemployment rate from the natural rate:

$$\Delta p - \Delta p_{-1} = -\beta(u - u_n) + \varepsilon = \alpha - \beta u + \varepsilon \quad (1)$$

where p is the log of the price level, u is the unemployment rate, β is a positive coefficient, α equals βu_n , and ε is an error term. Expected inflation is assumed to equal the lagged inflation rate (Δp_{-1}). A regression of the change in the inflation rate on the unemployment

rate yields estimates of the natural rate of unemployment ($u_n = -\alpha/\beta$). The basic idea behind Equation (1) is that price inflation increases when unemployment is below the natural rate and decreases when it is above.

Columns (1) to (3) in Table 2 present estimates of several versions of Equation (1) for the United States using annual data from 1970 to 1997, with the adjusted Consumer Price Index (CPI-U-X1) as the measure of the price index (for comparability with our European data) and the overall civilian unemployment rate. Gordon's (1997a, b) state-of-the-art reduced-form Phillips curve specification includes longer lags of past inflation, price control dummies, a slowly moving natural rate, and controls for supply shocks. But this simple formulation does a reasonable job of capturing the relation between US price inflation and unemployment. The restriction that the coefficient on lagged inflation (Δp_{-1}) equals one in the price-price Phillips curve equation does not do much injustice to the US data for the period since 1970.³ The estimates in column (2) of

Table 2: Price Inflation and Unemployment in the United States and OECD Europe

	United States			OECD Europe	
	(1)	(2)	(3)	(4)	(5)
Constant	5.08 (1.26)	4.93 (1.22)	5.68 (1.30)	7.33 (1.55)	4.29 (1.36)
D80			-0.04 (0.59)	2.08 (1.11)	2.04 (1.30)
D90			-0.92 (0.58)	2.13 (1.38)	2.96 (1.58)
Δp_{-1}	1.08	1.00*	1.00*	0.73 (0.09)	1.00*
Unemployment rate (u)	-0.85 (0.23)	-0.77 (0.18)	-0.84 (0.20)	-0.89 (0.23)	-0.78 (0.27)
Durbin-Watson statistic	1.71	1.60	1.78	1.73	1.80
R ²	0.74	0.74	0.77	0.89	0.84
n	28	28	28	25	25

Notes: The US regressions cover 1970 to 1997; the regressions for OECD Europe include 1971 to 1995. The dependent variable in all regressions is the inflation rate (Δp). * indicates that the coefficient is constrained to equal 1. The numbers in parentheses are standard errors.

$p = 100 \times \log(\text{Consumer Price Index})$, using the CPI-U-X1 for the United States and the average inflation rate for OECD Europe (using CPI information in each country and relative PPP GDP weights); u is the civilian unemployment rate measured in per cent; D80 = 1 for the 1980s and 0 otherwise; D90 = 1 for the 1990s and 0 otherwise.

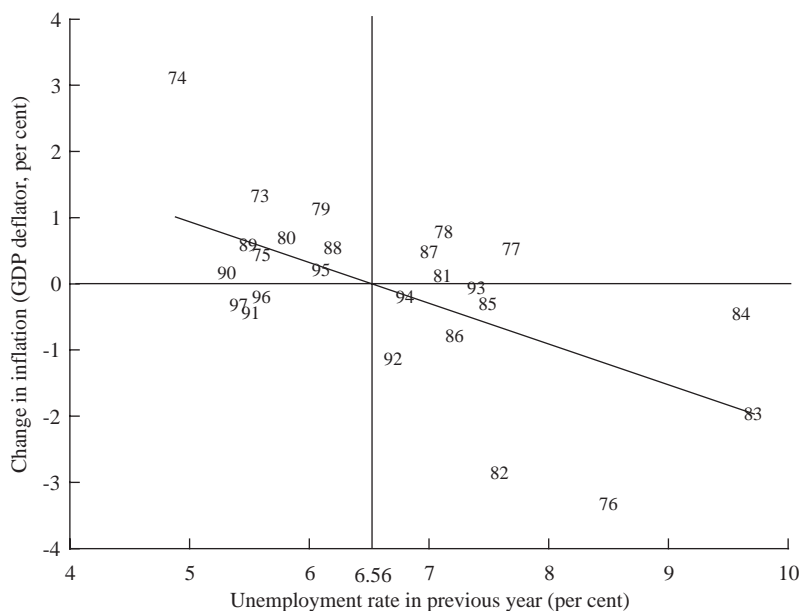
Sources: Citibase and the Council of Economic Advisers (1998) for the United States. The data for OECD Europe were provided by Olivier Blanchard and are based on data from the OECD.

3. The coefficient on lagged inflation in the price-price relation of Equation (1) is much lower for the pre-1970 period and has increased over time as inflation has become more persistent in line with the Lucas (1976) critique of the Phillips curve.

Table 2 imply a natural rate of unemployment of 6.4 per cent. Despite the high t-statistics, Staiger, Stock and Watson (1997) have shown that such estimates do not tightly determine the natural rate once one takes into account parameter uncertainty. Experimentation with time trends, or with decade dummies, suggests a rather stable US natural rate, but provides some evidence of a reduction in the US natural rate of unemployment in the 1990s (to 5.7 per cent according to column (3) of Table 2).

The extent to which inflation accelerates when unemployment is low and decelerates when the rate is high is further illustrated for the United States in Figure 2. Following Staiger, Stock and Watson (1997), we plot the change in inflation (using the chain-weighted GDP deflator) on unemployment in the previous year for the past 25 years and the OLS prediction line for the relationship. The implied natural rate of unemployment is 6.56 per cent over this period. The plot shows that inflation tends to accelerate in the next year when unemployment is below the estimated (time-invariant) natural rate (9 out of 12 observations) and tends to decelerate when unemployment is above this unemployment level (9 out of 13 observations). Inflation decelerated in 1996 and 1997 despite quite low unemployment rates in the previous year, further suggesting a decline in the US natural rate in the 1990s or some favourable (transitory) supply shocks (Gordon 1997b). One can do somewhat better with more sophisticated models, or with a demographically adjusted unemployment rate. Still, the natural rate hypothesis with a reasonably stable NAIRU and cyclical fluctuations in unemployment around the NAIRU seems to work fairly well for the United States. But the experience of the past few years of continued declines in unemployment below previous estimates of the NAIRU (typically 6 per cent or higher in the early 1990s) with no acceleration in inflation, raises the issues of what appears to have caused a recent decline in the US natural rate of unemployment.

Figure 2: Change in Inflation versus Unemployment in Previous Year
US; annual data; 1973–97



We now turn to OECD Europe. Figure 1 illustrates that the unemployment rate rose from 3.2 per cent in 1970 to 10.8 per cent in 1995. Columns (4) and (5) of Table 2 present estimates of simple reduced-form Phillips curve specifications for OECD Europe where inflation (Δp) is measured by the average inflation rate in OECD Europe (using CPI information in each country and relative PPP GDP weights) and the unemployment measure (u) is the unemployment rate for the whole of OECD Europe (the ratio of total unemployment to the total labour force). To capture the trends displayed in Figure 1 in a relatively agnostic manner, we use dummy variables for each decade.

