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## Examination and Comparison of Hispanic and White Unemployment Rates

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# Examination and Comparison of Hispanic and White Unemployment Rates

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## Abstract

This research documents the time series behavior of unemployment rates for Hispanics and whites over the period of 1976-2008. In particular, we provide insight as to how Hispanics fared relative to whites by examining the unemployment rate, the unemployment rate gap, and the cyclical component of unemployment. The results should prove useful to those involved in applied economic analysis.

**KEYWORDS:** Hispanic, unemployment rates, time series, economic loss

## **Introduction**

The Hispanic population in the U.S. has been growing substantially in recent years and the Census Bureau expects persons of Hispanic origin will make up 17 percent of the entire U.S. population by the year 2015. Corresponding with this growth in the Hispanic population is a number of implications important for applied economic analysis. For example, from 1976 to 2008 the average annual growth rate in the civilian labor force for Hispanics (5.26 percent) was more than four times the growth rate for whites (1.27 percent). Such dramatic changes in the labor force over time affect a number of labor market outcomes and, for this reason, should be of interest to forensic and labor economists. In particular, the growth in the Hispanic labor force may influence measures of life-time earnings, worklife expectancies, probability of employment, wages and earnings, etc. Moreover, a thorough understanding of Hispanic labor market outcomes relates to issues of job loss, job search, job match, labor market attachment, and job stability.

For this paper, we conduct an exploratory time series study of the labor market to see how Hispanics fare relative to (non-Hispanic) whites. We utilize monthly unemployment rate data from the Bureau of Labor Statistics for the period of January 1976 - June 2008. The research focuses on two aspects of the labor market: unemployment rates and unemployment cycles. We document the behavior of the unemployment rates over the sample period, examine the unemployment rate gap, and decompose the unemployment rates into trends and cycles. The latter methodology allows us to compare and contrast the cyclical components of unemployment between Hispanics and whites. The results shed light on how the unemployment rates of the two demographic groups behave over time and the implications for work of forensic and labor economists. In fact, economists often point out the adverse effects associated with unemployment. That is, the economic loss in output had the worker been employed. However, psychologists have also added to this literature (see Goldsmith et al., 1996).

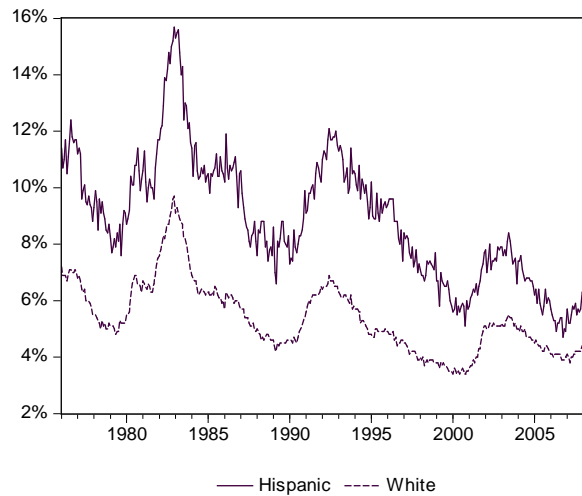
## **Unemployment Rates**

Over the period of January 1976 through June 2008, the mean unemployment rate for Hispanics is 8.9 percent while the unemployment rate for whites is 5.4 percent (see Table 1). The difference between these unemployment rates is statistically significant ( $p$ -value  $< 0.01$ ). Figure 1 shows how the unemployment rates behave over the time period. There are several observations worth noting. First, over this time period, the unemployment rate for Hispanics is always higher than for whites. The unemployment rates for Hispanics and whites are at their highest in

December 1982, 15.7 and 9.7 percent, respectively. Secondly, the two unemployment rates move up and down together, with higher rates corresponding to periods of economic downturns and lower rates to periods of economic growth and prosperity. Thirdly, the unemployment rate for Hispanics is noticeably more volatile than the rate for whites. In fact, the standard deviations of the unemployment rates for Hispanics and whites are 2.23 and 1.26, respectively. A comparison of the variances of the two rates indicates that the volatility of these two unemployment rates is not due to chance. We found the variances of the two unemployment rates to be statistically different (p-value < 0.01).

