

The Creative Class and the crisis

Todd Gabe^a, Richard Florida^b and Charlotta Mellander^c

^aUniversity of Maine, 5782 Winslow Hall, Orono, Maine 04469, USA, todd.gabe@maine.edu

^bMartin Prosperity Institute, 101 College Street, Suite 420, Toronto, Ontario, Canada, M5G 1L7, florida@rotman.utoronto.ca

^cJönköping International Business School, Box 1026, 551 11 Jönköping, Sweden, charlotta.mellander@jibs.se

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The economic crisis contributed to sharp increases in US unemployment rates for all three of the major socio-economic classes. Results from regression models using individual-level data from the 2006–2011 US Current Population Surveys indicate that members of the Creative Class had a lower probability of being unemployed over this period than individuals in the Service and Working Classes and that the impact of having a creative occupation became more beneficial in the 2 years following the recession. These patterns, if they continue, are suggestive of a structural change occurring in the US economy—one that favours knowledge-based creative activities.

Keywords: economic crisis, Great Recession, Creative Class, Service Class, Working Class, unemployment.

JEL Classifications: J6, J24, R0

Introduction

The economic crisis of 2008 was deep and far reaching. Over a relatively short time period, the US economy saw a reduction in the ranks of the employed of about 8.4 million individuals between January 2008 and December 2009, and the US unemployment rate rose from 5.0% at the start of the economic slowdown in December 2007 to 9.5% at its official end in June 2009.¹ But a broader measure of unemployment, the so-called U-6 unemployment rate—which also accounts for ‘marginally attached’ workers and those who work part-time for ‘economic reasons’—topped 17% in several months of 2009 and 2010.

Many observers of the US and global economies have commented on the severity, defining characteristics and long-reaching implications of the recent economic downturn. [Reinhart and Rogoff \(2009\)](#) refer to it as the ‘Second Great Contraction’, with the Great Depression being the first, and suggest that its impacts have been “extraordinarily severe”. After initiating the less sombre description of a ‘Great Recession’, [Krugman \(2009\)](#) noted that it appeared that the USA was in a Second Great Depression. [Nelson \(2008\)](#) suggests that in many respects the current economic crisis bears more similarity to the even deeper Panic and Long Depression of the 1870s. [Cowen \(2011\)](#) dubs it a

Great Stagnation, noting the diminishing pace of new discovery and the falling rate of productivity growth among advanced economies.

Florida (2010) refers to the present economic era as a ‘Great Reset’, similar in scope and nature to the crises of the 1870s (the First Reset) and 1930s (the Second Reset), remarking that recovery will result in not only an accelerated rate of innovation and enhanced productivity but also new sources of consumer demand that stem from significant shifts in lifestyles and a new geography or spatial fix (Harvey, 1981, 1982, 2003). Furthermore, Florida (2010) notes that the current crisis is more than a financial or economic crisis. He suggests that it is an even deeper structural divide as the productive and innovative capacities of the emergent knowledge-based creative economies came smack up against the outmoded institutions, economic and social structures and geographic forms of the old industrial age. This is indicative of broader structural change in the economy—a shift in the nature and make-up of employment.

Economists have noted that individuals without a college degree were hit particularly hard by the recession (Elsby et al., 2010; Katz, 2010). The rate of unemployment for the college educated peaked at 5.0% in September 2009 while individuals 25 years and older without a college degree saw a high of 9.1% unemployment in September 2010. Autor (2010) suggests that the economic crisis ‘reinforced’ the trend towards ‘skill-biased technical change’ in the labour market—the combination of enhanced technology use (for example, automation of routine tasks) and the globalization of labour markets, which has already contributed to a ‘polarization’ of the labour market with employment opportunities concentrated in the highest and lowest skilled occupations, and a reduction of ‘middle-skill jobs’. This perspective also suggests that the economic downturn has reinforced broader structural change in the economy, with the most substantial impacts

hitting less skilled workers with lower levels of education (Autor, 2010; Kolesnikova and Liu, 2011).²