In contrast to the United States, there has been a clear upward shift in the natural rate. Column (4) of Table 2 implies point estimates of the natural rate for OECD Europe of 5.5 per cent in the 1970s, 8.1 per cent in the 1980s, and 9.3 per cent in the 1990s, although the shifts are not very precisely estimated. There also appears to be a strong relation between the change in inflation and the (increasing) natural rate: the coefficient on unemployment is of similar magnitude and nearly as significant as the corresponding coefficient for the United States.

The (time-varying) natural rate model appears to be fairly consistent with unemployment and inflation behaviour in the US and Europe. The large differences in unemployment experiences of the past twenty-five years largely reflect a large rise in structural unemployment in most OECD countries relative to the United States.

3. Possible Explanations for US Unemployment Performance

A large and growing literature examines a wide variety of explanations for the rise in the natural rate of unemployment in most OECD economies and for cross-country differences in levels and changes in unemployment (e.g. Bean 1994; Jackman, Layard and Nickell 1996; Layard, Nickell and Jackman 1991; OECD 1994; Phelps 1994). In this paper, I focus on a selective list of factors that may play a role in the distinctive unemployment performance of the US economy: the treatment of the unemployed (the generosity of the welfare state), wage-setting institutions, and employment protection policies.

The US labour market has been characterised by less generous and shorter duration unemployment benefits, less union and government influence in wage-setting, and fewer onerous restrictions on hiring and firing than most other OECD countries for many decades. This US model translated into higher unemployment than experienced by other OECD economies prior to the 1970s and has been associated with relatively low unemployment in the 1990s. This pattern suggests that large macroeconomic shocks and market forces pushing towards greater wage inequality (e.g. skill-biased technological change) may have differential impacts depending on an economy's labour welfare-state policies and labour market institutions. The short duration of unemployment benefits and flexibility of wages may make the United States less susceptible to developing widespread long-term unemployment following an adverse shock.

3.1 A simple framework

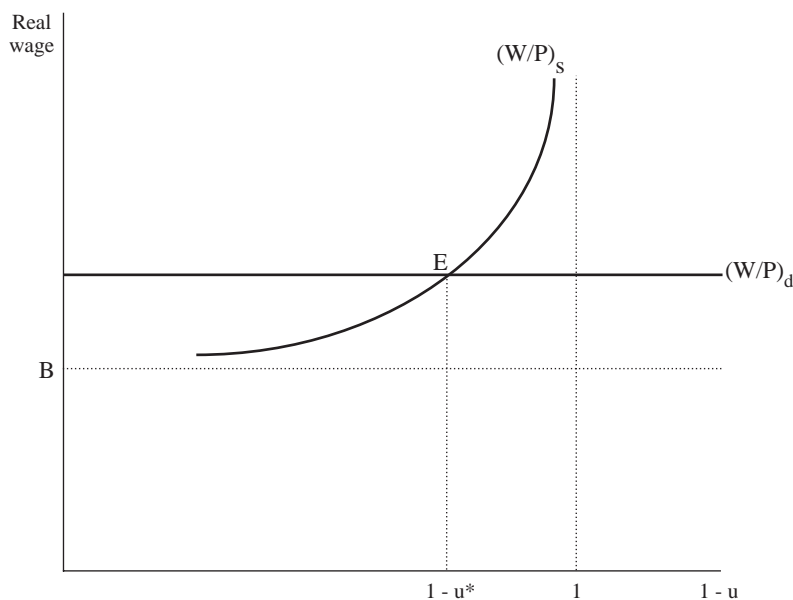
I begin by developing a simple framework based on Blanchard and Katz (1997), for thinking about the determinants of the natural rate of unemployment. Theories of the

natural rate of unemployment have developed along four main lines emphasising different aspects of wage-setting. The competitive approach focuses primarily on the heterogeneity of reservation wages, and how, especially at the bottom end of the wage distribution, workers shift back and forth between employment and non-employment in response to changes in labour market opportunities (Juhn, Murphy and Pierce 1993).

The three other main approaches explore deviations from competitive wage-setting. The efficiency-wage approach focuses on the complexity of transactions of labour between workers and firms, and the potential role of wages in affecting productivity. Firms may choose to pay workers more than their reservation wage in order to get and keep better workers, economise on turnover costs, or to motivate greater effort or co-operation from their employees (Katz 1986). Furthermore, firms and workers typically have some bargaining power. The bargaining power of workers arises from the fact that they cannot be costlessly and instantaneously replaced. The bargaining power of firms arises because most workers cannot costlessly and instantaneously find an equivalent job. The matching approach emphasises the large flows of workers in the labour market and has formalised wage determination as the result of decentralised bargaining (Diamond 1982; Pissarides 1990). Formal models of union wage-bargaining behaviour represent a similar alternative approach (Layard, Nickell and Jackman 1991).

Despite their many differences, these four approaches have a common basic structure. They can be represented in a simple graph like Figure 3, which has the real wage on the vertical axis and one minus the unemployment rate on the horizontal axis. They each lead to a natural rate of unemployment determined by the intersection of an upward-sloping 'supply wage relation' (or wage-setting curve), such as $(W/P)_s$ in Figure 3, and a horizontal 'demand wage relation' (or price-setting curve), such as $(W/P)_d$ in Figure 3. The demand wage relation gives the wage that firms can afford to pay. The supply wage curve shows the wage firms have to pay as a function of unemployment.

Figure 3: Determination of the Natural Rate of Unemployment



These two relations can be represented by the following two equations:

$$W/P = B g(u, X_s) \quad g_u < 0 \quad (2)$$

$$W/P = A f(X_d) \quad (3)$$

where W is the nominal wage, P is the price level, u is the unemployment rate, B is the reservation wage, A measures the level of total productivity (under the assumption of Harrod-neutral technological progress), X_s includes factors affecting wage-setting (such as unionisation, wage-setting institutions, and the extent of labour market flows), and X_d represents all the factors which affect the real wage that firms can afford to pay (including the real interest rate and prices of other non-labour inputs). The reservation wage B is likely to depend on the generosity of unemployment benefits, the value of leisure, non-labour income, and 'black market' earning opportunities. The reservation wage might also be thought of as an 'aspiration wage' to the extent it is affected by fairness considerations related to past or customary rates of real wage growth.

Equation (2) gives the wage as a function of labour market conditions. Each of the main theories has the implication that the tighter the labour market, the higher the real wage given the reservation wage. In a weak labour market, workers will be willing to settle for a lower wage in bargaining/matching models. In a strong labour market, the bargained wage will be much higher than the reservation wage. Efficiency wage models also tend to imply the tighter the labour market, the higher the wage required to prevent shirking (by increasing the cost of job loss), raise morale or limit turnover. The exit rate from unemployment, rather than the unemployment rate itself, is likely to be the correct measure of labour market tightness in efficiency wage and matching/bargaining models. What matters to the unemployed is not how many of them there are, but how many there are relative to the number of hires firms are willing to make. Thus the escape rate from unemployment (H/U), where H is the number of hires and U the number of unemployed, belongs in X_s . The $(W/P)_s$ curve could also represent a standard upward-sloping labour supply curve in a competitive labour market.