**Figure 1**

Unemployment Rates  
(Jan. 1976 - Jun. 2008)



**Table 1**

Descriptive Statistics for Unemployment Rates

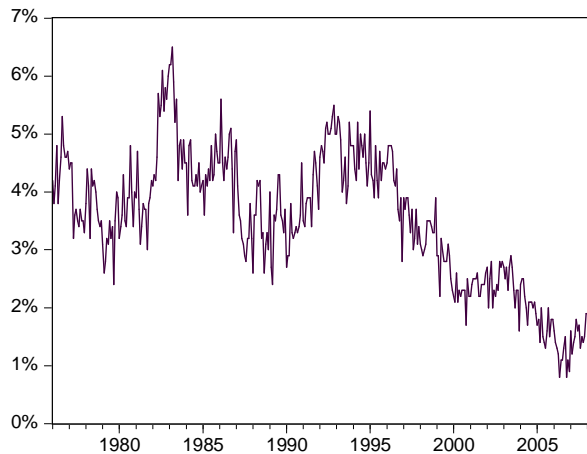
	Hispanic	White
Mean	8.8708	5.3695
Median	8.8000	5.1000
Maximum	15.700	9.7000
Minimum	4.7000	3.4000
Std. Dev.	2.2321	1.2629

In summary, the unemployment rate for Hispanics is higher and more volatile than it is for whites. Moreover, our evidence suggests that Hispanics (1) become unemployed sooner in economic downturns than whites, (2) experience longer periods of unemployment, that is, leave the ranks of the unemployed at slower rates than whites, and (3) generally face a “riskier” labor market than whites. In economic terms, a riskier labor market means that Hispanics may face higher probabilities of unemployment, lower rates of successful job matches, weaker labor market attachment, and greater job instability than whites. Consequently, Hispanics may exhibit a more volatile job history profile or employment lifecycle than whites. These findings are similar to DeFreitas (1986), in which Hispanics tend to bear a larger share of unemployment increases during economic downturns.

Casual observation of the unemployment rates suggests a downward trend in unemployment rates over time. Further, the gap between the two unemployment rates (referred to as the unemployment rate gap) may have narrowed during the mid-1990s and early-2000s. Figure 2 plots the unemployment rate gap (i.e., Hispanics unemployment rate minus white unemployment rate) over time.

**Figure 2**

Unemployment Rate Gap  
(Jan. 1976 - Jun. 2008)



A narrowing of the unemployment rate gap is a signal that the labor market for Hispanics may be becoming more integrated with or similar to that of whites. Consequently, this gap is often used to measure one group’s progress relative to another group. By this measure, Hispanics have experienced some

positive gains in the labor market, especially in recent years. Thus, Hispanics may experience real gains in terms of equal labor market status with whites, at least in terms of the unemployment rate. To further investigate the unemployment rate gap, we estimate an autoregressive moving average (ARMA) model. The Box-Cox methodology identifies the best specification to be ARMA(4,0). The model also includes a time trend and four dummy variables to control for the 1980, 1981, 1990, 2001 recessions. The adjusted R-square is 0.86 and the corresponding F-statistic for the model is 273.5 (p-value < 0.001).

**Table 2**

ARMA Results for Unemployment Rate Gap

	Coefficient	t-Statistic	Prob.
CONSTANT	5.1834	6.7277	<0.001
TREND	-0.0070	-2.5475	0.0112
RECESSION 1980	-0.3049	-1.1376	0.2560
RECESSION 1981	-0.2203	-0.8258	0.4094
RECESSION 1990	-0.0500	-0.1882	0.8508
RECESSION 2001	0.0214	0.0809	0.9356
AR(1)	0.5000	9.7592	<0.001
AR(2)	0.1392	2.4485	0.0148
AR(3)	0.1713	2.9999	0.0029
AR(4)	0.1191	2.2845	0.0229
Adjusted R-squared	0.8643		
F-statistic	273.47		
Prob(F-statistic)	<0.001		

