Job Flows, Demographics and the Financial Crisis

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Abstract

The recession the United States economy entered in December of 2007 is considered to be the most severe downturn the country has experienced since the Great Depression. The unemployment rate reached as high as 10.1 percent in October 2009 - the highest we have seen since the 1982 recession. In this paper we decompose the changes in the unemployment rate by examining worker flows into and out of unemployment during the current recession in the United States with a special focus on the most vulnerable groups.

1 Introduction

In August 2007, the U.S. and global economy were hit by a financial crisis. Many argued that it is the worst financial crisis in the post-war period, and some went as far as suggesting it might be the worst in modern history.[1] The colossal losses faced by financial institutions led to a credit crunch. At the same time, the extremely poor performance of housing and stock market led to an enormous wealth loss by households(over 25 percent of U.S. households' net worth was destroyed in the crisis). With weakening demand, the labor market tumbled, as businesses laid off workers. The U.S. economy entered the recession December of 2007. Early on, job losses were low in comparison to previous recessions and the downturn appeared to be mild (in fact, some questioned if a recession was imminent). As financial panic intensified in the fall of 2008, massive job losses followed, and it was clear that not only the country entered a recession, but that this was going to be a deep one.

As we write this paper, the National Bureau of Economic Analysis (NBER) has yet to announce the end of the recession. Yet, as early as September 2009, many analysts and policymakers suggested that the recession might be over. Even if this is so, job losses continue to this day. Overall, the U.S. economy lost more than 7.2 million jobs since the beginning of the recession. The unemployment rate reached as high as 10.1 percent. While the pace of the job losses subsided and the unemployment rate came down to 10 percent, the multitude of public and private forecasts suggest that it

[1] Bernanke 2010 – http://www.federalreserve.gov/newsevents/speech/bernanke20100103a.htm

would take years for the U.S. labor market to recover. And, thus, while the recovery has begun, there is little doubt that it will be slow and painful.

The extreme weakness of the labor market became the focus of attention of many U.S. policymakers. Policy response was comprehensive and involved measures aimed at the stabilization of the financial system, improvements in credit and liquidity and the American Recovery and Reinvestment Act (ARRA) - an aggressive fiscal expansion. One of the goals of ARRA was to create and save jobs.

How does this recession compare to the other ones? Were some demographic groups affected more than others and what was the main driving force behind the rising unemployment? Was it fueled by higher worker inflows into unemployment or decreasing worker outflows compared to previous recessions? Is ARRA helping the most vulnerable? These are the questions we attempt to answer with this paper. We look into labor market experiences of several demographic groups. In particular, we look at gender, age and race -an important variable in the United States.

The paper is organized as follows. Section 2 discusses reasons to expect heterogeneity in employment experiences during economic downturns and briefly summarizes the relevant literature. We then proceed to a discussion of our data in Section 3. We present our empirical methodology in section 4. Section 5 documents the current state of the U.S. labor market for different demographic groups and compares it to previous recessions. Section 6 discusses policy response and section 7 concludes.

2 Heterogeneity in Employment Experiences and Background Literature

There are reasons to expect employment losses - unemployment inflows - to weigh more heavily on women and/or people of color. With regard to gender, job segregation, gender differences in labor market attachment and job tenure, and gender employment discrimination all could serve as mechanisms by which women and men experience different effects on employment. With regard to race and age, one motivation is theoretical work by Blanchard (1995), which argues that economic downturns have "ladder effects" adversely affecting lower-income individuals. In this section, we outline the potential reasons for expecting differential employment responses during changing economic conditions in the labor market. In the first instance our focus is on gender differences as research especially with regard to gender on this issue is sparse.

2.1 Employment segregation

Empirical evidence in OECD countries indicates that women tend to work in a different and narrower range of occupations than men, leaving the possibility of unevenly distributed employment effects during times of economic change.[2] Traditionally, men are more likely to be employed in manufactur-

[2]Both demand- and supply-side explanations for employment segregation have been advanced. On the demand side, employer discrimination against women, including the perception that women are on average less qualified, could result in a greater willingness to hire men and a greater willingness to lay off women first during economic downturns. On the supply side, one explanation is that women self-select into occupations that require smaller human capital investment, due to lower penalties for career breaks . This could be attributed to "societal discrimination" whereby women are expected to bear the burden

ing and agricultural professions while women tend to concentrate in administrative, public, and service sector occupations in a more restricted range of professions. In OECD countries, recent shifts have occurred with both women and men increasing their employment in managerial and professional occupations. In terms of industries, in the US in the 1970s, for example, 28 percent of men were employed in manufacturing and 17 percent in services versus 21 percent and 42 percent respectively of women. In the 1990s, this number changed to 21 percent of men in manufacturing and 25 percent in services versus 11 percent and 47 respectively for women (Blau et al. (1998)). In the 1990s, OECD countries saw the beginning of a greater demand for women in the labor market due to: technological change that allowed substitution of men and women workers, the rise of the service sector and the decline of the production sector, increased education levels of women, and effective anti-discrimination policy measures. As discussed in the next section, while women's labor market attachment increased, occupation and industry segregation, although declining, has remained an issue in these countries (Dolado et al. (2002)). Given the existence of occupational and industry segregation, a differential employment effect by gender due to the onset of a recession can be expected, if these sectors have for example, differing degrees of interest rates sensitivity. Cyclical properties of certain industries and occupations could also result in a gendered employment effect. For example, in European Union (EU) countries, women's relative lower unemployment rates in the past have been attributed to female labor shifts from manufacturing to the service sector, the latter less affected by the

of raising children, thus requiring more flexible jobs.

business cycle. Hence, women, by concentrating in industries less sensitive to business cycle swings, shelter themselves from both negative and positive business cycle effects (Buddelmeyer et al. (2004b)). More recently, the influences of changes in occupational distribution, rather than distributions by industry, have been highlighted as having a greater effect on employment. Using United Kingdom data, Rives and Sosin (2002) show that although at times of recession, unemployment rises for both genders, the occupational distribution favors women's employment. More specifically, within occupations, women's unemployment rates are consistently higher than men's rates. But the distribution of occupations favors women because low unemployment occupations have relatively higher proportions of women. This evidence suggests the possibility of gender-specific employment effects, although the direction of that effect is ambiguous.