The demand wage relation, given by Equation (3) and represented by the horizontal line $(W/P)_d$ in Figure 3, shows the real wage consistent with the employment decisions of firms. If we focus on the medium run – a period long enough for firms to adjust all factors of production including capital – we can think of the real wage of the firm as independent of the level of employment. This can be thought of as a factor-price frontier, giving the real wage consistent with other input prices and the condition that firms make zero pure profit. In this case, the demand wage depends on the level of productivity, characteristics of the production function, and other input prices (including the real interest rate). When firms operate in imperfectly competitive goods markets, the behaviour of the mark-up of price over marginal cost will also matter for wages. The higher the price of goods given the wage, the lower the real wage paid by firms.

The natural rate of unemployment (u^*) is the rate at which the supply wage equals the demand wage:

$$g(u^*, X_s) = (A/B) f(X_d) \quad (4)$$

This equilibrium is given by point *E* in Figure 3. The natural rate of unemployment is negatively related to the ratio of productivity to the reservation wage (A/B) and depends on the other factors affecting the supply wage and demand wage. I next use this framework to help assess alternative explanations for differences in the evolution of the natural rate of unemployment in the United States and other OECD nations.

3.2 Unemployment benefits, insider power and hysteresis

The resources available to the unemployed may be an important determinant of the natural rate of unemployment. An increase in the generosity of unemployment benefits generates two effects that tend to raise the natural rate. The first direct effect is an increase in the reservation wage relative to productivity, leading to an upward shift of the supply wage relation $(W/P)_s$ in Figure 3. Increased transfers to the unemployed are likely to require increased taxes (typically payroll taxes) on the employed and thereby increase the ‘tax wedge’ and produce a downward shift in the demand wage $(W/P)_d$ in Figure 3 (interpreting W/P as the take-home real wage).⁴

Much microeconomic evidence indicates that more generous unemployment benefits – in terms of both benefit levels and the duration of benefit availability – are associated with longer duration of unemployment spells (e.g. Katz and Meyer 1990; Meyer 1990). Of course, the longer unemployment spells of benefit recipients could be offset by shorter spells of non-recipients (Levine 1993). But increased benefit generosity for experienced workers tends to reduce the cost of job loss at a given unemployment rate and thus raise the bargaining power of incumbent workers as well as firms’ optimal efficiency wages. A rather consistent finding in cross-country studies using data from the 1980s and 1990s is that greater unemployment benefit generosity (higher replacement rates and especially greater duration of benefits) is associated with higher unemployment (Layard, Nickell and Jackman 1991; Forslund and Krueger 1997).

By almost any measure, the United States has a less generous unemployment benefit system and overall set of welfare-state supports for the unemployed and poor relative to most other advanced economies. The OECD (1994) rates the US average replacement rate (over five years of unemployment for various demographic groups) as the third lowest among 21 countries with data (only Italy and Japan come out as less generous). The relatively short duration of unemployment benefits (6 months for most eligible workers but sometimes expanded by several more months in recessions) is the driving force behind the US ranking.

Less generous support for the unemployed is clearly a possible explanation for a more flexible US labour market and currently lower structural unemployment in the United States than in Europe or Australia. But similar differences in unemployment benefits were apparent in the 1950s, 1960s and 1970s when the United States had persistently higher unemployment than these other countries. Although unemployment benefits have expanded in some countries over the past few decades (e.g. Portugal,

4. A potentially offsetting effect is that higher unemployment benefits may allow the unemployed to wait longer to find better employment matches, increasing average productivity and the demand wage. But little evidence exists suggesting such an effect is empirically important.

Norway), large increases in unemployment are present in countries with rather stable estimates of replacement rates and benefit duration (e.g. Germany) and those with declining generosity (e.g. United Kingdom). Thus an explanation focusing on the welfare state policies must explain why generous benefits are associated with much higher unemployment in the 1990s than in the 1960s or 1970s. Two possibilities are that the generosity of the treatment of the unemployed affects the dynamic response to adverse macroeconomic shocks or has become more costly in terms of unemployment in the face of a decline in the relative demand for less-skilled workers. Explanations for the strong recent performance of the United States because of wage flexibility arising from relatively little union influence or government influence in wage-setting, also must focus on how such institutions affect the evolution of unemployment in the face of shocks.

This logic has motivated the analysis for explanations based on ‘hysteresis’ – the notion that the history of unemployment itself may have long-lasting effects on the natural rate (Blanchard 1991; Blanchard and Summers 1986). Various shocks to many OECD economies, including the oil shocks of the 1970s and tight monetary policy in the 1980s, led to high unemployment. Even after these shocks had played out by the late 1980s, sustained high unemployment dominated by long-term unemployment translated into a higher natural rate of unemployment. The periods of high unemployment were of shorter duration in the United States, and the lower generosity of unemployment benefits and lower insider bargaining power, meant the unemployed continued to put strong pressure on wage-setting in the United States.

A number of potential channels exist for hysteresis in unemployment. A long period of high unemployment, particularly when unemployment benefits are long-lasting, leads to an increase in the proportion of the long-term unemployed. This pattern is apparent in the 1980s in most countries with persistent high unemployment into the 1990s. If the human capital of the long-term unemployed depreciates or if they become discouraged and less effective in job search, their impact on wage bargaining will decrease, leading to an upward shift of the $(W/P)_s$ relation and a higher natural rate of unemployment. Concentrated high rates of joblessness and (perceived or real) lack of opportunity in the legitimate labour market may further erode human capital by increased crime involvement and drug use. These changes may have long-lasting effects across generations through family and neighbourhood effects. Sociological factors may also effectively increase the reservation wage of the unemployed by reducing the stigma of joblessness and making it more acceptable to utilise benefits to their fullest (Lindbeck 1995).

Much evidence is suggestive of such ‘social hysteresis’ effects in concentrated poverty areas of US cities (Wilson 1996). The empirical case for these hysteresis mechanisms affecting the evolution of national unemployment rates is somewhat ambiguous. But Ball (1997) presents striking evidence that those OECD countries with longer or larger disinflations, especially those with both long disinflations and generous (long duration) unemployment benefits, experienced larger increases in the natural rate of unemployment from 1980 to 1990. Under this scenario, the United States experienced no increase in the natural rate of unemployment in the 1980s because of a sharp but rapid disinflation in the early 1980s and because of short duration unemployment benefits reducing hysteresis effects.

3.3 Relative demand shifts

Skill-biased technological progress may well have important effects on unemployment. It is simplest to think of two groups of workers: the skilled and the unskilled. The unskilled are paid a wage very close to their reservation wage. The skilled are likely to be paid a wage much higher than their reservation wage. Shifts in the demand for the unskilled imply movements along a very flat labour supply schedule, shifts in the demand for skilled workers imply movements along a steep labour supply curve. Thus, relative shifts in demand towards the skilled lead to an increase in the natural rate when the reservation wages of the skilled and unskilled do not move proportionately with shifts in the wages firms can afford to pay them. Juhn, Murphy and Topel (1991) and Murphy and Topel (1997) present suggestive evidence of such differences in labour supply responses to wage shocks for high- and low-skill US males.

