

Komlos, John

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Estimating Labor Market Slack, U.S. 1994-2019

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John Komlos

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Poschingerstr. 5, 81679 Munich, Germany

Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email office@cesifo.de

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Abstract

U3, the official unemployment rate, is an inadequate gauge of labor-market slack and the extent to which it misinforms varies substantially over the business cycle. The U6 unemployment rate is usually about 4 percentage points above U3. However, during the Great Recession it exceeded U3 by 7 percentage points for three years. Moreover, the U6-U3 gap is magnified among disadvantaged groups such as minorities, youth, and for the less educated. For instance, in January 2011 the U6-U3 gap among African American youth was 17.9 pps as U6 climbed to 47.5% and was similarly large among African Americans without a high-school diploma.

JEL-Codes: J400, J490, J690.

Keywords: unemployment, U6, unemployment by ethnicity, discouraged workers, labor market slack.

John Komlos
University of Munich / Germany
john.komlos@gmx.de

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1. Introduction

That the official unemployment rate (U3) is no longer an adequate measure of labor market slack is being increasingly recognized, especially since the Great Recession (Bell and Blanchflower, 2018; Blanchflower, 2019; Feng and Hu, 2013; Friedman, 2014; Dooley and Prause, 2003). Janet Yellen, former Chair of the Federal Reserve, intimated as much—not for the first time—in October 2019 when she raised the “possibility... that labor market slack is not appropriately measured by the civilian unemployment rate. Perhaps broader measures of slack including, for example, individuals involuntarily working part-time or some who are considered to be out of the labor force entirely are relevant to wage and price inflation” (Yellen, 2019).

Since 1994 the Bureau of Labor Statistics (BLS) does publish a lesser known measure of unemployment dubbed U6, which includes exactly those individuals Yellen mentioned as missing from U3.¹ (BLS refers to U6 as an “alternative measure of labor underutilization”.) As Yellen intimates above, it is probably an improved gauge of labor market slack, insofar as it includes, in addition to U3, part-time workers who would like to work full time, as well as individuals who have looked for work in the previous year although not in the previous month.² Thus, U6 has three components: the official unemployed (U3), the involuntary part-time workers, and the “marginally attached workers” (Figure 1). In turn, the “marginally attached workers” are made up of discouraged workers and others who are “marginally attached” for reasons other than being discouraged (referred to as U5-U4 in Figure 1). Thus, U3 is a narrow conceptualization of unemployment insofar as it excludes data on those who are clearly partially unemployed, and because it excludes those unemployed who have been pushed out of the labor force on account of the adverse labor market conditions. In contrast, the U6 data includes these individuals.

Figure 1 about here

To be sure, Yellen is hardly alone in her views that U3 is of limited value as a measure of labor-market slack. Other researchers have likewise recognized that “the US official unemployment rate is potentially subject to measurement error” (Feng and Hu, 2013; Beatty and Fothergill, 2002), or that “underemployment replaces unemployment as the main measure of labor market slack in the post-recession years” (Bell and Blanchflower, 2018; Brandolini and Viviano, 2016; Buffie, 2015; Häring and Niall 2012; Leonhardt, 2018; Thies, 2017; Feng, Hu, and Sun, 2018).

Following up on these suggestions, which can also be interpreted as warnings about relying excessively on U3, as well as admonitions to explore the fundamental nature of unemployment further, we compare U3 to U6 by calculating the gap between them in order to gauge the extent to which the *official* unemployment rate is an imprecise and possibly misleading indicator of labor-market slack.

We refer to the absolute differences as “percentage points” (pps). In some of the cases we also calculate the differences as a *percent* relative to U3 and refer to them using the symbol % in order to distinguish them from the absolute differences which we signify with pps. We find that both measures vary substantially by ethnicity, age, and education over the business cycle. This finding is significant because it implies that U3 not only misleads but the extent to which it does so varies not only over time, but also across various subgroups of the labor force with the most vulnerable varying the most. The discrepancy is particularly strong among minorities, and other disadvantaged groups such as youth and the less educated especially those who did not complete high school. This is due to the fact that these groups are most likely to work part-time involuntarily the longest after the end of a recession and therefore bear the brunt of the burden of its lingering impact (Crain and Sherraden, 2014).

The remainder of this paper is organized as follows: section 2 analyzes the U6-U3 gap for the whole labor force society (Figure 2); section 3 stratifies the absolute gap by ethnicity; section 4 examines the gap as a percent of U3 by ethnicity; section 5 parses the absolute gap stratified by education, gender, and age; and section 6 concludes. The ethnic U6 data are not published by the BLS but by the Economic Policy Institute (EPI).³

2. The Aggregate Difference between U6 and U3

The average values of U6 and U3 for the whole period under consideration were 10.4% and 5.7% respectively, implying that the average difference was 4.6 pps or 81% of U3. (The minimum and maximum values of the gap were 2.9 pps and 7.4 pps). The absolute gap for the whole labor force was 4.5 pps at the end of the 20th century and declined slightly to 3.6 pps at the turn of the 21st century only to rise to 6.1 pps in the aftermath of the Great Recession (Table 1, column 1). The gap started to climb as soon as the recession began in December 2007, at first slowly, and then jumped suddenly after the failure of Lehman Brothers, reaching 7.1 pps by March 2009 (Figure 2). That means that U6, the more reliable indicator of labor-market slack, was (at 15.8%) 7.1 pps above the reported official unemployment rate, U3 (at 8.7%).

Figure 2 and Table 1 about here

The increase in the gap was due mostly to the increase in the involuntary part-time workers which made up 77% of the U6-U3 gap with very little variation (Figure 1).⁴ The involuntary part-time workers increased from 3.0% at the outset of the recession to 3.9% until September 2008, or by 0.9 pps in 9 months. Their number swelled thereafter, increasing by 1.3 pps in just 3 months and by another 0.7 pps during the next three months, so that by March 2009 involuntary part-time workers reached 5.9% of the labor force (Figure 1). Corresponding to the rise in involuntary part-time workers, the U6-U3 gap increased from 3.7% to 7.0% and stayed near that level for about three more years until early 2012 when it started to decrease slowly (Figure 2). However, it took nine whole years before the gap broached the pre-crisis level of 4 pps at the end of 2017. In August 2019 the difference was back at 3.5 pps (Figure 2).

The gap had increased also during the recession of 2001 following the Dot.Com bubble but only slightly, probably because that recession was mild and of short duration (Figure 2). The main reason that the gap increased during recessions is that the number of involuntary part-time workers rose, and they do not increase U3 insofar as they are considered employed but they do increase the U6 rate in which they are considered unemployed. One would think that the number of discouraged workers would swell likewise, because of the decline in the probability of finding a job should have induced many unemployed individuals to cease expending energy in vain to look for work until prospects in the labor market improved. However, this effect is not reflected in the data (Figure 1). For instance, discouraged workers added but 0.2% to the U6 rate at the beginning of the Great Recession and merely 0.5% at its end. Similarly, the marginally attached workers who were not already captured among the discouraged workers increased merely from 0.2% to 0.5%.⁵

The U6-U3 gap as a percent of U3 was also stationary at the end of the 20th century at about 80%, declined during the recession of 2001 and its immediate aftermath to about 65% and then climbed slowly back to 80% by 2005 (Figure 2). It stayed slightly above that level until and even during the Great Recession but decreased somewhat toward its end to 73%. However, it started to climb almost immediately toward the pre-crisis level of 80% but overshot it by the Summer of 2012 reaching 102% by October 2014 and remained near that extraordinarily high level thereafter. In August 2019 it was still at the historically high level of 95%. This implies that the discrepancy between the two rates has become more serious in percentage terms in recent

years, signaling that the problem of involuntary part-time workers will persist for much longer in a segmented labor market after the end of a major recession.⁶

3. The Absolute U6-U3 Gap Stratified by Ethnicity

The gap by ethnicity is calculated by subtracting U3 of the ethnic group in question from its U6 rate. Generally, the gaps have been two or more times as large among minorities than among whites (Figure 3).⁷ For example, in the 1990s the gap averaged 3.3 pps among whites but was 6.9 pps among African Americans and 7.2 pps among Hispanics (Table 1, row 1). The gaps decreased somewhat at the turn of the 21st century and did so to a greater degree among minorities (Table 1, row 4). So, the amount by which the gap among African Americans exceeded that of whites declined from 3.6 pps to 2.9 pps or by 0.7 pps (Table 1, column 5). This pattern is similar among Hispanics (Table 1, column 6).