2.2 Labor market attachment

Men's and women's employment effect due to changing economic conditions may also take place due to gender differences in the division of part-time and full-time work and labor market attachment (resulting from men's and women's different roles in the care economy) and its correlation with occupational segregation. In both Europe and the US, women have a considerably lower presence in full-time work compared to men (for example, Blank (1998); Buddelmeyer et al. (2004a); Bardasi and Gornick (2008)) and concentrate in temporary and part-time jobs, which are more sensitive to economic downturns and upswings. Occupational segregation is also positively correlated with the share of part-time jobs, as these jobs tend to be

in occupations traditionally held by women.

2.3 Job tenure

A third reason we could expect differential employment responses is the difference between genders in job tenure (Munasinghe and Reif (2008)). Researchers have found that women have shorter tenure (one reason is that they leave work to start families) and consequently may be laid off faster than men (see Booth et al. (1999) for the case of the UK). As a result, in times of economic downturns women may suffer more in terms of employment. However, workers with substantial tenure may also be disproportionately hurt in terms of employment during economic downturns. Ruhm (1987) finds that although the inverse relationship between job duration and turnover rates holds in the US, workers with substantial tenure in recently held jobs are more vulnerable during cyclical fluctuations. This effect is strengthened in sectors that are hit particularly hard by recessions. Overall, it is clear that there are differences in job tenure between men and women, and that tenure affects employment responses to economic conditions.

2.4 Gender discrimination

Employer gender discrimination can also result in employment segregation and cause a gendered employment effect during recession. Employers may perceive the productivity of men and women differently and prefer to hire one over the other, either in hiring/firing the more productive or hiring/firing the seemingly less productive and offering a lower wage. This type of behavior may not be evident when the economy is operating close to full em-

ployment but can certainly be in effect in times of economic downturns. Although the argument of employer discrimination is difficult to maintain with the existence of widespread occupational segregation, there is empirical evidence for the US showing that in male-dominated occupations and industries, the unemployment rate for women has in the past increased more at the cycle troughs (see the literature review in Rives and Sosin (2002) and Azmat et al. (2006)). More recently, Singh and Zammit (2002) found that women in developing countries were fired at substantially higher rates than men after the Asian financial crisis. Another study also found that employers in developing countries may prefer to hire men as a means of reducing costs in recessionary times given that women are more likely to go on leave due to maternity or illness despite the fact that they are perceived as reliable employees (Seguino (2003)).

3 Data

For our project, we use current publicly available data from the U.S. Current Population Survey (CPS) that is continually updated. Our latest data comes from November 2009. The unemployment data is collected by the U.S. Department of Labor, Bureau of Labor Statistics beginning in 1948. For this project we use three series for each demographic group: the number of unemployed, unemployment rate and the number of short-term unemployed (those unemployed for less than 5 weeks). While the unemployment rate and the number of unemployed is typically available for the whole sample (i.e. starting in 1948), the data for short-term unemployed is often available

from mid-1976 only. Thus, much of our analysis begins in 1976 (rather than in 1948).

4 Empirical Methodology

Looking at unemployment rates gives us an idea of the share of people not working in a given period of time or the probability that a randomly chosen person will be unemployed. A more dynamic approach is to estimate the underlying movements of workers into and out of unemployment. This typically refers to the inflow rate, which is the pace at which workers move into unemployment and the outflow rate, the pace at which workers move out of unemployment. During recessions, generally, we see more people losing jobs and becoming unemployed, hence we expect the inflow rate to increase. At the same time, it is harder for people to find jobs, hence we expect the outflow rates to decrease. In this paper, we examine both by computing job finding and separation probabilities with a particular focus on differences across demographic groups.

We use methodology developed by Shimer (Shimer (2007)). We calculate the job finding (inflow) rate -f_t and job separation (outflow) rate-s_t by assuming that during period t, unemployed workers find or lose their job according to a Poisson process with arrival rate $f_t \equiv -log(1 - F_t) \geq 0$ or $s_t \equiv -log(1 - S_t) \geq 0$, where F_t and S_t are finding and separation *probabilities*, respectively and by solving a differential equation for unemployment and short term unemployment further described in the paper. The relationship then between unemployed workers at time t and $t + 1$ (u_t, u_{t+1}) and

short-term unemployed workers (u^s_{t+1}) leads to the job finding probability

$$f_t \equiv -\log(1 - F_t) = -\log\left[\frac{u_{t+1} - u^s_{t+1}}{u_t}\right] \tag{1}$$

The implicit expression for the separation probability is

$$u_{t+1} = \frac{(1 - \exp^{-f_t - s_t})s_t}{f_t + s_t} l_t + \exp^{-f_t - s_t} u_t \tag{2}$$

where $l_t \equiv_t + e_t$ is the size of the labor force during period t

This approach allows us to avoid time aggregation bias, as we work in a continuous time model in which data are available at discrete intervals (Shimer (2007)).