A rapid pace of relative demand shifts favouring the more skilled (possibly driven by an increased rate of skill-biased technological change or by globalisation factors) as compared with growth in the relative supply of skilled workers can have differential effects on unemployment and wage inequality depending on labour market institutions. Higher relative minimum wages, more generous social benefits for the non-employed, and greater pressure for wage compression in most OECD nations in comparison with the United States, imply a larger increase in unemployment among the less skilled and a greater increase in overall unemployment. These same factors imply larger increases in wage inequality in the United States.

This hypothesis suggests a much larger increase in unemployment for unskilled than for skilled workers in rigid-wage countries. The absolute differences in unemployment rates between high- and low-education males have increased sharply in most countries, but the proportional changes have not been very different over the past two decades (Nickell and Bell 1995). If education provides only a noisy indicator of skill, a rise in unemployment among a small share of less-skilled but highly educated workers could generate such a pattern of similar proportional increases in unemployment for high and low education groups. Furthermore the rise in within-group wage inequality in the United States even among the highly educated suggests that policies maintaining within-group wage compression could reduce the employment of relatively less-able workers in all education groups especially if support for the unemployed is generous and such individuals are quite reluctant to compete for less-skilled jobs. But patterns of changes in unemployment and employment/population ratios by demographic group do not appear to line up closely with differences in the growth of between-group wage inequality across countries (e.g. Card, Kramarz and Lemieux 1996; Krueger and Pischke 1997; Nickell and Bell 1995).

3.4 Labour market rigidities: employment protection

Employment protection policies are often mentioned as a possible culprit for high European unemployment, and the lack of restrictions on hiring and firing is viewed as facilitating rapid employment growth in the United States. OECD (1994) rates the United States as having the lowest degree of legislated employment protection among 21 OECD countries. This raises the question of whether greater employment protection should increase the natural rate of unemployment.

Matching models provide a useful framework for assessing the effects of such restrictions (Blanchard and Katz 1997). Firing restrictions are likely to have three separate effects. First, firing restrictions lead firms to retain workers they otherwise would have laid off. This will lead to fewer job separations, and thus fewer hirings in equilibrium. Second, these restrictions may reduce the effectiveness of the matching of workers to firms and lower average productivity and the demand wage. Third, firing restrictions insulate incumbent workers from the outside labour market, strengthens them in bargaining, leading them to obtain a higher wage for given labour market conditions.

Thus, firms can afford to pay a lower wage, but workers can extract a higher one at a given exit rate from unemployment (H/U). The equilibrium exit rate from unemployment unambiguously has to go down: labour market prospects have to be sufficiently dismal to make workers accept the lower wage despite their higher bargaining power. The effect on unemployment, however, is ambiguous. In terms of Figure 3, the demand wage declines, but the supply wage schedule could move in either direction depending on the relative magnitudes of the effects of greater worker bargaining power at a given exit rate (a leftward shift) combined with a lower exit rate (a rightward shift). Greater firing restrictions lead to a more sclerotic labour market with lower flows of workers and a longer average duration of unemployment, but they do not necessarily lead to a higher rate of unemployment (e.g. Blanchard 1998).

The cross-country evidence strongly suggests that greater employment protection is associated with lower worker flows and a higher level of long-term unemployment, but there appears to be little robust relationship between firing restrictions and overall national unemployment rates (Blanchard and Portugal 1998; Nickell 1996). Although employment protection appears to have large effects on the operation of the labour market and on unemployment duration, its effect on unemployment appears ambiguous when it is analysed in isolation. But the interaction of firing restrictions with other labour market distortions (e.g. high minimum wages and/or strong union roles in influencing wages in new positions) and with product market restrictions (e.g. regulatory barriers to the formation of new enterprises) might have a large effect on the unemployment rate of some groups (young workers, new labour market entrants) and thereby affect the overall unemployment rate. Such interactions may play important roles in the greater concentration of high unemployment among young workers and women in Spain and Italy. It is also unclear how the introduction of fixed-length contracts not covered by employment protection affects the overall labour market. They allow more new entrants to be hired, but may reduce investments in stable employment relationships. Employment protection by insulating insiders from labour market pressures may also increase the persistence of unemployment in response to shocks. These are important issues for future research.

More generally, the multiple features of US labour market flexibility (a less generous welfare state, decentralised wage-setting with only modest direct union and government influence, comparatively few onerous restrictions on hiring and firing) combined with relatively unfettered product markets may add up to more than their individual parts in terms of creating an environment of strong employment growth and much labour market competition. But such overall flexibility with relatively low levels of social protection implies much greater disparities in wages and incomes than other OECD nations.

Substantial geographic labour mobility in response to regional shocks also may play a role in the ability of the US economy to respond to shifts in product demand (Blanchard and Katz 1992). Pragmatic monetary policy (that has recently been willing to experiment with gradual reductions in unemployment rates to below previous estimates of the NAIRU) also may be an important component of US success in the 1990s.

These observations suggest that piecemeal reforms of 'rigid' labour markets (e.g. just reducing unemployment benefit levels) may have a small impact in the face of large remaining labour and product market restrictions and overly cautious monetary policy. For example, Italy, with stringent employment protections rules and a strong impact of wage adjustments favouring low-wage workers (the *scala mobile*) in the 1980s, generated high and persistent unemployment despite less generous unemployment benefits than the United States. And moves to temporary contracts have not solved high unemployment in France and Spain. Such interaction effects are difficult to identify in standard cross-country regressions with few observations. Thus more detailed analyses of the effects of specific labour market reforms may be helpful.

3.5 Has the US natural rate of unemployment declined in the 1990s?

The continuing decline of US unemployment over the past few years to levels well below existing estimates of the NAIRU may be indicative of favourable structural developments that have reduced the US NAIRU. Several hypotheses have been offered for this strong recent employment and inflation performance.

The first posits favourable demographic shifts from the entry of baby-boom cohorts in the 1970s to much smaller young cohorts in the 1990s. But the decline in unemployment is found in all demographic groups and the timing does not appear quite right. A second posits increased anxiety and perceived (and possibly actual) job insecurity which has reduced the willingness of workers to hold out for high wages even in a seemingly very tight labour market. A rise in earnings instability (Gottschalk and Moffitt 1994) and some evidence of (cyclically adjusted) increased rates of permanent job displacement are consistent with this view (Farber 1996). But the high levels of consumer confidence in recent polls do not suggest unusually widespread anxiety. A third hypothesis is that favourable supply shocks (e.g. a decline in the rate of growth of health care costs, spectacular reductions in computer prices, increased competitive pressures on pricing from a strong dollar) are the driving force, and these factors may be transitory (Gordon 1997b).

A fourth explanation is that the efficiency of job matching and labour market competition have been increased by the growth of private sector employment intermediaries (especially temporary help agencies). Employment in temporary help services increased from under 0.5 per cent of US employment in the early 1980s to approximately 2 per cent by 1996, and employment growth in temporary agencies accounted for approximately 10 per cent of all US employment growth in the first several years of the recovery from the unemployment peak of 1992 (Autor 1998). The greater ease for firms of locating qualified and screened employees through intermediaries lowers hiring costs, creates greater pressure on wage-setting of incumbent workers by

reducing bottlenecks in the labour market, and may facilitate better employment matches. An inward shift in the Beveridge curve relationship between the help-wanted index (a proxy for the vacancy rate) and unemployment is consistent with this hypothesis (Bleakley and Fuhrer 1997), but declining use of help-wanted ads with more use of intermediaries may play a role in this pattern.