Three interesting findings are worth noting. First, the trend in the unemployment rate gap is negative and statistically significant (t-statistic = -2.55, p-value = 0.01). The estimated coefficient on the trend term was -0.007 suggesting the gap has been closing by nearly 0.08 of a percentage point per year. If this trend continues uninterrupted from its current level of 2.8 (June 2008), the gap would *not* be effectively eliminated for over 30 years. Second, the

unemployment rate gap is highly persistent following an economic shock or disturbance as indicated by the coefficients on the AR terms. The slow trend and the high degree of persistence suggest that closing the gap will not necessarily occur by itself (i.e., by market forces), at least any time soon. Thus, if closing the gap is a goal for policymakers, then it will need to be addressed through policy action. Third, the unemployment rate gap appears to be unaffected by recession. That is, severe economic downturns do not significantly increase the gap. Thus, the trend and the persistence in the unemployment rate gap should be addressed by policy and not any type of recession-based policy. Moreover, when considering issues related to unemployment rate gaps, labor and forensic economists should focus on the effects of trend and persistence as opposed to recession.

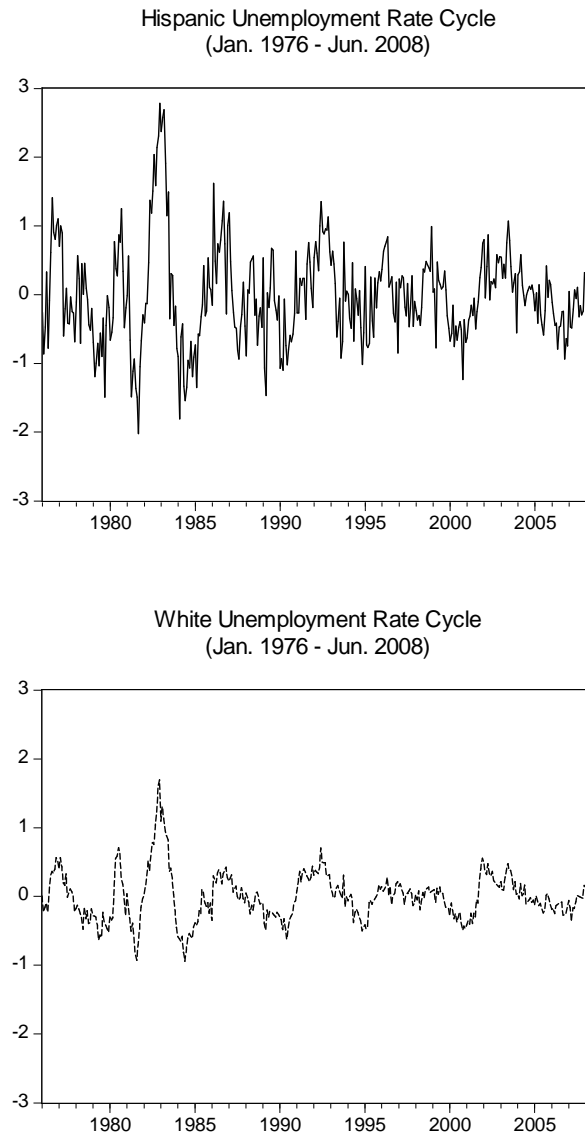
### Unemployment Cycles

This part of our study documents how and to what extent the cycle of the unemployment rate for whites is leading, is synchronous, or is lagging the cycle of the unemployment rate for Hispanics. The first step of the methodology decomposes the time series into long-run and business cycle components. In the second step, we estimate the dynamic correlations between the cycle series to measure the degree of comovement. We employ the popular two-sided linear Hodrick-Prescott (1997) filter (HP).