Figure 3 about here

However, the Great Recession increased the gaps for all groups beyond their 1990s level. The average gap among African Americans reached 8.0 pps and that of Hispanics 8.6 pps (Table 1, row 3). These were 3.7 pps and 4.3 pps above the levels experienced by whites. The difference was consistently the largest among Hispanics (Table 1, column 4). In fact, the Hispanic gap reached and remained at an astonishing 10 pps from October 2009 through June 2013, peaking at 12.5 pps in May 2010 (Table 2, column 2). At the peak, this was no less than 6.7 pps above the gaps for whites (Figure 3). With a few exceptions the gap among Hispanics was 6+ pps above those of whites for 27 months from September 2009 through November 2011.

Table 2 about here

The magnitude of the gaps varied considerably over the business cycle for all three ethnic groups, with the Hispanic gap being similar to those of African Americans (Figure 3). The main difference between the two trends was that the Hispanic gap tended to be larger immediately after a recession and peaked earlier than those of African Americans. Moreover, the variance, range, and maximum values were much larger for both African Americans and Hispanics than for whites (Table 2). The gaps tended to decline during recessions for whites and African Americans but only during the first recession among Hispanics implying that U3—the official unemployment rate, was rising faster than U6—and the involuntary part-time workers during recessions (Figures 4, 5, and 6). The Great Recession was an exception to this generalization insofar as the gaps did not decline throughout the recession but reversed course

some months before the end of the downturn and started to increase quite noticeably for all groups, in contrast to the other two recessions, probably because the recession lasted 19 months, or twice as long as the other two recessions (Figure 6).

Figures 4-6 and Table 3 about here

However, as soon as the first two recessions were over, the trends in the gaps reversed and began to increase and did so faster and considerably longer among minorities than among whites (Figures 4 and 5). During the 1990-91 recession the gap among whites was 2.9 pps and rose to reach 4.3 pps two years later (Table 3, column 1), while for African Americans the gap continued to rise much longer, reaching 10 pps at the end of 1994 (Figure 4). In contrast, to the 1.3 pps increase among whites, the gap among African Americans increased from an average of 5.3 pps during the recession to an average of 8.4 pps two years after the recession ended (Table 3, column 2). The difference between the white gap and the African American gap increased for 45 months after the recession ended in March 1991, when it exceeded the white gap by 6 pps (Figure 7).⁸ Among Hispanics the pattern was comparable except that the peak occurred somewhat earlier than among African Americans (in August 1993). However, the gap relative to the white gap still increased for more than two years after the recession ended.

Figure 7 about here

The pattern was comparable ten years later after the 8-month recession of 2001. The gaps had been falling until then but rose after the recession ended. Again, the increase was largest among Hispanics and again the peak was reached earlier (December 2003) than among African Americans, (July 2005) (Figure 8). The African American gap exceeded that of whites by 2.5 pps during the recession rising to an average of 3.1 pps three years after the end of the recession (Table 3, column 4 and Figure 8). Among Hispanics the comparable values increased from 2.8 pps to 3.4 pps.

Figure 8 about here

This uncanny pattern recurred for the third time during the Great Recession (Figure 9). The increase in the gap among whites was much shallower than among minorities. The Hispanic peak (12.5 pps) exceeded that of African Americans (11.9 pps) and occurred earlier as after prior recessions. The Hispanic gap averaged 11.9 pps for two years (2010-11) and was on average 6.2 pps above that of whites (Table 3, column 5, row 8). The African American gap during the three recessions was 2.3-2.5 pps above that of whites and increased to 3.1-4.1 pps subsequent to the

recession (Table 3, column 4). Similarly, the amount by which the Hispanic gap exceeded that of whites increased from 2.8-3.3 pps during recessions to 3.4-6.2 pps after the recessions (Table 3, column 5). While the average gap tended to be greater among Hispanics than among African Americans this was not uniformly so during the whole period. After the recessions the Hispanic gap tended to be larger than those of African Americans. However, after the elapse of approximately 4 years the Hispanic gap became equal to or even smaller than the African American gap (Figures 7-9). The crossover point during the first recession was about 55 months, during the 2nd recession it was 44 months, and during the Great Recession it was 52 months.

Figure 9 about here

4. The U6-U3 Gap Relative to U3, Stratified by Ethnicity

The relative gap, calculated by dividing the absolute gap by U3 of the ethnic group in question, varied considerably over the business cycle with the average values of 69% for whites, 66% for African Americans, and 93% for Hispanics. During all three recessions the percentages tended to decrease among whites by between 21% and 26% (Table 4). Among minorities the percentage gaps tended to decline by between 5% and 19% during recessions (Table 4).⁹ This was the case because the absolute gaps tended to decline during recessions while U3 increased (Figures 4-6). The trends are shown only for the Great Recession insofar as the pattern was similar for the other two recessions: the trends declined during recessions and rose thereafter (Figure 10). Moreover, the Hispanic relative gap was always the largest, generally reaching at least 100% while the African American and white relative gaps were lower and similar to one another. However, during the Great Recession all three groups reached or broached 100% and the Hispanic trend rose even as high as 150%. The relative gaps were still elevated well above “normal” for all three groups in July 2019: 85% among whites, 93% among African Americans and 116% among Hispanics.

Figure 10 and Table 4 about here

5. The U6-U3 Gap Stratified by Education, Gender, and Age

The U6-U3 gap increases monotonically with educational attainment: the gap ranges from a mere 1.9 pps among those with an advanced degree (beyond a BA or BS) to 9.4 pps among those who are not in possession of a high school degree (Table 5, row 3). Moreover, the gap stratified by education is like the baseline results: the absolute gap increases during and after

recessions (Figures 2 and 11). The increase was rather small during the first two recessions but conspicuously larger during the Great Recession, reaching 5.1 pps for individuals without a high-school diploma (Table 6, row 9). Stratified by ethnicity the gap among those who did not complete high school was the largest among African Americans followed by Hispanics and whites but the jump in the gap in the course of the Great Recession was largest among Hispanics at 6.7 pps, well above the average increase of 5.1 pps for all without a high school degree (Figure 12 and Table 6, row 9).

Figures 11 and 12 and Tables 5 and 6 about here

The gaps by gender also conform to the baseline model. Noteworthy in this case is that the gaps among the women are slightly larger than those of men except during the Great Recession when they were practically identical (Table 7 and Figure 13). However, the size of the gap narrowed in the 1990s and early 2000 to reach just 0.3 pps prior to the Great Recession and returned to a similar level a few years after it was over.

Figure 13 and Tables 7 about here

The gaps by age indicate that the youngest group consistently has the largest gaps while the other three age groups did not differ from one another meaningfully (Figure 14). The youngest age group also experienced the largest uptick in consequence of the Great Recession of 6.1 pps, reaching its peak value in January 2011, while the gap of the other age groups increased by between 3.0 pps and 3.3 pps. Stratified by ethnicity, the gap among African American youth was the most dramatic, rising to 18 pps two years after the end of the Great Recession, and still near that level 4 years thereafter (Figure 15).

Figures 14 and 15 about here

6. Conclusion

We explored the properties of the difference between the official unemployment rate, U3, and a more comprehensive measure of unemployment designated by the BLS as U6. We do so insofar as the awareness is growing that the “unemployment rate may understate the amount of remaining slack in the labor market” (Yellen, 2014). Similarly, Eric Rosengren, President of the Federal Reserve Bank of Boston, stressed repeatedly that there was “significant ‘slack’ in labor markets”, as indicated by “the high numbers of U.S. workers who want full-time work but are currently working part time” (Rosengren, 2014). Hence, U6 is worth considering as an important

measure of labor market slack, which macroeconomists and public policy makers have not yet considered sufficiently.