In summary, only time and further research will allow us to determine the extent that the recent strong US unemployment record with low inflation reflects structural changes reducing the NAIRU or favourable transitory factors. The strong economic expansion of the past five years and currently tight labour market appears to have improved the economic situation of less-educated and disadvantaged workers, but changes in the distribution of labour market outcomes over the past few decades display the downside of the US flexible labour market model.

4. Rising Inequality in US Labour Market Outcomes

The inequality of economic well-being has increased substantially along many dimensions in the United States over the past two decades. The enormous disparities in the fortunes of American families in recent years have largely been associated with labour market changes that have increased overall wage inequality, and shifted wage and employment opportunities in favour of the more educated and more skilled. These changes have been carefully documented by many researchers using a wide variety of publicly available household and establishment data sets.⁵ While much debate exists concerning the causes of rising inequality, there is substantial agreement concerning the ‘facts’ that need to be explained.

Recent broad changes in US labour market outcomes can be summarised as follows:

- From the 1970s to the mid 1990s wage dispersion increased dramatically for both men and women, reaching levels of wage inequality for men that are probably greater than at any time since 1940. The weekly earnings of a full-time, full-year worker in the 90th percentile of the US earnings distribution (someone whose earnings exceeded those of 90 per cent of all workers) relative to a worker in the 10th percentile (someone whose earnings exceeded those of just 10 per cent of all workers) grew by approximately 45 per cent for men and 35 per cent for women from 1971 to 1995 (Katz and Autor 1998). Earnings inequality has expanded even more rapidly if one considers the very top part of the distribution (the upper 1 per cent). This pattern of rising wage inequality was reinforced by changes in the distribution of non-wage compensation and working conditions (Hamermesh 1998; Pierce 1997).
- Wage differentials by education and occupation increased. The labour market returns to years of formal schooling, academic achievement as measured by test scores, work-place training, and computer skills appear to have greatly increased in the 1980s and early 1990s. The earnings of young college graduates increased by 33 per cent relative to those of young high school graduates from 1979 to 1995. But the gender differential in wages has narrowed substantially since 1979.

5. See Freeman and Katz (1994), Gottschalk (1997), Gottschalk and Smeeding (1997), Katz and Autor (1998), and Levy and Murnane (1992) for recent surveys of the literature and more detailed references.

- Wage dispersion expanded within demographic and skill groups. The wages of individuals of the same age, education, and sex, working in the same industry and occupation, are much more unequal today than ten or twenty years ago.
- The real earnings of less-educated and lower-paid workers appear to have declined relative to those of analogous workers two decades ago. Non-employment rates for less-educated males have increased over the past two decades and the official employment and unemployment numbers understate this rise since the burgeoning population of those incarcerated (over 1.5 million in 1995) is not included in the civilian non-institutional population (Freeman 1996).
- Increased cross-sectional earnings inequality has not been offset by increased earnings mobility. Permanent and transitory components of earnings variation have risen by similar amounts (Gottschalk and Moffitt 1994). But this implies that year-to-year earnings instability has also increased substantially over the past two decades.
- These labour market changes have translated into a large widening of the family income distribution, as the earnings of husbands and wives have become more positively correlated over time (Károlyi and Burtless 1995). While pre-tax money income is a noisy measure of economic well-being, increased inequality is also apparent when one directly examines consumption and accounts for in-kind benefits and government transfers (e.g. Cutler and Katz 1991; US Department of Labor 1995a).

The overall spreading-out of the US wage distribution for men and women from 1971 to 1995 is illustrated in Figure 4 using data on real weekly wages of full-time, full-year workers from the March Current Population Survey (CPS).⁶ The figure shows an almost linear spreading-out of the wage distributions for both men and women, substantial gains of women on men throughout the wage distribution, and declining real earnings for males below the 60th percentile. The timing of the overall rising wage inequality (as measured by the 90–10 log wage differential) for men and women is illustrated in Figure 5. Rising wage inequality (driven initially by increases in within-group inequality) began in the 1970s for men. The period from 1980 to 1985 of a deep recession and large decline in manufacturing employment is the period of most rapid growth of wage inequality. The rate of growth of wage inequality appears to have slowed down in the 1990s. Figure 6 illustrates the evolution of the US college wage premium for all workers and young workers. The upsurge in the college wage premium in the 1980s more than offset a decline in the 1970s.

The slowdown of productivity growth since the early 1970s combined with growing inequality of labour market outcomes has translated into increased disparities in family incomes over the past twenty-five years. Figure 7 illustrates rapid income growth and declining inequality from 1947 to 1973, and increased inequality with declining family incomes in the bottom quintile (using pre-tax, post-transfer money incomes deflated by the consumer price index) from 1973 to 1996. Similar (but modestly less extreme) patterns of growing family income inequality and persistent poverty over the past couple of decades are apparent when adding in-kind benefits to money incomes, adjusting for family size, or looking at consumption expenditures per adult equivalent.

6. Nominal wages are converted into constant dollars using the chain-weighted personal consumption expenditures deflator of the national income accounts.

Figure 4: Change in Log Real Weekly Wage by Percentile
1971–95

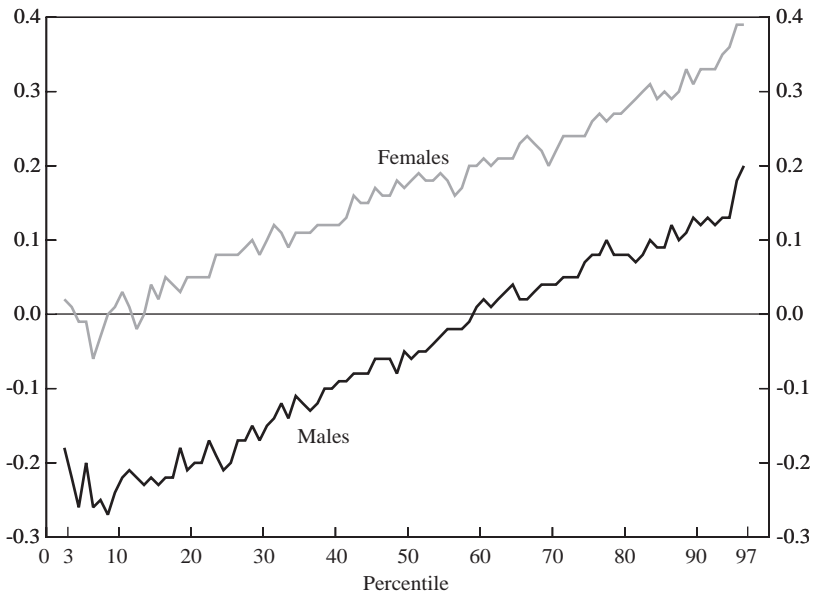
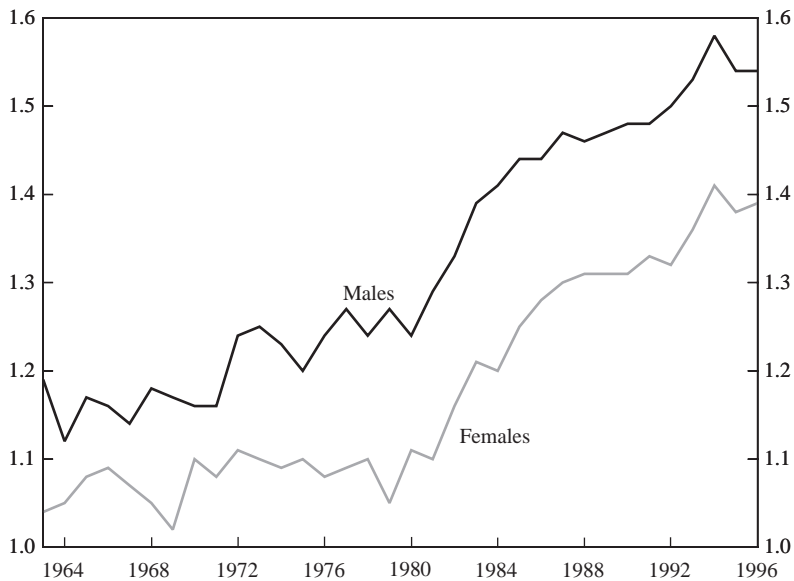