5 The Current State of the U.S. Labor Market

As mentioned in the introduction, during the most recent recession so far more than 7.2 million jobs have been lost since December 2007. A look into the demographic composition of employment and job losses suggests that some demographic groups have been hit harder than others(see Table 1). For example, for the youngest group, the share of job losses exceeds the group's share in employment. For women, the oldest group (55+) also suffered by this definition. With respect to race, blacks are affected more than whites.

Turning to unemployment, the national unemployment rate reached a high of 10.1 percent (October, 2009), bringing back the memories of unemployment rates as high as 10.8 percent reached during the recession of the

Table 1: Demographic composition of employment and job losses (percent)

	Men		**Women**	
	Emp.comp.	Job loss.	Emp.comp.	Job loss.
lt 25	13	20	14	19
25-54	69	64	68	61
55+	19	16	18	20
	100	100	100	100
White	83	80	81	77
Black	10	15	12	16
Other	7	5	7	7
	100	100	100	100

Source: Authors' calculations and Bureau of Labor Statistics.
Note: Employment composition in 12/07. Job losses as of 11/09.

early 1980. To gain additional insight into which forces lead to high unemployment rates during recessions we examine job finding and separation probabilities. The average job finding probability (Ft) during the whole sample period (January 1948 - October 2009) is rather high at 43 percentage points, while the average separation probability (St) is rather low at 3.3 percentage points (See Figure 1). We find that in the recessions of the 1970s and 1980s, we observed considerable declines in job finding probabilities which were also accompanied by comparable increases in job separation probabilities. This resulted in large increases in the unemployment rate during recessions. However, the large recessionary increases in unemployment were also accompanied by strong unemployment rate declines after the downturn. The recessions of the early 1990s and early 2000s were different: as those are characterized by large declines in job finding probability which were not accompanied by increases in job separation probabilities. Thus, unemployment rate increases during those two recessions were driven by the

lack of hiring rather than firing of workers.

During the most recent economic downturn, the job finding probability fell from the pre-recession peak of just above 40 percentage points to a low 17 percentage points. This level is the lowest observed since 1948. The decline in job finding probability from pre-recession peak to trough is 57 percent. This is the largest peak-to-trough decline observed since data collection began (the next largest decline observed is equal to 45 percent (in the 1950s)). The separation probability increased from a pre-recession low of slightly below 2 percent to a peak of just above 3 percent over the course of the most recent recession. At 3 percent, the separation probability is not extraordinarily high, as similar levels were observed during the previous recession and higher levels were observed in recessions prior to that. Shimer (2007) points out the secular decline in separation probability since the early 1980s. Recent data does not contradict this conclusion, although the increase in the job separation probability over the course of the most recent recession allows for a possibility of a reversal of this trend. During the most recent recession, the job separation probability increased by just over 58 percent. This is the third largest increase in job separation probability observed during the period (larger increases in job separation probability were observed in the recessions of 1948 and 1953).

To gain insight into the cyclicality of the unemployment rate, we examine the contributions of job finding and separation probabilities to unemployment rate fluctuations. We exploit the fact that $\frac{s_t}{s_t+f_t}$ is a good approximation of the end-of-month unemployment rate. Let $\bar{f}$ and $\bar{s}$ denote the average values of f_t and s_t over the sample period. We compute $\frac{\bar{s}}{\bar{s}+f_t}$ and

$\frac{\bar{f}}{\bar{f}+s_t}$ as measures of contributions of fluctuations in job finding and separation rates to overall fluctuations in the unemployment rate. The results are shown in Figure 2.

Each panel in Figure 2 shows the actual unemployment rate and the hypothetical one. The hypothetical rate is computed either holding the job finding rate or job separation rate constant at the sample average. Thus, the top panel shows the hypothetical unemployment rate computed holding job separation rate constant and, therefore, lends insight into the contributions of job finding rate to unemployment rate fluctuations. The bottom panel shows the hypothetical unemployment rate computed holding the job finding rate constant (and, therefore, gives us an idea about the contributions of job separation rate to unemployment rate fluctuations). We find that much of the aggregate unemployment rate fluctuations can be explained by job finding rate movements, while movements in job separation probabilities explain much less of the fluctuations in unemployment (as the hypothetical unemployment rate depicted in the top panel of Figure 2 trails the actual unemployment rate closer than the hypothetical unemployment rate presented in the bottom panel).

One possible explanation for the decline in the aggregate job finding probability is the change in the composition of the labor force. For example, with the aging of the baby boomers and increase in educational attainment of the population, the share of prime age adults and those with higher education increased. As these groups, on average, have a lower job finding probability (see Table 2 later in this paper), the increase in their share in total labor force would drive the aggregate job finding probability down. As

a result, to get a better understanding of the forces driving the changes in the unemployment rate we proceed by examining differences in unemployment rates by various demographic groups. To be specific, we look at gender, age, and race (an important demographic variable in the United States). Our findings indicate that this recession in many ways is different from those in the past (in terms of degree of severity) and as a result will have different implications for the well-being of households and individuals.