The inference from the above analysis is that U3 is not only an inadequate gauge of labor-market slack, but more importantly, the extent to which it misinforms researchers, policy makers, and the public varies meaningfully over the business cycle, since the extent to which U6 tracks U3 varies substantially over time (Figure 16). Prior to 2001 the relationship between the two variables was good but became even better after the recession of 2001. In contrast, after 2008, the relationship deteriorated noticeably: for each value of U3 the value of U6 was larger than before, although since 2017 the tracking improved and returned to its previous norms (Figure 17).

Figures 16 and 17 about here

Regression analysis substantiates the impressions gained from Figure 17 that the relationship between U3 and U6 varies substantially (Table 8). The intercept in periods 1 and 4 are both not significantly different from zero while in the 2nd and 3rd regression they are both large and significant (although not significantly different from one another). The slope coefficients are all significant and vary quite a bit except that in periods 1 and 4 they are again not significantly different from one another, while those of periods 2 and 3 are each significantly different from all slope estimates. This implies that the relationship between U3 and U6 varies enough over time so that they ought not be considered mere substitutes for one another in macro models.

Table 8 about here

Furthermore, the information value of U3 generally worsens during recessions and did so especially strongly after 2007 (Figure 2). That is, no doubt, why Yellen worried so much, when she was Chair of the Federal Reserve, that “slack” in the labor market “may partly reflect perceptions of poor job prospects” (Yellen, 2014). In other words, the unemployment rates were biased measures of labor market conditions, because they, themselves, were endogenous to labor market conditions. In addition, the extent to which U3 misleads is magnified considerably for fragile groups including minorities (subject to discrimination), youth, as well as the less educated mirroring the extent of social inequality (Crain and Sherraden, 2014; Standing, 2014).¹⁰ This is particularly the case for these vulnerable groups doing involuntary part-time work or those “marginally attached” to the labor force who have little support from public institutions (Darity,

Hamilton and Stewart, 2015; Davis 2014). Hence, for them U6 increases quickly during downturns and lingers for years after the recession's end (Figures 7-9).

For instance, the gap was still 15 pps in 1995 among African American 16-24-year-olds. Furthermore, during the Great Recession the gap among African American 16-24-year-olds soared by 7.5 pps to reach 18.3 pps (Table 9). In January 2011 the U6 rate among African American youth was 47.5% regardless of educational attainment, and among African Americans of any age without a high-school diploma it was 48.6%. Similarly, among Hispanics the average U6 rate has been almost double its U3 rate and frequently as high as 150% above it (Figure 10). Consider moreover, that in January 2012 the U3 had been falling for 27 months and reached 8.3%. Yet, U6 for African Americans had been moving in the opposite direction since the end of the Great Recession and reached 25.5% or 11.9 pps above its U3 rate (and 17.2 pps above U3 for the labor force as a whole). In short, policy makers could be quite misled if they focused on the average value of U3 for the labor force as a whole and disregarded the labor-market slack among groups whose situation was far worse than average (Table 9).¹¹

Table 9 about here

From a normative perspective, such odious waste of human resources of vulnerable groups is inefficient and should be avoided with policies aimed at the amelioration of the adversity they face, keeping in mind that conventional monetary and fiscal policies are unlikely to reach them. Thus, full employment does not seem to be a meaningful concept in a segmented labor market unless the concept pertains equally to all segments of the labor force, including disadvantaged groups subject to discrimination (Darity and Mason, 1998; Stiglitz, 2018; Tcherneva, 2018). It does not seem appropriate to suggest that the U.S. is at full employment, as Marty Feldstein did in January 2016, when 32% of the African American youth between the ages of 16 and 24 were not employed full time (Feldstein, 2016). Such pronouncements hinder us from thinking creatively about institutional innovation to reduce their precarious position in a dynamic, ever changing, and challenging environment. For instance, an apprenticeship program aimed at high school dropouts might be worth an experiment (Unger, 2015). We should just not ignore the problem—as has been the case until now—just because conventional policies are inadequate to cope with the problem.

The disregard of this evidence could mislead macroeconomists and policy makers in significant ways. After all, estimating unemployment is an important input into monetary policy

through the Phillips curve and the Federal reserve has a dual mandate to achieve full employment while keeping inflation at bay. Using informal means to assess the “slack” in the labor market, as the above quotations from Yellen and Rosengren imply, are insufficient. Perhaps this is the moment for the Fed to formalize these ‘back-of-the envelope’ impressions and keep U6 in mind in formulating monetary policy and for economists to design macroeconomic policies to achieve full employment based on U6 rather than on U3 (Darity, 2010; Darity and Hamilton, 2012). Consequently, the size of the U6-U3 gap is a key economic variable worthy of serious further consideration and analysis.

An exception is Fontanari et al.’s exploration of potential output using Okun’s law with U6 in addition to U3 (Fontanari, Palumbo, and Salvatori, 2019a). They find that “Okun’s law seems thus to... hold also with alternative indicators of labor underutilization” and then proceed to estimate “potential output, based on U-6 instead [of] U-3, to assess the current measure of the US output gap” (Fontanari, Palumbo, and Salvatori, 2019b). Using U6 to gauge labor market slack, they estimate that the gap between current and potential GDP could be as high as \$546 billion (Fontanari, Palumbo, and Salvatori, 2019b, Table 3).

In addition, it would be interesting to do research on these gaps also in terms of the Diamond-Mortensen-Pissarides search frictions of the labor market inasmuch as in those models the tightness of the labor market depends on the difference between U3 and vacancies (Diamond, 1971, 1981, 1982; Mortensen 1970, 1976; Mortensen, and Pissarides, 1994; Pissarides, 1976). It appears straightforward to substitute U6 in place of U3 in those models.

In sum, Yellen was right to suggest that the *official* “unemployment rate may understate the amount of remaining slack in the labor market” (Yellen, 2014). “in the aftermath of the Great Recession, which... may have been associated with... unprecedented structural changes in the labor market--changes that have yet to be fully understood” (Yellen, 2014). Thus, using U6 has important implications not only for testing of economic theories but are also crucial for the formulation of macroeconomic stabilization and growth-enhancing policies by central banks, and other governmental institutions which, in turn, effect political developments around the globe. Clearly, U6 should be taken much more seriously by economists than has been the case. Hence, it is time to pay more serious attention to broader measures of labor market slack and especially for the subpopulations noted above.

Tables

					Compared to Whites	
	All	Whites	Blacks	Hispanics	Blacks	Hispanics
	1	2	3	4	5	6
1 1990-2000	4.5	3.3	6.9	7.2	3.6	3.9
2 2001-2007	3.6	2.8	5.7	5.9	2.9	3.1
3 2008-2019	6.1	4.3	8.0	8.6	3.7	4.3
4 Diff 2-1	-0.9	-0.5	-1.2	-1.3	-0.7	-0.8
5 Diff 3-1	1.6	1.0	1.1	1.4	0.1	0.4

Note: in rows 4 and 5 the difference is calculated by subtracting the values in row 1 from the values in rows 2 and 3; Columns 5 and 6 are calculated by subtracting column 2 from columns 3 and 4 respectively. The EPI data series starts in December 1989 while the BLS data series starts in 1994. So, when our data starts in 1990, we are using the EPI series. When it begins in 1995, we are using the BLS series.

Source: Federal Reserve Bank of St. Louis, series UNRATE and U6RATE; Economic Policy Institute (EPI), *State of Working America Data Library*, Underemployment,” and “Unemployment” 2019; the EPI calculation is based on data from the Current Population Survey of the U.S. Census Bureau.

					Gap Between Whites and	
	Blacks	Hispanics	Whites	All	Blacks	Hispanics
	1	2	3	4	5	6
Mean	7.1	7.4	3.6	4.6	3.5	3.9
Min	3.8	4.3	1.5	2.9	1.5	1.9
Max	11.9	12.5	6.0	7.4	6.1	6.9
Range	8.1	8.2	4.5	4.5	4.6	5.0
Variance	3.1	4.2	1.2	1.6	0.8	1.2

Source: see Table 1.