To decompose the unemployment rate series, let  $y_t = \tau_t + c_t$ , where  $y_t$  is the unemployment rate,  $\tau_t$  is the trend component, and  $c_t$  is the cyclical component. Given the penalty parameter,  $\lambda$ , as recommended by Hodrick and Prescott of 14,400 for monthly data, there is a trend component that will minimize  $\sum_{t=1}^T (y_t - \tau_t)^2 + \lambda \sum_{t=2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2$ . The first term of this equation penalizes the cyclical component and the second term penalizes variations in the trend component. The larger the value of  $\lambda$ , the higher is the penalty. The result of the HP filter is a stationary cyclical component. These cyclical deviations from trend are then used to examine the dynamic comovements between the two unemployment rates. We compute the cross correlations between the two unemployment rates to test for common cycles among Hispanics and whites.

Similar to the findings for the level of the unemployment rates, the cyclical component of unemployment is higher and more volatile (i.e., there is more cyclical variation) for Hispanics than for whites. Figure 3 plots the cyclical components of the unemployment rates for Hispanics and whites.

**Figure 3**



According to Serletis and Shahmoradi (2005), the degree of comovement between the unemployment rate cycles can be measured by the correlation coefficient,  $\rho(j)$ , where  $j=0, \pm 1, \pm 2, \dots, \pm n$ . The correlation coefficient provides information as to the degree of comovement but also whether the two unemployment rates are procyclical ( $\rho(0)>0$ ), acyclical ( $\rho(0)=0$ ), or countercyclical ( $\rho(0)<0$ ). In addition, the cross correlation coefficient indicates whether the unemployment rate cycle is leading if  $|\rho(j)|$  is at maximum for a positive  $j$  or lagging for negative  $j$ . Furthermore, Fiorito and Kollintzas (1994)

provide additional details and interpretation of the correlation coefficient. That is, we say the unemployment rate cycles are strongly contemporaneously correlated, weakly contemporaneously correlated, or contemporaneously uncorrelated with one another if  $0.23 \leq |\rho(0)| < 1$ ,  $0.10 \leq |\rho(0)| < 0.23$ ,  $0 \leq |\rho(0)| < 0.10$ , respectively.

The correlation analysis indicates that the cycles of both unemployment rates move with the business cycle. The cross-correlation analysis indicates that the unemployment cycles for Hispanics and whites tend to move together over time (i.e., no evidence of leading or lagging).

Overall, the analysis of the cyclical comovements of unemployment rates for Hispanics and whites confirms the conclusions based on the levels of the corresponding unemployment rates. Hispanics experience more severe labor market responses to the business cycle than whites do. However, the cyclical analysis also suggests that the timing of the cyclical responses does not differ by demographic group. Note that, given our analysis of the level of unemployment rates, this suggests that it must be the trend component of unemployment that leads Hispanics to enter the ranks of the unemployed sooner and leave unemployment later than whites.

### **Concluding Comments**

Our analysis has several policy and applied economics implications. For example, the results suggest that the primary policy focus should be to reduce the cyclical component of the Hispanic unemployment rate. These policies might include focusing job training on industries and occupations that are traditionally less sensitive to the business cycle (e.g., education and health services, government and public service, to name a few). For example, Mundra et al. (2003) highlight how Hispanics are underrepresented in managerial and professional occupations. This type of underrepresentation may make Hispanics more sensitive to business cycle movements. Additionally, economic policy might focus on “removing the trend of persistence” from the Hispanic unemployment rate. That is, placing efforts on creating job seniority for Hispanics (e.g., those with more tenure are less likely to be let go first in economic downturns) such as educating Hispanics on the importance of job tenure. The documentation of unemployment rate behavior may help researchers in the areas of labor and forensic economics to better estimate and understand worklife expectancies, job search and job match dynamics, and ultimately to improve the modeling of life time earnings and employment patterns. Furthermore, understanding the demographic differences in the labor market may lead to better forecasts of earnings, especially during economic downturns. For example, Kirchoff (2008) discusses how official employment statistics do not fully account for the labor market conditions of

Hispanics. Such economic downturns may put the Hispanic community at greater risk of job loss (due to less of a safety net). The differential labor market effects will affect labor force projections, earnings calculations, and employment forecasts. Not adequately accounting for different demographics could lead to biases in economic loss calculations.

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