5.1 Age and Gender

In the United States, the unemployment rate for males tended to be below that for females until the early 1980s. After, the situation reversed particularly during recessions (see Figure 3 for gender-specific unemployment rates). In August 2009, the unemployment rate for males was 2.7 percentage points higher than that for females - the largest unemployment rate gap observed in the history of the series. We further examine the gender unemployment gaps by age groups. We distinguish six: 16-19, 20-24, 25-34, 35-44, 45-54, 55+. The results are shown in Figure 4. We show the difference between male and female unemployment rates (i.e. a positive gap means that the unemployment rate for men is higher than that for women). During the most recent recession the gap is the largest observed during the sample period for all age groups. Interestingly, for prime age workers, the male and female unemployment rate tended to converge since the 1980s (unemployment rate gap is close to zero), but during the recent recession the gap increased dramatically.

This unusually large gap between male and female unemployment is

driven by historically high unemployment rates for males. At 11.4 percent in October 2009, the unemployment rate for males stands at its highest level since 1948. Last time male unemployment rate reached the teens was during the recessions of the 1980s (the peak back then was 11.2 percent in December of 1982). For females, unemployment rate stands at 8.8 percent. While this is the highest unemployment rate we have observed for females in more than two decades, it is not an unprecedented high, as unemployment level for females reached 10.4 percent in December 1982.

The size of the unemployment rate *increase* also underscores the severity of this recession. Unemployment rate jumped by 6.3 and 4.1 percentage points for males and females, respectively. These magnitudes are quite large in comparison to previous recessions. For instance, the largest unemployment rate increase previously observed was 4.2 percentage points for males (during the recession of 1981) and 3.6 percentage points for females (during the recession of 1973). Looking into the age break-down, we find that for men the unemployment rates reached historic highs for all age groups, whereas for women this is only the case for the youngest (16-19) and the oldest (45-54) groups.

To learn more about gender and age unemployment rate differentials, we look into job finding and separation probabilities(see Figure 5) since 1976. At the beginning of the sample period, the job finding probability for males tends to be lower than for females. The two rates start converging in the early 1990s and move closely together during the most recent downturn. The decline in job finding probability for men was 64.8 percent for men, and 58.5 percent for women. Both groups experienced the largest decline in the

job finding probability during the sample period.

The job separation probability for men also tends to be below that for women over the sample period, but both seem to be systematically decreasing over time (this secular decline in job separation probability was also pointed out by Shimer (2007)). The current downturn is a noticeable exception, as the job separation probability for men increased and became higher than that for women. These results suggest that the gender gap differential observed (higher unemployment rate for men) in the current downturn can be explained by differences in job separation probabilities (with job separation probability for men exceeding that for women) and not job finding probabilities. As we have shown this phenomena has not been observed during previous recessions and is driving the current results.

Examining age-specific gender differentials in job finding and separation probabilities we find that, on average, job finding probabilities are smaller at older ages and they are statistically significantly higher for women than for men (see Table 2). The gender gap in job finding probabilities has been narrowing over time for all age groups, with the gender-specific job finding probabilities converging since the mid-1990s. During the most recent downturn, the job finding rate for females appears to have fared out better than that for males for the younger group (those under 24), and there are no noticeable differences for age groups above 24 (results available from the authors).

The calculated job separation probabilities are also smaller for the older workers (see Table 2). While gender specific job separation probabilities have converged over time, in the recent recession job separation probabilities for

Table 2: Average Job Finding (F) and Separation (S) Probabilities (Standard Errors in Parenthesis)

	Men		**Women**	
	F	S	F	S
16-19	0.49*	0.14*	0.53*	0.14*
	(0.004)	(0.001)	(0.004)	(0.002)
20-24	0.40*	0.06*	0.47*	0.06*
	(0.004)	(0.000)	(0.004)	(0.001)
25-34	0.35*	0.03*	0.41*	0.04*
	(0.003)	(0.000)	(0.004)	(0.001)
35-44	0.31*	0.02*	0.37*	0.02*
	(0.003)	(0.000)	(0.004)	(0.000)
45-54	0.28*	0.01*	0.34*	0.02*
	(0.014)	(0.001)	(0.017)	(0.001)
55+	0.29	0.01	N/A	N/A
	(0.003)	(0.000)		

Source: Authors' calculations.

Note: * indicates results are statistically significantly different at 5%.

females dropped noticeably in comparison to males for all age groups (results available from the authors).

5.2 Race and Gender

We now take a look at the labor market indicators by race and gender. The unemployment rate of the whites stands below that of the blacks (see Figure 6). The available data show that the race gap has been growing since 1976 until early 1980s and then reversed course until the last recession. The

trend has been for a decreasing race gap although in 4 out of 5 recessions the gap increased (the recession of the early 1990s is an exception). As a result the increase observed during the most recent downturn is not unusual although it is rather large in magnitude. The peak of 6.4 percent reached in September of 2009 is about half of what was observed during the recession of the 1980s (for instance, the gap reached 12.1 percent in January of 1983). Examining the unemployment rate by race and gender (Figure 7) reveals that the increase in the race unemployment gap during the current recession is driven by the increase in the unemployment rate gap for males, as the unemployment rate gap for females actually declined.

Turning to job finding and separation probabilities (Figure 8), we find that for white women and men job finding probabilities are for the most part higher than for blacks. During the current economic downturn, peak-to-trough decline in job finding probability was higher for blacks. Job separation probabilities have been steadily declining since 1976 for women and men and since the mid-1990s there is about a 1 percentage point difference between the two race groups although those of whites remain lower than those of blacks. Interestingly, for many demographic groups surveyed, we observe that relatively speaking groups with lower job finding rates also have lower job separation rates (for instance, different age groups). In this case, though, we observe that blacks have lower job finding rates than whites, but do not enjoy lower job separation rates although the differences are small.