Table 3. Average Absolute Gap During and After Three Recessions						
					Compared to Whites	
		Whites	Blacks	Hispanics	Blacks	Hispanics
		1	2	3	4	5
1	1990-1991	2.9	5.3	6.0	2.3	3.1
2	1993-1994	4.3	8.4	9.0	4.1	4.8
3	Difference	1.3	3.1	3.0	1.8	1.7
4	2001-2001	1.8	4.3	4.5	2.5	2.8
5	2004-2005	3.3	6.4	6.7	3.1	3.4
6	Difference	1.5	2.1	2.1	0.6	0.6
7	2007-2009	2.4	4.7	5.7	2.3	3.3
8	2010-2011	5.6	9.3	11.9	3.7	6.2
9	Difference	3.2	4.6	6.1	1.4	2.9

Source: See Table 1; Note: The dates of the three recessions are: 1) July 1990-March 1991, 2) March 2001-November 2001, 3) December 2007-June 2009. The two years used for comparative purposes encompass 24 months of the years indicated.

Table 4. The U6-U3 Gap Relative to U3 in Three Recessions (Percent)						
					Compared to Whites	
Recessions		White	Black	Hispanic	Black	Hispanic
		1	2	3	4	5
1	Beginning	68.1	49.1	80.0	-19.0	11.9
	End	46.7	44.0	61.2	-2.7	14.6
	Difference	-21.4	-5.1	-18.8	16.3	2.6
2	Beginning	54.1	53.0	69.4	-1.0	15.3
	End	30.6	38.8	63.0	8.2	32.4
	Difference	-23.4	-14.2	-6.3	9.2	17.1
3	Beginning	59.1	53.3	77.8	-5.8	18.7
	End	33.3	37.8	67.8	4.5	34.4
	Difference	-25.8	-15.5	-10.0	10.3	15.7

Source: see Table 1.

Table 5. Descriptive Statistics of U3 and U6 by Education (%)						
		No H.S.	H.S.	No BA	College	Advanced
Averages						
1	U6	21.9	12.6	9.5	5.8	4.2
2	U3	12.5	6.8	5.2	3.2	2.3
3	U6-U3 Gap	9.4	5.8	4.3	2.6	1.9
Ranges						
4	U6 Max	33.6	21.3	16.1	9.9	6.5
5	U3 Max	19.0	12.2	9.2	5.7	3.6
6	U6 Min	15.0	7.9	5.6	3.4	2.6
7	U3 Min	7.9	4.3	3.1	1.9	1.4

Note: "No H.S." = does not have high school diploma; H.S.= has high school diploma; "Some College" = attended college but did not receive a degree; "College" = has BA or BS degree or equivalent; advanced degree = beyond BA or BS.

Source: see Table 1.

Table 6. The Absolute Gap at Start and End of Three Recessions						
		Educational Attainment				
		No H.S.	H.S.	No BA	College	Advanced
1990-1991						
1	Start	7.7	4.5	3.1	1.9	1.4
2	End	8.4	5.1	3.3	2.2	1.5
3	Difference	0.7	0.6	0.2	0.3	0.1
2001						
4	Start	6.6	3.7	2.5	1.4	1.2
5	End	7.2	4	2.7	1.6	1.3
6	Difference	0.6	0.3	0.2	0.2	0.1
2007-2009						
7	Start	7.8	4.7	3.3	2.1	1.4
8	End	12.9	7.8	5.6	3.4	2.3
9	Difference	5.1	3.1	2.3	1.3	0.9

Note: "No H.S." = does not have high school diploma; H.S.= has high school diploma; "Some College" = attended college but did not receive a degree; "College" = has BA or BS degree or equivalent; advanced degree = beyond BA or BS.

Source: see Table 1.

Table 7. The U6-U3 Gap by Gender			
	Women	Men	Difference
1990-1997	5.3	4.2	1.1
1998-2001	4.6	3.7	0.9
2002-2007	4.1	3.8	0.3
2008-2010	5.9	6.0	-0.1
2011-2019	4.5	4.1	0.4

Source: see Table 1.

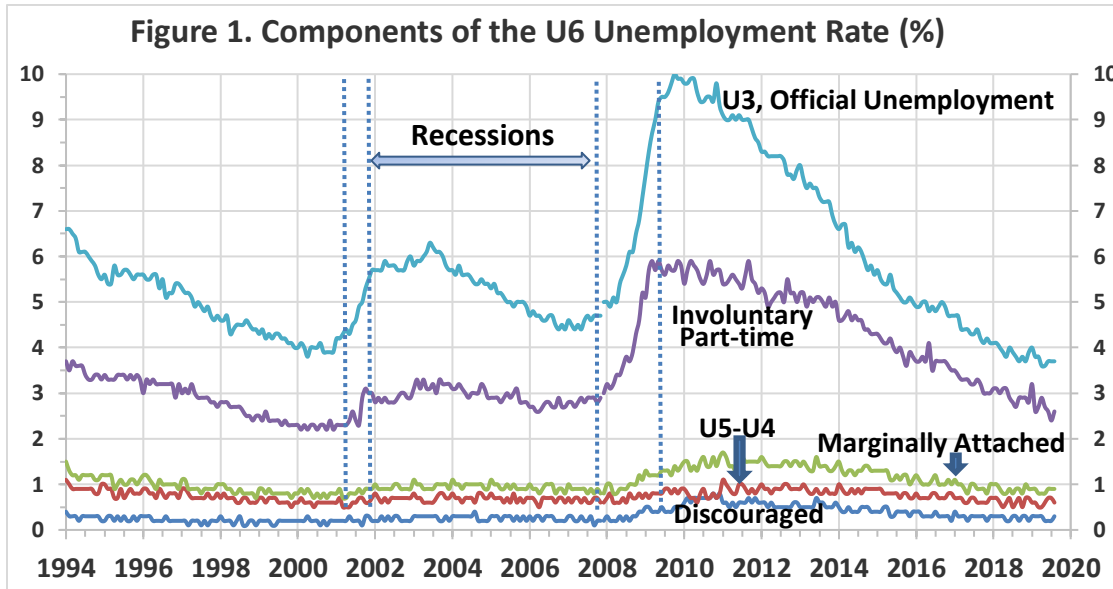
Table 8. Linear Regression Estimates for Four Periods, 1994-2019									
		Estimated Coefficient		t-stat		Intercept 95% CI		Slope 95% CI	
		Intercept	Slope	Intercept	Slope	Lower	Upper	Lower	Upper
1	1994-2001	-0.05	1.78	-0.05	69.45	-0.30	0.20	1.73	1.83
2	2002-2007	2.54	1.25	14.99	39.14	2.20	2.88	1.19	1.31
3	2008-2016	2.35	1.51	17.06	81.99	2.08	2.62	1.48	1.55
4	2017-2019	0.32	1.89	0.90	21.48	-0.40	1.04	1.71	2.07

Source: see Table 1; Note see Figure 17.

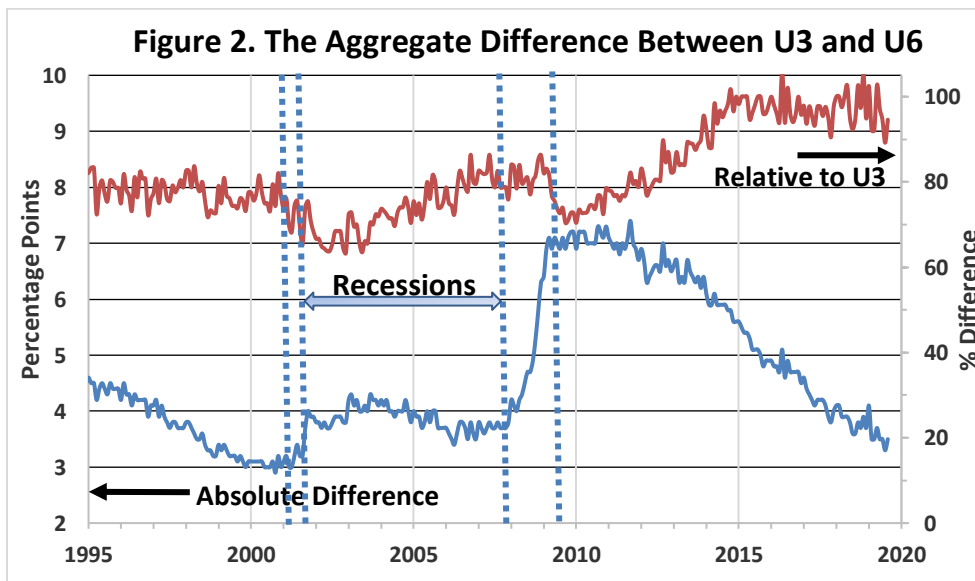
Table 9. The Peak Values of the U6-U3 Gaps after the Great Recession					
Group	Dec. 2007	Peak	Increase	Peak Date	% at Peak
Hispanics	4.9	12.5	7.6	May 2010	104.2
Blacks	4.9	11.9	7.0	Dec. 2011	66.2
No H.S. All	7.8	14.7	6.9	April 2010	77.8
Hisp.	8.2	16.9	8.7	Dec. 2009	106.3
Black	11.7	19.3	7.6	Dec. 2012	65.4
Age 16-24	6.1	13.3	7.2	April 2011	73.9
Hisp.	8.4	15.8	7.4	July 2011	77.8
Black	10.8	18.3	7.5	Oct. 2011	63.3

Source: see Table 1.