Figure 5: Overall US Wage Inequality
90–10 log weekly wage differentials



Source: Full-time full-year wage, March Current Population Survey.

Figure 6: College/High School Wage Differential
 Difference in log weekly wage

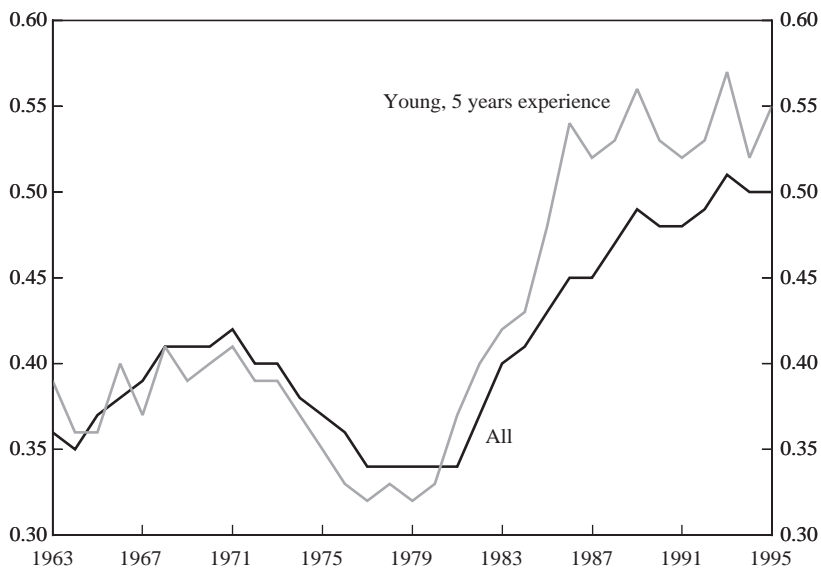


Figure 7: Family Income
 Average annual percentage change



4.1 Understanding changes in the US wage structure

What roles did supply, demand and institutional factors play in explaining rising wage inequality in the United States? Most researchers conclude that a major factor underlying rising US wage dispersion and educational wage differentials is a strong secular shift in labour demand favouring more-skilled workers (Autor, Katz and Krueger 1998; Bound and Johnson 1992; Juhn, Murphy and Pierce 1993; Katz and Murphy 1992). The industrial and occupational distribution of US employment has been shifting strongly in favour of college graduates and women for many years. Employment has declined in goods-producing sectors that have disproportionately provided high-wage opportunities for blue-collar men and expanded in professional, medical, business, and other services that employ many college graduates and women. The internationalisation of the US economy has contributed some to these between-industry shifts, but (possibly naive) calculations of the factor content of US trade flows indicate that actual net trade flows explain only a modest portion of the shift in demand against less-educated workers necessary to be consistent with observed changes in educational wage differentials (Borjas, Freeman and Katz 1997). Most of the growth in the utilisation of more-educated workers reflects within-industry and even within-establishment skill upgrading (Autor, Katz and Krueger 1998; Dunne, Haltiwanger and Troske 1996). Within-industry changes in labour demand appear to be strongly related to technological and organisational changes favouring skills, and are strongly positively correlated with investments in computers and research and development (Autor, Katz and Krueger 1998; Berman, Bound and Griliches 1994).

Demand-side factors are not the entire story. Demand shifted in favour of more-educated workers in the 1970s and the 1980s–90s, but educational wage differentials narrowed in the 1970s and expanded dramatically in the 1980s–90s. The supply side of the market helps explain the difference between the two periods. The relative supply of college graduates grew extremely rapidly in the 1970s with the enrolment of baby boomers and incentives from the Vietnam War to enter and remain in college. The rate of growth of the relative supply of college graduates declined substantially in the 1980s and 1990s with the labour market entry of ‘baby bust’ cohorts. A large influx of immigrants with less than a high school education also contributed to slower growth in the supply of highly educated workers relative to less-educated workers in the 1980s and the 1990s (Borjas, Freeman and Katz 1997). A smooth secular shift in demand favouring more-educated workers, combined with variation in supply growth across decades, goes a fair distance to explaining the time pattern of the evolution of US skill differentials from the 1960s to the mid 1990s. Nevertheless, some acceleration in the rate of demand shifts against the less-skilled is required to more fully explain the magnitude of the growth of skill differentials in the 1980s. Autor, Katz and Krueger (1998) find an acceleration in the rate of within-industry demand for college workers in the post-1970 period relative to the 1960s.

Two institutional changes further contributed to rising US wage inequality in the 1980s. The precipitous decline in unionism is estimated to explain as much as one-tenth to one-fifth of the growth in educational wage differentials and wage dispersion among males (Freeman 1993; Card 1998a). Changes in unionisation do not appear to be an important factor in the evolution of the female wage structure. The large decline in the

real and relative value of the Federal minimum wage from 1981 to 1990 also contributed to rising wage inequality especially for women (DiNardo, Fortin and Lemieux 1996; Lee 1998). Of course, it is unclear the extent to which the decline of unions and minimum wages are exogenous events as opposed to endogenous institutional changes in response to strong changes in market conditions. A disproportionate decline in employment in high-wage industries for less-educated workers (a loss of labour rents) also contributed to rising educational wage differentials in the 1980s.

In summary, sizeable and somewhat accelerated demand shifts favouring more-educated workers, a reduction in the rate of growth in their supply, and institutional changes, all contributed to sharp increases in US wage inequality since the early 1980s. Similar demand shifts appear to have had smaller impacts on wage inequality in countries with stronger institutional interventions in wage-setting. Furthermore, educational wage differentials did not increase as much in countries with smaller decelerations in the rate of growth of the supply of highly educated workers (Freeman and Katz 1995).

5. Some Concluding Remarks

The flexible US labour market has generated strong employment growth and been somewhat resistant to the persistent, high levels of (predominantly long-term) unemployment experienced by many other OECD economies over the past two decades. But the US model has also generated much greater inequality of labour market outcomes and family incomes. Despite higher average real incomes, the real hourly earnings of low-wage workers (those in the bottom decile of the wage distribution) are substantially lower (placed on a purchasing power parity basis) than those of the analogous workers in advanced Europe (Freeman 1997). The tight labour markets and rapid economic growth of the past few years are drawing more disadvantaged individuals into employment and starting to raise real earnings in the bottom quarter of the US wage distribution. Such tight labour markets need to be complemented with workforce preparation strategies that better enable those without college degrees and from poor backgrounds to take advantage of emerging opportunities, and possibly also with policies to subsidise the employment of the less skilled.