It seems that for males, the observed increase in race unemployment gap is driven by differences in job separation probabilities, as job separation probability for blacks jumped noticeably above that for whites during the

recent recession (see Figure 8). This is not the case for females and we do not observe an increase in their race unemployment gap. Thus, once again, we see that the job separation rate is playing an important role in explaining the differences between unemployment rates across demographic groups.

6 Policy Response

After documenting the current state of the U.S. labor market, we turn to policy response. In particular, we look into the American Recovery and Reinvestment Act (ARRA) of 2009, whose purpose (among others) is to save and create jobs. The Council of Economic Advisers (an agency within the Executive Office of the U.S. President charged with offering the President objective economic advice on the formulation of both domestic and international economic policy) estimates that ARRA would increase employment by 3.5 million by the end of 2010 and 6.8 million by the end of 2012 (Council of Economic Advisers (2009)).

The employment and unemployment experiences during economic downturns, however, vary by demographic groups. The Obama administration recognizes this and one of ARRA's aims is to protect the most vulnerable from the deep recession. The administration estimates that roughly 42 percent of jobs created will go to women, which as of December 2007 held about 48% of jobs and initially (until the end of November, 2008) accounted for about 27% of the job losses during the current recession (Romer and Bernstein (2009)).[3] In order to assess whether this recovery package favors

[3]Our most recent calculations based on Dec 2007-Nov 2009 data indicate women lost about 35% of the jobs (see Table5).

Table 3: Change in Payroll Employment 2007-2009

	Q1	Q2	Q3	Q4
2007	133	82	2	167
2008	-113	-153	-208	-553
2009	-691	-428	-199	-69

Source:Department of Labor (Bureau of Labor Statistics)

one demographic groups over another (for example, women over men) we would need to understand the reasons lower shares of, for example, women are employed in certain industries in the first place (due to discrimination or individual preferences). As a result assessing the equity of the stimulus package based on raw data alone is not fully satisfactory. Other evidence on the demographic split of jobs created by the ARRA forecasts that less jobs will go to whites compared to their initial employment share before the recession, while nonwhites will not gain significantly. The highest job losses not addressed by ARRA will be for those with low education levels (high school or less)(Zacharias et al. (2009)).

Compared to the above studies, which forecast the likely path of recovery, the most recent estimates of the impact of the ARRA published by the Council of Economic Advisers (Council of Economic Advisers (2009),Council of Economic Advisers (2010)) examine the effect of the stimulus plan relative to a baseline scenario. Using past data of GDP and employment and actual data from 2009 these estimates indicate that employment would be about 2 million jobs lower without the ARRA. In Table 3, BLS data indicate the extent to which there has been a systematic decrease in the number of jobs lost since the onset of the recession.

Table 4: Employment Effects of the Recovery Act by Sector, 2009:Q4

Factor	Empl. Share	Share of total jobs created			Total jobs (000s)	Fraction Female	Jobs Women (000s)
		Levy		CEA	CEA		CEA
		Gov.	Private				
Mining and Logging	1%	**2 %**	**2 %**	0 %	8	13	1
Construction	5%	5 %	**10 %**	**13 %**	262	13	34
Manufacturing	9%	8 %	9 %	**17 %**	354	29	103
Trade, Transportation and Utilities	19%	15 %	16 %	**22 %**	459	43	197
Information	2%	2 %	2 %	**5 %**	101	42	42
Financial Activities (FIRE)	6%	5 %	5 %	3 %	61	59	36
Professional and Business Services	13%	12 %	13 %	**25 %**	510	44.7	228
Education and Health Services	15%	10 %	13 %	2 %	46	77	35
Leisure and Hospitality	10%	8 %	7 %	8 %	165	53	87
Other Services	4%	4 %	4 %	2 %	43	52	22
Government	17%	**29 %**	**19 %**	3 %	60	57	34
Total Nonfarm Employment	100%	100 %	100 %	100 %	2068		955

Sources: Authors' calculations; Bureau of Labor Statistics; Council of Economic Advisers (2009); Zacharias et al. (2009)

Notes: Items may not add to total due to rounding. In bold if estimate of share of jobs created is larger than the share in employment. Employment composition in 12/07. Levy estimates is ARRA employment estimated as in Zacharias et al. (2009) considering two scenarios (government and private). See text.

Using the employment effects calculated by the CEA we estimate the possible job effects by gender by industries given the share of groups employed in each of the industries (see Table 4). We see that for some industries the net gain of total jobs considering the baseline scenario is larger than their share in total employment (in bold: construction, manufacturing, trade and to the largest extent professional and business services) as compared to the other sectors (education and health services, leisure and government). Taking into account the equity effects of the ARRA one should note that in the former industries the majority of employees are men as compared to the latter group. In Table 4 besides the estimates of the CEA, for comparison purposes we also include two types of estimates of jobs created performed by the Levy Institute based on different assumptions.[4] These matched well with CEA estimated considering the total number of jobs created in 2009-2011 (about 6.2 million), but there is some variation when comparing the results by industry (particularly for manufacturing, professional and business services and government).

Finally, we compare the impact of the fiscal stimulus on employment by demographic groups with the employment composition and job losses until late 2009 (see Table 5). We find that men and the young have suffered in terms of job loss relatively more then their share in employment would suggest. Job creation estimates suggest that the nonwhite will benefit relatively

[4]In both of these the midpoint of 'high' and 'low' multipliers for transfers, taxes and subsidies provided by the Congressional Budget Office is used. The difference lies in the further assumption regarding the industrial distribution of final demand generated by government purchases. The 'government' scenario assumes it is distributed among government industries and the 'private' scenario assumes most of the final demand increase is captured by private industries.