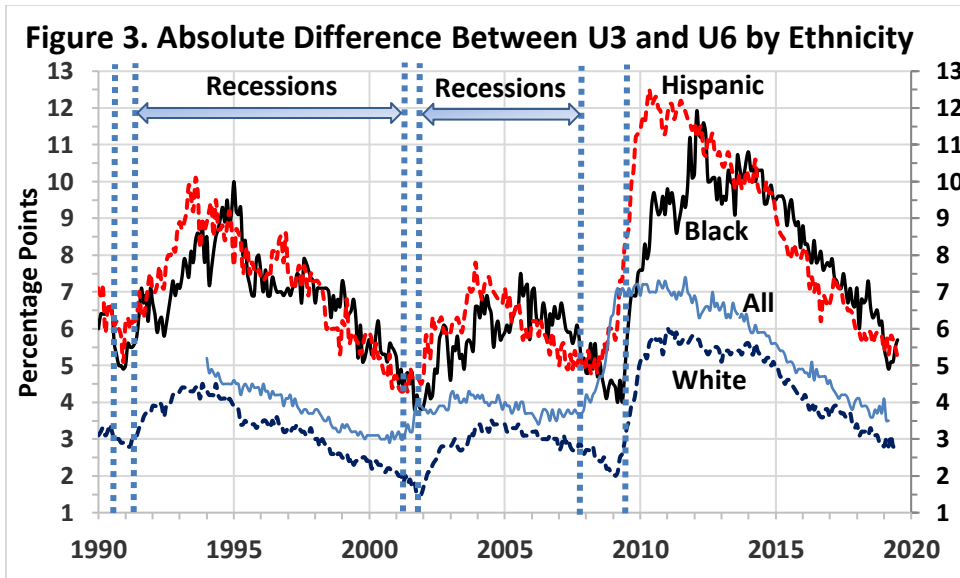
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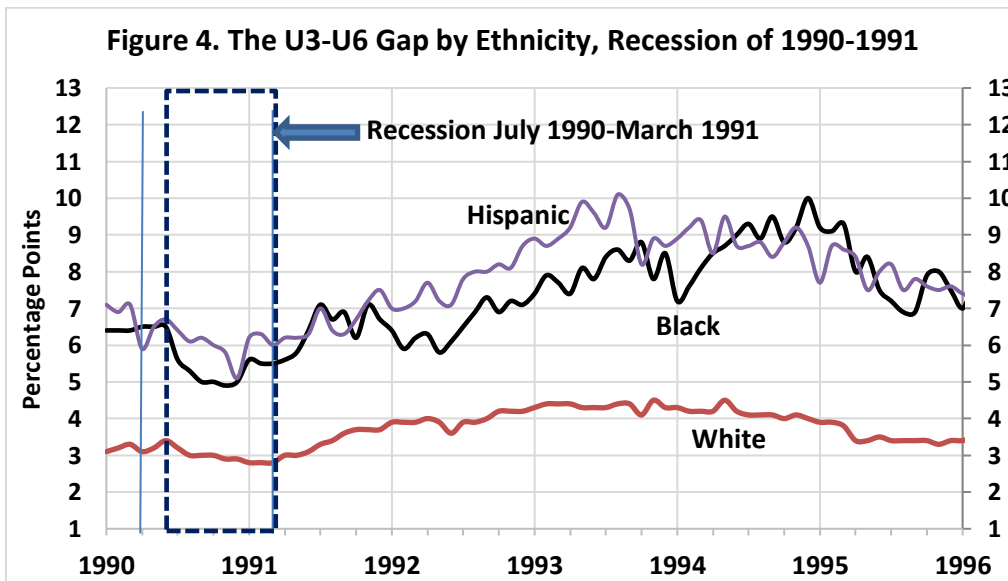
Source: Federal Reserve Bank of St. Louis, series UNRATE, U4RATE, U5RATE, U6RATE.



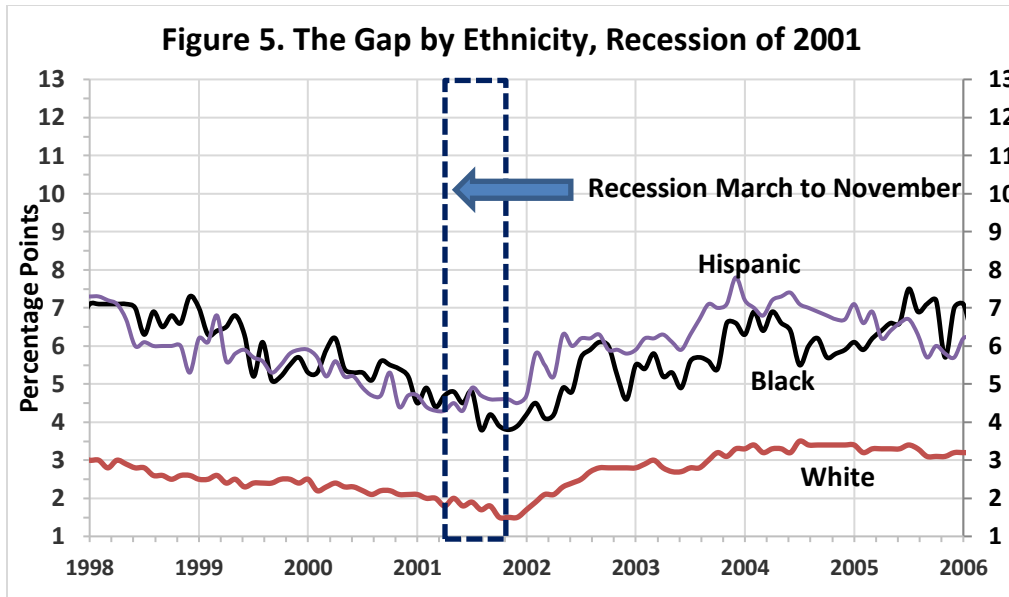
Source: Federal Reserve Bank of St. Louis, UNRATE and U6RATE.



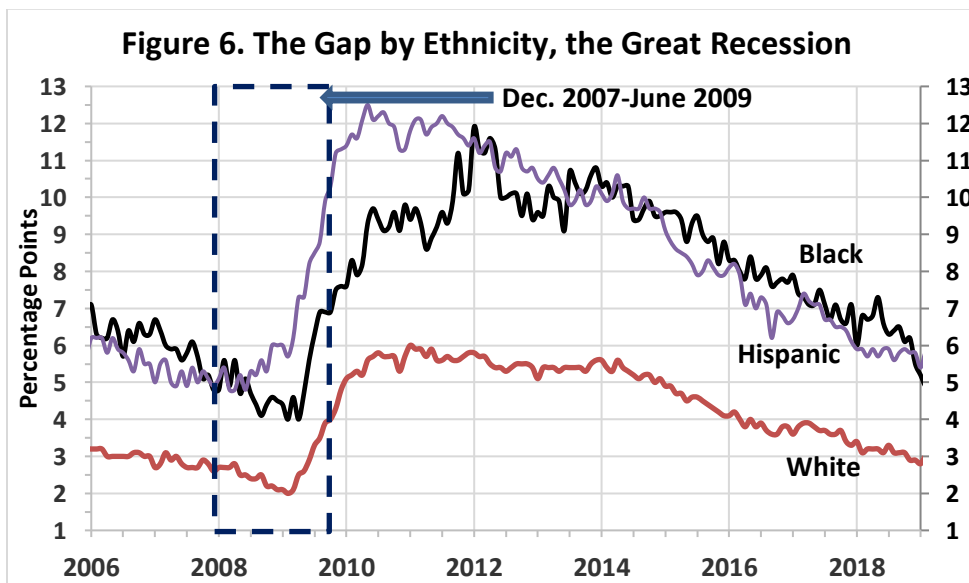
Source: See Table 1 and Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.