Market incentives for increased individual educational investments and skill upgrading can play some role in alleviating growing inequality in the United States. The large increase in the college wage premium in the 1980s and early 1990s has been associated with an increase in college enrolment rates from 49 per cent of high school graduates in 1980 to more than 60 per cent in the early 1990s. But the process of supply adjustment can take many years, and many disadvantaged individuals face financial and informational barriers to pursuing further education and training.

Much recent work has evaluated the effectiveness of alternative active labour market policies for improving the labour market prospects of the disadvantaged.⁷ Policies to increase years of schooling for those from low-income families appear to have high returns (Card 1998b). Public-sector-sponsored training programs have a mixed record

7. See US Department of Labor (1995b) and Stanley, Katz and Krueger (1998) for recent reviews of the evidence on the effectiveness of US employment and training programs and demonstrations.

with strong positive returns for disadvantaged adults (particularly adult women) but more disappointing results in evaluations of programs for disadvantaged out-of-school youths (LaLonde 1995; Stanley, Katz and Krueger 1998; US Department of Labor 1995b). Employer-side wage subsidies (or employment tax credits) that are highly targeted on very specific socioeconomic groups appear somewhat effective for disadvantaged youth but have substantial administrative burdens and may even stigmatise some targeted groups (e.g. welfare recipients and ex-convicts). Policies using an intermediary (a public employment agency, non-profit training organisation, *etc.*) that combine job development, job-search assistance, training, and employment subsidies appear more successful for targeting specific disadvantaged groups (Katz 1998). The earned-income tax credit, which currently provides up to a 40 per cent earnings supplement for low-income workers with two or more children, also appears to be an effective part of a strategy to improve the earnings of less-skilled workers and encouraging movements from dependency to work.

References

- Autor, D. (1998), 'Why Do Temporary Help Firms Provide Free General Skills Training?', mimeo, Harvard University, April.
- Autor, D., L. Katz and A. Krueger (1998), 'Computing Inequality: Have Computers Changed the Labor Market?', *Quarterly Journal of Economics*, 113(4), forthcoming.
- Ball, L. (1997), 'Disinflation and the NAIRU', in C. Romer and D. Romer (eds), *Reducing Inflation*, University of Chicago Press, Chicago, pp. 167–185.
- Bean, C. (1994), 'European Unemployment: A Survey', *Journal of Economic Literature*, 32(2), pp. 573–619.
- Berman, E., J. Bound and Z. Griliches (1994), 'Changes in the Demand for Skilled Labor within US Manufacturing Industries: Evidence from the Annual Survey of Manufactures', *Quarterly Journal of Economics*, 108(2), pp. 367–397.
- Blanchard, O. (1991), 'Wage Bargaining and Unemployment Persistence', *Journal of Money, Credit and Banking*, 23(3), pp. 277–292.
- Blanchard, O. (1998), 'Employment Protection and Unemployment', mimeo, MIT, March.
- Blanchard, O. and L. Katz (1992), 'Regional Evolutions', *Brookings Papers on Economic Activity*, 1, pp. 1–76.
- Blanchard, O. and L. Katz (1997), 'What We Know and Do Not Know About the Natural Rate of Unemployment', *Journal of Economic Perspectives*, 11(1), pp. 51–72.
- Blanchard, O. and P. Portugal (1998), 'What Hides Behind an Unemployment Rate: Comparing Portuguese and US Unemployment', mimeo, MIT, March.
- Blanchard, O. and L. Summers (1986), 'Hysteresis and the European Unemployment Problem', in O. Blanchard and S. Fischer (eds), *NBER Macroeconomics Annual*, MIT Press, Cambridge, Massachusetts, pp. 15–78.
- Bleakley, H. and J. Fuhrer (1997), 'Shifts in the Beveridge Curve, Job Matching, and Labor Market Dynamics', *New England Economic Review*, September/October, pp. 1–18.
- Borjas, G., R. Freeman and L. Katz (1997), 'How Much Do Immigration and Trade Affect Labor Market Outcomes?', *Brookings Papers on Economic Activity*, 1, pp. 1–90.
- Bound, J. and G. Johnson (1992), 'Changes in the Structure of Wages in the 1980s: An Evaluation of Alternative Explanations', *American Economic Review*, 82(3), pp. 371–392.
- Card, D. (1998a), 'Falling Union Membership and Rising Wage Inequality: What's the Connection?', NBER Working Paper No. 6520.
- Card, D. (1998b), 'The Causal Effect of Education on Earnings', in O. Ashenfelter and D. Card (eds), *Handbook of Labor Economics*, North-Holland, Amsterdam, forthcoming.
- Card, D., F. Kramarz and T. Lemieux (1996), 'Changes in the Relative Structure of Wages and Employment: A Comparison of the United States, Canada, and France', NBER Working Paper No. 5487.
- Council of Economic Advisors (1998), *Economic Report of the President*, US Government Printing Office, Washington, D.C.
- Cutler, D. and L. Katz (1991), 'Macroeconomic Performance and the Disadvantaged', *Brookings Papers on Economic Activity*, 2, pp. 1–74.
- Debelle, G. and T. Swann (1998), 'Stylised Facts of the Australian Labour Market', Reserve Bank of Australia Research Discussion Paper No. 9804.
- Diamond, P. (1982), 'Wage Determination and Efficiency in Search Equilibrium', *Review of Economic Studies*, 49(2), pp. 217–227.