Table 5: Demographic composition of employment, job losses and ARRA employment

	Emp.comp.	Job loss.	ARRA emp.	
			Gov.	Priv.
Gender				
Men	54	65	60	63
Women	46	35	40	37
Race				
White	81	79	61	61
Nonwhite	19	21	40	39
Age				
lt 25	13	18	10	12
25+	87	80	90	88

Source: Authors' calculations. Bureau of Labor Statistics;Zacharias et al. (2009)

Note: Employment composition in 12/07. Job losses as of 11/09. ARRA employment estimated as in Zacharias et al. (2009) considering two scenarios (government and private). See text.

more than the white from ARRA job creation and the young relatively less than prime-age adults.

6.1 ARRA and the income distribution

Our results indicate that men, nonwhite and particularly the young have been affected relatively more (in terms of percentages) by unemployment during the current recession than their employment share would suggest. To some extent this seems to be addressed by ARRA thus affecting the distribution of earnings, although it still leaves the most vulnerable- vulnerable. Zacharias et al. (2009) estimate that jobs created by ARRA will

provide higher average earnings than the earnings of earners in non-ARRA jobs by 3%. Particularly affected will be those in the bottom quintile of the earnings distribution compared to the rest of the distribution. There will be some gain for those with high school diploma, nonwhites and to women compared to men although these will not be sufficient to close the respective earnings gaps. These authors also find that the gain in average income resulting from the ARRA stimulus package will benefit those in the lower quintiles relatively more than those in the higher quintiles, but the pro-poor pattern of income growth will only have a negligible effect on the shares of aggregate income enterning each quintile hence, suggesting that the overall effect of ARRA on income inequality will be negligible.

7 Conclusions

This paper measures worker inflows and outflows into unemployment in the United States between 1948 and 2009 and between 1976 and 2009 for several demographic groups. The focus of the paper are the experiences of the most vulnerable groups during the last recession and a comparison with previous recessions.

We find that during the most recent recession the job finding probability exhibited its biggest drop from peak to trough since official measurement began (57%). In addition the job separation probability also exhibited one of the largest increases in the post-war period. The decline in the job finding probability seems to be explaining the majority of the fluctuations in the unemployment rate, which to a certain extent can be explained by the chang-

ing composition of the labor force with older workers exhibiting smaller job finding probabilities than younger workers (and at the same time smaller separation probabilities).

This recession has also been accompanied by a large gender gap in unemployment with men driving the unemployment rate upwards (particularly at older ages). Further insight shows that men currently have one of the highest unemployment rates in history due to very low job finding probability rates. The increase in separation probabilities has not been so dramatic. Gender differences though seem to be driven by the higher separation probabilities for men compared to women and not by the historically low finding probabilities for men and women.

We find that the race gap has also increased being driven by the gap for males as the differences in unemployment rates for black and white females has actually decreased. In terms of job finding probabilities, historically they have been higher for whites, and during this recession both white women and men have exhibited less of a decline in these probabilities than their black counterparts. Overall, the increase in the race unemployment gap for males seems to be driven by differences in job separation probabilities, as job separation probability for blacks jumped noticeably above that for whites during the recent recession. Yet again, the job separation rate seems to be playing an important role in explaining the differences between unemployment rates across demographic groups.

In terms of the ARRA stimulus package and its effect on job creation the research has only began. For the moment, we find that industries that have been hit the hardest (trade and professional and manufacturing) and

employ a majority of men will benefit the most. Those suffering the most will be the low educated and the young.

The effect of the income distribution needs to be further examined, but helping the poorest (through job creation or extension of unemployment benefits) will have a negligible effect on income inequality although it should be pointed out that not helping would lead to its further increase. Falling stock prices and housing prices resulting in vanishing retirement accounts and retirement wealth could potentially pose a big problem for the future if this results in having large numbers of baby boomers in poverty. This could potentially have an effect on the income distribution. Inequality is mostly driven by very high earnings at the top end of the distribution, which may decline temporarily as a result of the current recession thus reducing income inequality. At the same time, disappearing wealth for the rich will have a negative effect on private business and job creation. One interesting direction for further research would be to focus on examining the effects of the recession at the top end of the distribution.

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Figure 1: Aggregate Job Finding and Separation Probabilities

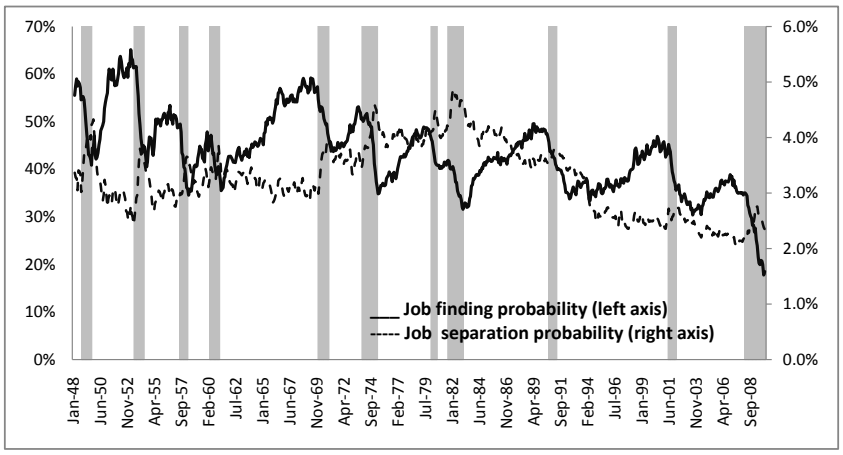


Figure 2: Contributions of Job Finding and Separation Rates to Fluctuations in the Aggregate Unemployment Rate