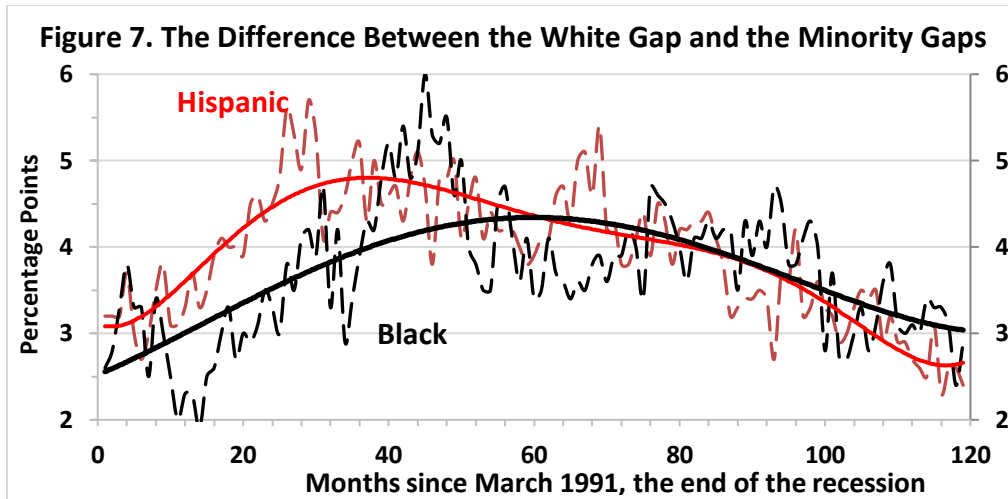
Source: Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.



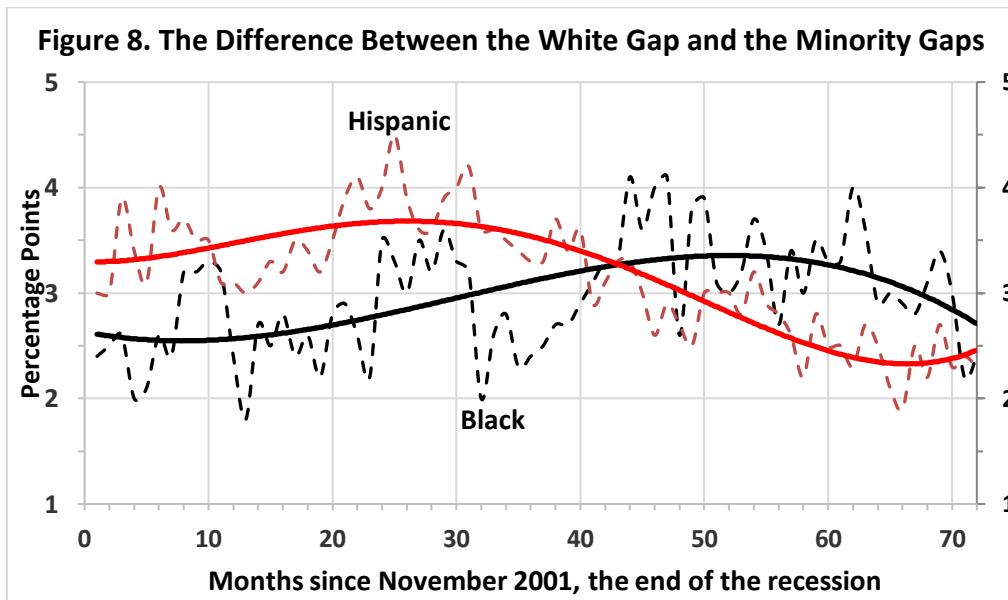
Source: Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.



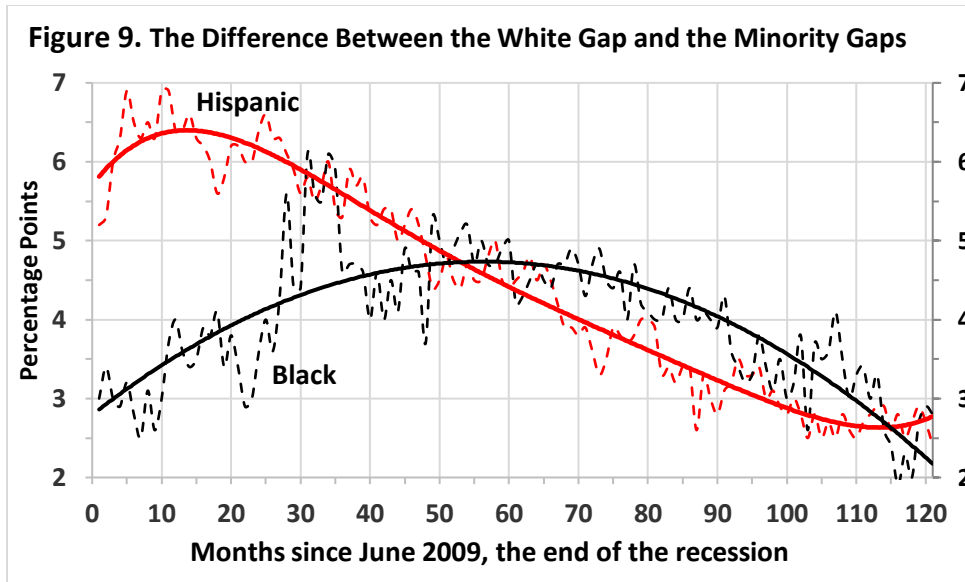
Source: Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.



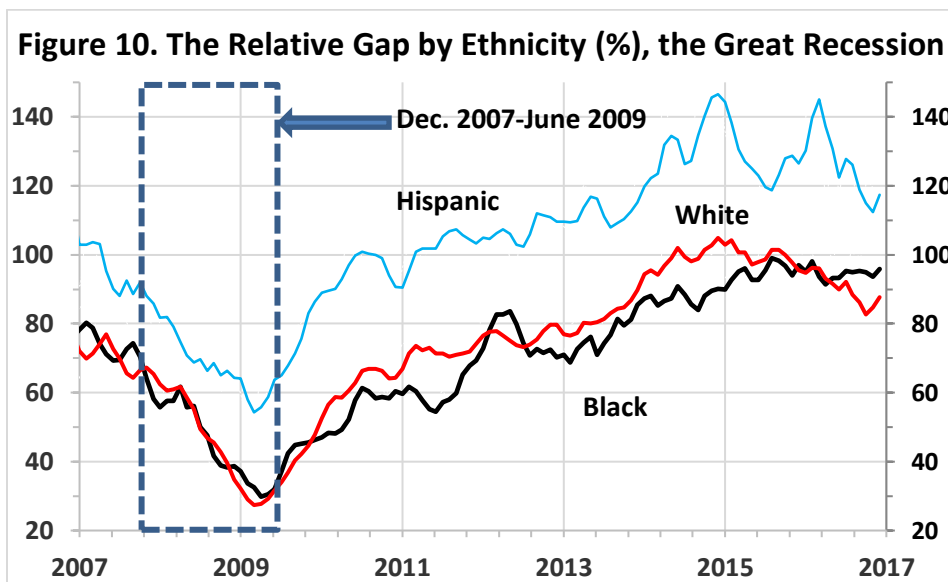
Source: Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.



Source: Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.