- DiNardo, J., N. Fortin and T. Lemieux (1996), 'Labor Market Institutions and the Distribution of Wages, 1973–1992: A Semi-Parametric Approach', *Econometrica*, 64(5), pp. 1001–1044.
- Dunne, T., J. Haltiwanger and K. Troske (1996), 'Technology and Jobs: Secular Changes and Cyclical Dynamics', NBER Working Paper No. 5656.
- Farber, H. (1996), 'The Changing Face of Job Loss in the United States, 1981–1993', NBER Working Paper No. 5596.
- Forslund, A. and A. Krueger (1997), 'An Evaluation of Swedish Active Labor Market Policy: New and Received Wisdom', in R. Freeman, R. Topel and B. Swedenborg (eds), *The Welfare State in Transition*, University of Chicago Press, Chicago, pp. 267–298.
- Freeman, R. (1993), 'How Much Has De-unionization Contributed to the Rise in Male Earnings Inequality?', in S. Danziger and P. Gottschalk (eds), *Uneven Tides*, Russell Sage, New York, pp. 133–163.
- Freeman, R. (1996), 'Why Do So Many Young American Males Commit Crimes and What Might We Do About It?', *Journal of Economic Perspectives*, 10(1), pp. 25–42.
- Freeman, R. (1997), *When Earnings Diverge*, National Planning Association, Washington, D.C.
- Freeman, R. and L. Katz (1994), 'Rising Inequality: The United States vs. Other Advanced Nations', in R. Freeman (ed.), *Working Under Different Rules*, Russell Sage, New York, pp. 29–62.
- Freeman, R. and L. Katz (1995), *Differences and Changes in Wage Structures*, University of Chicago Press and NBER, Chicago.
- Friedman, M. (1968), 'The Role of Monetary Policy', *American Economic Review*, 58(1), pp. 1–21.
- Gordon, R. (1997a), 'The Time-varying NAIRU and its Implications for Economic Policy', *Journal of Economic Perspectives*, 11(1), pp. 11–32.
- Gordon, R. (1997b), 'The Sectoral Origins of the Recent Decline in the NAIRU', mimeo, Northwestern University, November.
- Gottschalk, P. (1997), 'Inequality in Income, Growth and Mobility: The Basic Facts', *Journal of Economic Perspectives*, 11(2), pp. 21–40.
- Gottschalk, P. and R. Moffitt (1994), 'The Growth of Earnings Instability in the US Labor Market', *Brookings Papers on Economic Activity*, 2, pp. 217–272.
- Gottschalk, P. and T. Smeeding (1997), 'Cross-national Comparisons of Earnings and Income Inequality', *Journal of Economic Literature*, 35(2), pp. 633–687.
- Hamermesh, D. (1998), 'Changing Inequality in Markets for Workplace Amenities', NBER Working Paper No. 6515.
- Jackman, R., R. Layard and S. Nickell (1996), 'Combating Unemployment: Is Flexibility Enough?', mimeo, London School of Economics.
- Juhn, C. (1992), 'Decline of Male Labor Market Participation: The Role of Declining Market Opportunities', *Quarterly Journal of Economics*, 107(1), pp. 79–121.
- Juhn, C., K. Murphy and B. Pierce (1993), 'Wage Inequality and the Rise in Return to Skills', *Journal of Political Economy*, 101(3), pp. 410–442.
- Juhn, C., K. Murphy and R. Topel (1991), 'Why has the Natural Rate Increased Over Time?', *Brookings Papers on Economic Activity*, 2, pp. 75–142.
- Karoly, L. and G. Burtless (1995), 'Demographic Change, Rising Earnings Inequality and the Distribution of Well-being, 1959–1989', *Demography*, 32(3), pp. 379–405.
- Katz, L. (1986), 'Efficiency Wage Theories: A Partial Evaluation', in O. Blanchard and S. Fischer (eds), *NBER Macroeconomics Annual*, MIT Press, Cambridge, Massachusetts, pp. 235–276.

- Katz, L. (1998), 'Wage Subsidies for the Disadvantaged', in R. Freeman and P. Gottschalk (eds), *Generating Jobs: How to Increase Demand for Less-skilled Workers*, Russell Sage Foundation, New York, Chapter 1.
- Katz, L. and D. Autor (1998), 'Changes in the Wage Structure and Earnings Inequality', in O. Ashenfelter and D. Card (eds), *Handbook of Labor Economics*, North-Holland, Amsterdam, forthcoming.
- Katz, L. and B. Meyer (1990), 'The Impact of the Potential Duration of Unemployment Insurance Benefits on the Duration of Unemployment', *Journal of Public Economics*, 41(2), pp. 45–72.
- Katz, L. and K. Murphy (1992), 'Changes in Relative Wages, 1963–87: Supply and Demand Factors', *Quarterly Journal of Economics*, 107(1), pp. 35–78.
- Krueger, A. and J. Pischke (1997), 'Observations and Conjectures on the US Employment Miracle', Princeton University Industrial Relations Section Working Paper No. 390.
- Krugman, P. (1994), 'Past and Prospective Causes of High Unemployment', in *Reducing Unemployment: Current Issues and Policy Options*, Federal Reserve Bank of Kansas City, Kansas City, Missouri, pp. 49–80.
- LaLonde, R. (1995), 'The Promise of Public-sector Sponsored Training Programs', *Journal of Economic Perspectives*, 9(2), pp. 159–168.
- Layard, R., S. Nickell and R. Jackman (1991), *Unemployment: Macroeconomic Performance and the Labour Market*, Oxford University Press, Oxford.
- Lee, D. (1998), 'Wage Inequality in the US During the 1980s: Rising Dispersion or Falling Minimum Wage?', mimeo, Princeton University.
- Levine, P. (1993), 'Spillover Effects Between the Insured and Uninsured Unemployed', *Industrial and Labor Relations Review*, 47(1), pp. 73–86.
- Levy, F. and R. Murnane (1992), 'US Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations', *Journal of Economic Literature*, 30(3), pp. 1333–1381.
- Lindbeck, A. (1995), 'Hazardous Welfare-state Dynamics', *American Economic Review*, 85(2), pp. 9–15.
- Lucas, R. (1976), 'Econometric Policy Evaluation: A Critique', *Carnegie-Rochester Conference Series on Public Policy*, 1, pp. 19–46.
- Martin, J. (1994), 'The Extent of High Unemployment in OECD Countries', in *Reducing Unemployment: Current Issues and Policy Options*, Federal Reserve Bank of Kansas City, Kansas City, Missouri, pp. 1–40.
- Meyer, B. (1990), 'Unemployment Insurance and Unemployment Spells', *Econometrica*, 58(4), pp. 757–782.
- Murphy, K. and R. Topel (1997), 'Unemployment and Nonemployment', *American Economic Review*, 87(2), pp. 295–300.
- Nickell, S. (1996), 'Unemployment and Wages in Europe and North America', Oxford University, Labour Market Consequences of Technical and Structural Change Discussion Paper Series No. 6.
- Nickell, S. and B. Bell (1995), 'The Collapse of Demand for the Unskilled and Unemployment Across the OECD', *Oxford Review of Economic Policy*, 11(1), pp. 40–62.
- OECD (1994), *Employment Outlook*, OECD, Paris.
- OECD (1996), *Employment Outlook*, OECD, Paris.
- OECD (1997), *Employment Outlook*, OECD, Paris.

- OECD (1998), *Main Economic Indicators*, OECD, Paris, April.
- Phelps, E. (1968), 'Money-wage Dynamics and Labor-market Equilibrium', *Journal of Political Economy*, 76(4, part 2), pp. 678–711.
- Phelps, E. (1994), *Structural Slumps: The Modern Equilibrium Theory of Unemployment, Interest, and Assets*, Harvard University Press, Cambridge.
- Pierce, B. (1997), 'Compensation Inequality', mimeo, US Bureau of Labor Statistics.
- Pissarides, C. (1990), *Equilibrium Unemployment Theory*, Basil Blackwell, Oxford.
- Staiger, D., J. Stock and M. Watson (1997), 'The NAIRU, Unemployment and Monetary Policy', *Journal of Economic Perspectives*, 11(1), pp. 33–50.
- Stanley, M., L. Katz and A. Krueger (1998), 'Impacts of Employment and Training Programs: The American Experience', mimeo, Harvard University, May.
- US Department of Labor (1995a), *Report of the American Workforce*, US Government Printing Office, Washington.
- US Department of Labor (1995b), *What's Working (and What's Not): A Summary of Research on the Economic Impacts of Employment and Training Programs*, Office of the Chief Economist, January.
- Wilson, W. (1996), *When Work Disappears: The World of the New Urban Poor*, Knopf, New York.