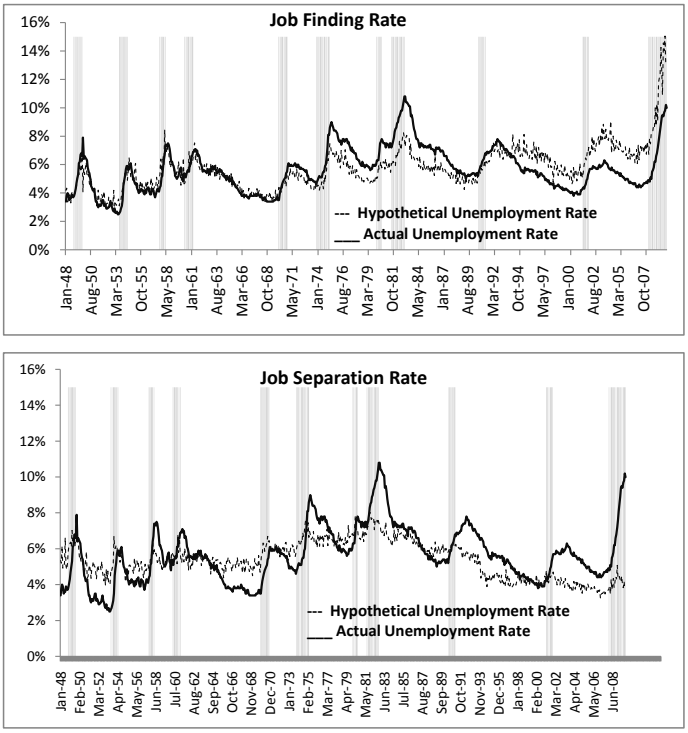


Figure 3: Male and Female Unemployment Rate

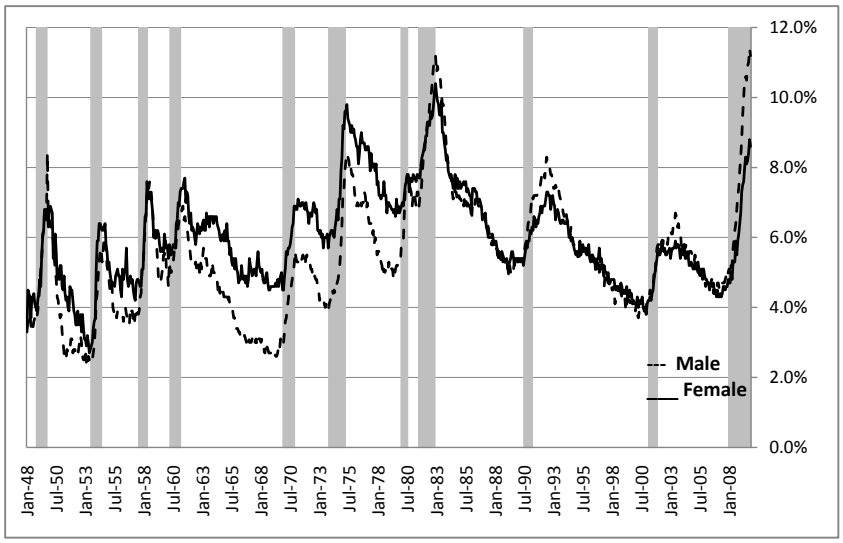
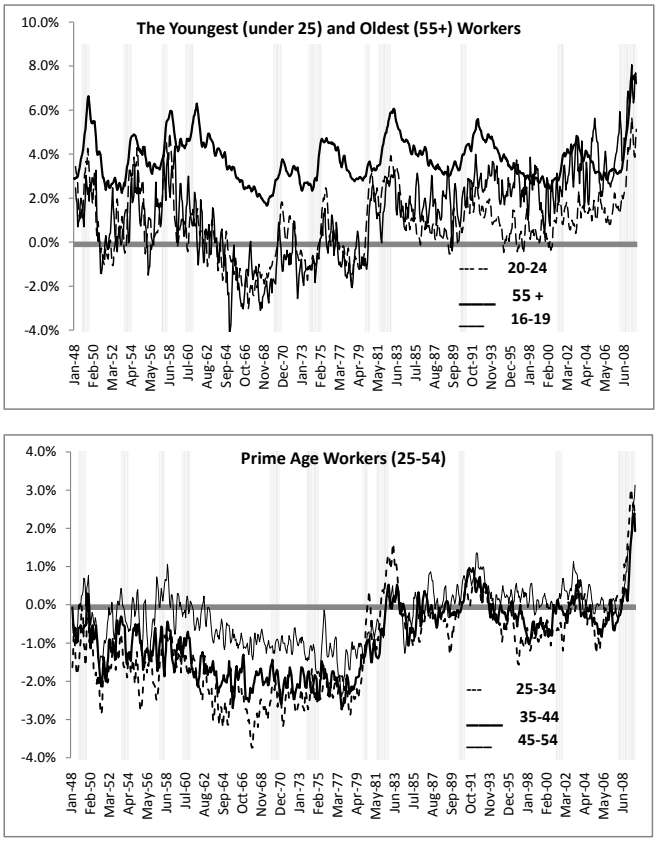


Figure 4: Unemployment Rate Gap for Men and Women by Age Groups (3-months moving average).