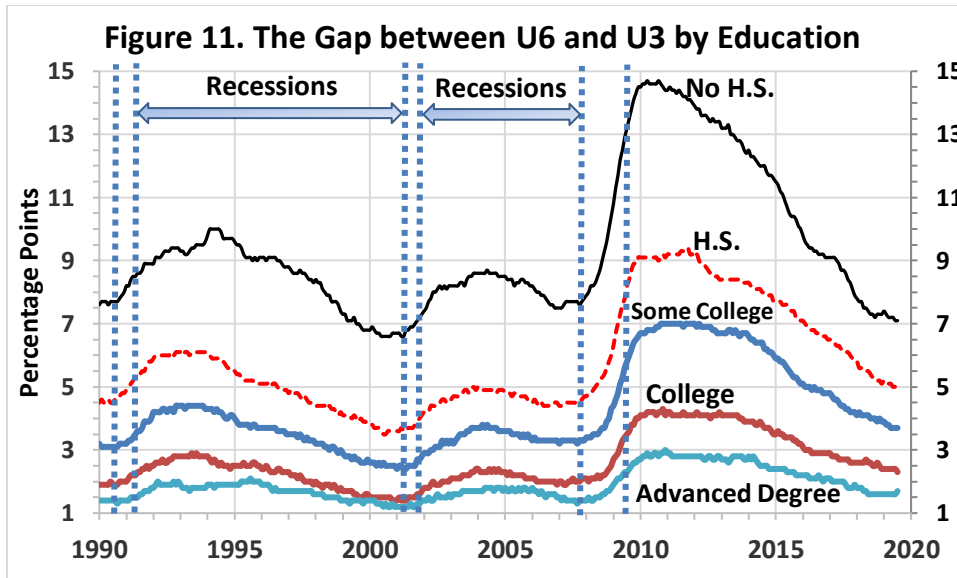


Source: Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.



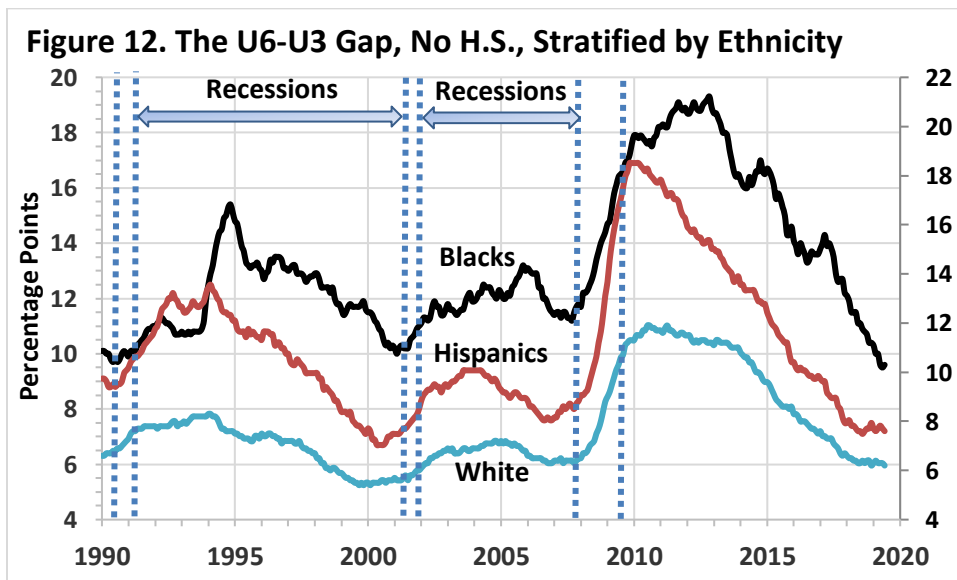
Note: The graph depicts the U6-U3 gap as a percent of U3; three month moving averages is shown.

Source: Economic Policy Institute, *State of Working America Data Library*, “Underemployment,” and “Unemployment,” 2019.

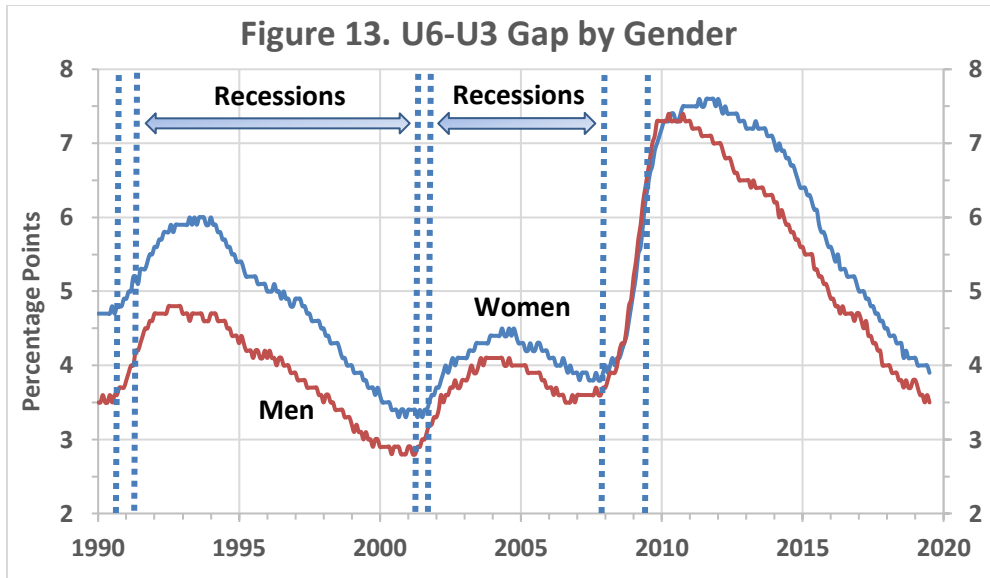


Note: "No H.S." = has high school diploma; H.S.= has high school diploma; "Some College" = attended college but did not receive a degree; "College" = has college degree.

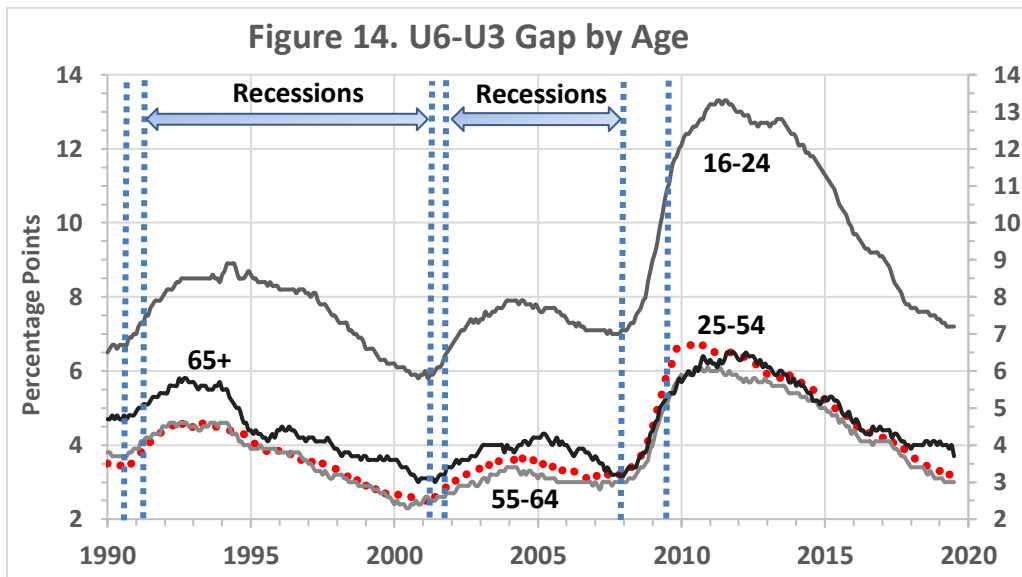
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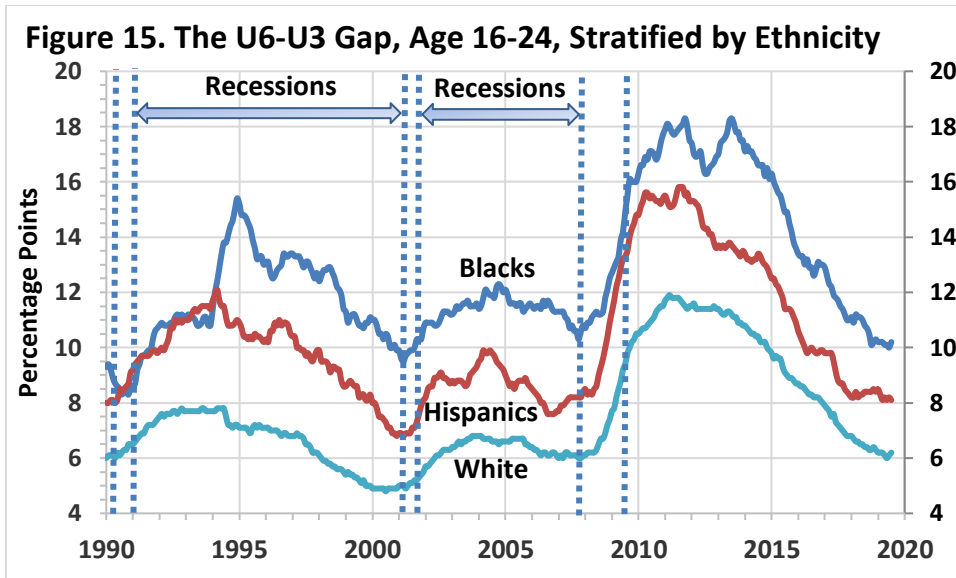
Source: Economic Policy Institute, *State of Working America Data Library*, "Underemployment," and "Unemployment," 2019.



Source: Economic Policy Institute, *State of Working America Data Library*, "Underemployment," and "Unemployment," 2019.



Source: Economic Policy Institute, *State of Working America Data Library*, "Underemployment," and "Unemployment," 2019.



Source: Economic Policy Institute, *State of Working America Data Library*, "Underemployment," and "Unemployment," 2019.

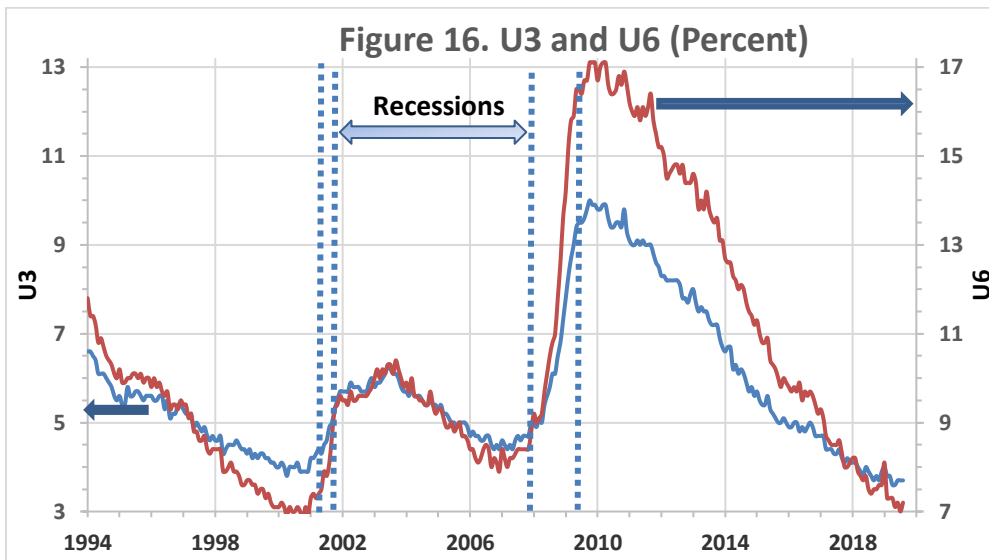
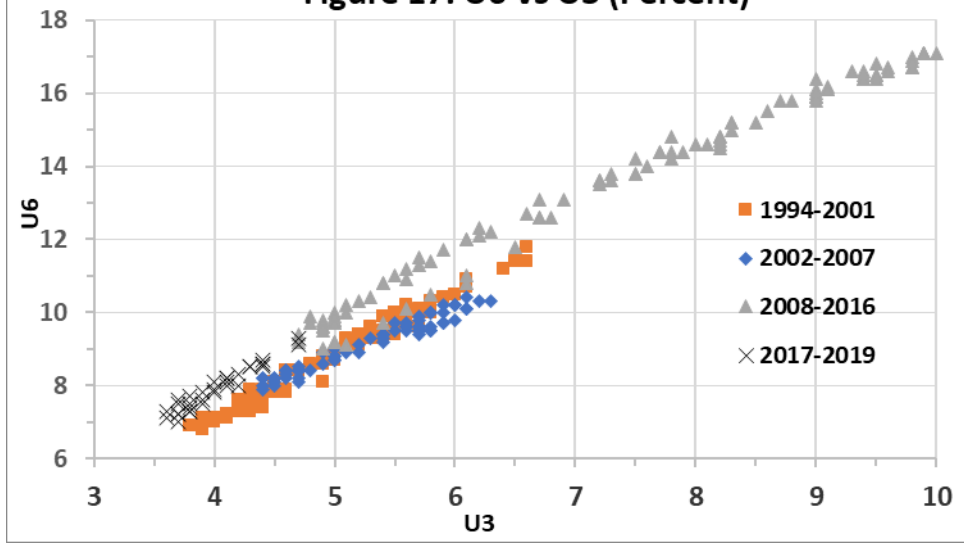


Figure 17. U6 vs U3 (Percent)



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Endnotes

¹ U6 is not defined in the official glossary of the Bureau of Labor Statistics (BLS). The Economic Policy Institute (EPI) calls it “Underemployment”.

² Discouraged workers have not actively sought work within the last month but have worked or sought work during the previous year and the reason they are not looking for work currently is that they do not believe that they would be successful in finding a job. Marginally attached workers do want to work and have worked or looked for work within the last year but have not looked for work within the last month for any reason. Thus, they include discouraged workers plus those who have not looked for work for other reasons besides thinking that they would not find work. Persons who want to work but have not looked for work because their car broke down and do not have money to repair it would fall into this category (BLS, Glossary).

³ Economic Policy Institute (EPI), *State of Working America Data Library*, Underemployment,” 2019; the EPI calculation is based on data from the Current Population Survey of the U.S. Census Bureau. The EPI data starts in December 1989 while the BLS data start in 1994. So, when our data series starts in 1990, we are using the EPI series. When it begins in 1994 we are using the BLS series.

⁴ This percent refers to the whole period under consideration. The variance of the involuntary part-time workers as a share of the U6-U3 gap was 5.3% and the coefficient of variation was just 0.07.

⁵ These are not plausible numbers, calling into question the veracity of the estimates of the marginally attached workers. For instance, in August 2019 the number of workers wanting jobs who have not looked for work was 5.1 million or about 3% of the labor force whereas the marginally attached workers (which included the discouraged workers) were supposedly only 0.9% of the labor force or 1.4 million. (FRED, series NILFWJN; U5Rate; BLS The Economics Daily, August 7, 2019).

⁶ Groups in a segmented labor market do not compete with one another (Dickens and Lang, 1988; McDonald and Solow, 1985; Bulow, and Summers, 1986).

⁷ The U6 data pertaining to minorities are published by the Economic Policy Institute (EPI). Neither the BLS nor the Federal Reserve is willing to publish these data. One can only surmise that they would find it too embarrassing.

⁸ This is like a difference of differences. The white U6-U3 gap is subtracted from the black and then the Hispanic U6-U3 gap.

⁹ Consequently, the relative gap in percentage terms between whites and minorities increased slightly in wake of the recessions by between 3% and 19% (Table 4).

¹⁰ To be sure, gauging the labor market slack correctly should not be our only concern. The duration of unemployment, incomes, and the reliability of incomes, of course, also matter to welfare, as does the nature of the employment and whether it is the foundation of a fulfilling life. The loss in welfare likely also depends on the duration of unemployment as well as on the “disparity in the distribution of the burden of unemployment” (Paul, 1992; Akerlof and Main, 1980).

¹¹ These are examples of Jared Bernstein’s quip that “when the economy snuffles, more economically vulnerable folks catch pneumonia” (Bernstein 2019).