Note: Gap shown is the difference between male and female unemployment rates

Figure 5: Job Finding and Separation Probabilities by Gender.

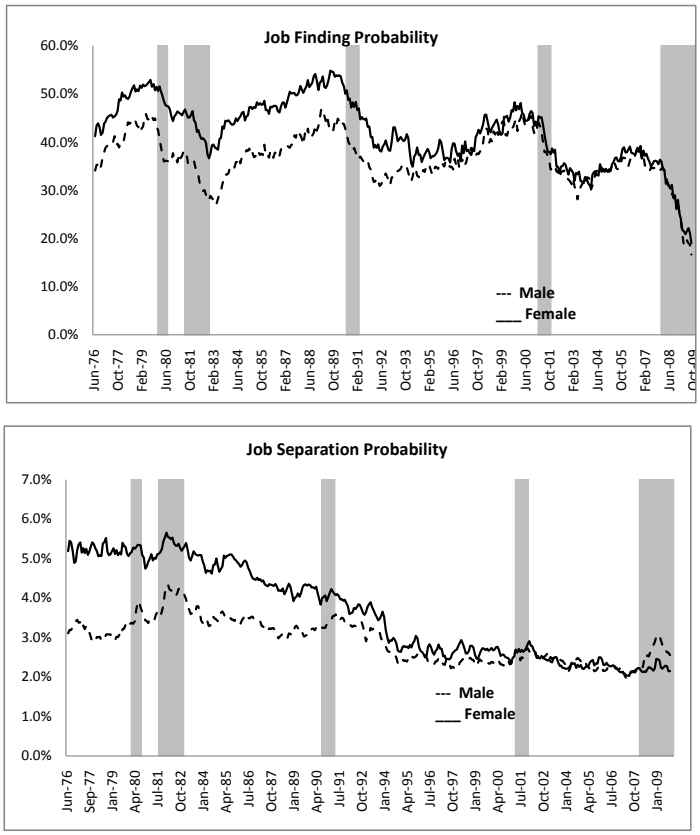
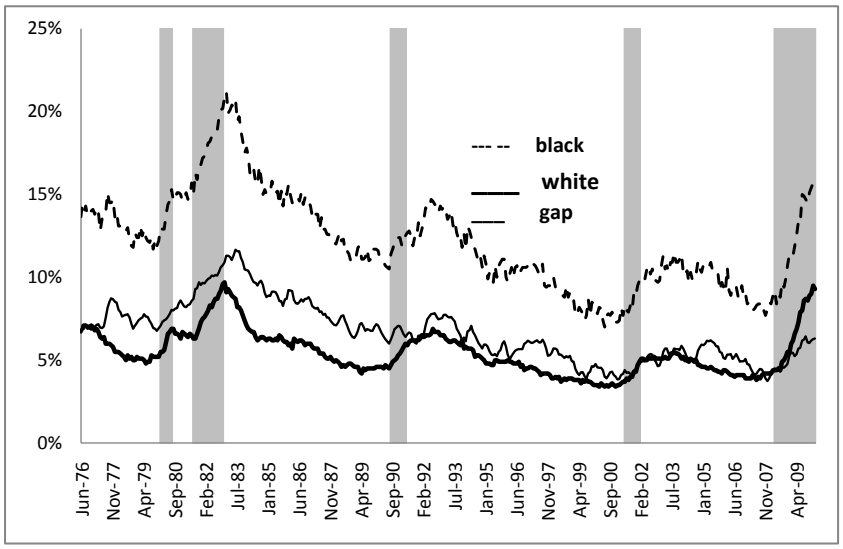
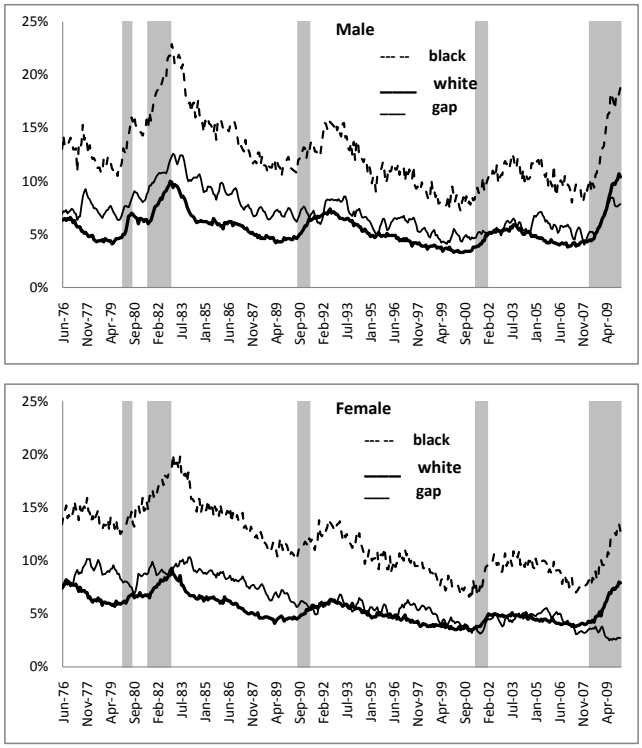


Figure 6: Unemployment Rate and Unemployment Rate Gap by Race (3-month moving average).



Note: Gap shown is the difference between black and white unemployment rates

Figure 7: Unemployment Rate and Unemployment Rate Gap by Race and Gender



Note: Gap shown is the difference between black and white unemployment rates

Figure 8: Contributions of Job Finding (left) and Separation Rates (right) to Fluctuations in the Aggregate Unemployment Rate