Although the receipt of a college degree is often used as a proxy for an individual’s skill level, a person’s occupation provides a strong indication of the types of skills that are actually used on the job. Florida’s (2002) Creative Class—defined along occupational lines and including jobs such as engineers, artists, scientists and educators—grew rapidly from the smallest of the socio-economic classes (behind the Working and Service Classes) to the second largest major occupational group (behind only the Service Class) over the latter-half of the 20th century. With the impacts of the 2008 recession on individuals with and without a college degree already known, the primary research question addressed in this paper is how members of the Creative Class fared during the Great Recession, as compared to those in the Service and Working Classes.

Numerous studies have examined the determinants of unemployment, although very little attention has been paid to differences across occupations or major occupational groups.³ Past studies, both those that report economy-wide unemployment statistics and others that involve regression analysis of state or metropolitan area unemployment rates, find that age, educational attainment, gender and race are key factors affecting unemployment (Azmat et al., 2006; Daly et al., 2007; Fairlie and Sundstrom, 1997; Mincer, 1989). A person’s location of residence also appears to influence the likelihood of being unemployed, with a region’s industrial structure (for example, diversification) explaining differences in unemployment rates across states and metropolitan areas (Blanchard and Katz, 1992; Malizia and Ke, 1993; Partridge and Rickman, 1997a, 1997b; Simon, 1988). Recent studies examining employment prospects during the Great Recession indicate that males, young workers, those without a college degree and ethnic

minorities were hardest hit by the 2008 economic downturn (Elsby et al., 2010; Katz, 2010). Our research not only accounts for the factors found in other studies to impact unemployment but also investigates the impact of having a Creative Class occupation—a measure of human capital that is different from educational attainment—on an individual’s probability of being unemployed in the years before, during and immediately following the Great Recession.

Why Creative Class members might have fared better

The Creative Class is comprised of the major occupational categories of computer and mathematical; architecture and engineering; life, physical and social science; education, training and library; arts, design, entertainment, sports and media; management; business and financial operations; health care practitioners and technical; and high-end sales and sales management occupations.⁴ In contrast to the educational-based human capital measure, the Creative Class occupational typology takes into account what people actually do (and related skill requirements) in their current jobs, rather than the amount of schooling they have completed. Focussing on occupations also differs from an analysis of the share of employment by ‘industry’. The latter takes a variety of jobs in an industry—say, for example, management and line workers employed in manufacturing—and treats them as similar, despite differences in the skills required for these jobs.

Focusing on occupations provides particularly useful insights into the nature of work in times of crises. For example, people in jobs with more standardized work may be easier to replace than individuals with more advanced, less routine-oriented occupations (Autor, 2010). As a result, we expect that Working and Service Class jobs were more likely to be cut during the recession. Further, we would expect regions with higher shares of knowledge and creative workers to be more resilient in the face of economic downturns

and be better equipped to both reinvent themselves and come up with new ideas and innovations to sustain the economy. Thus, creative regions with the ability to adjust to the economic crisis may also provide across-the-board benefits to workers in Service and Working Class jobs, mitigating the effects of the recession on these two groups of workers as well.

Several other factors explain why we might expect members of the Creative Class to have fared better during the recession than Working class individuals and, to a lesser extent, those in Service Class occupations. One of the main causes of the economic slowdown was the mortgage crisis and steep downturn in housing activity (Mian and Sufi, 2009a, 2009b, 2010). US Bureau of Economic Analysis statistics from June 2011 indicate that “construction continued to be a drag on real GDP growth” and that it “declined for the sixth consecutive year and detracted from growth in most states”.⁵ This reduction in building activity during the housing bust and continuing beyond the recession’s official conclusion has adversely impacted employment conditions in construction occupations, which figure prominently in the Working Class.⁶

Another explanation as to why members of the Creative class might have fared better than individuals in Service and Working Class occupations has to do with the nature of development that occurred alongside residential construction during the housing boom. In many places, housing growth during the early 2000s took place hand-in-hand with expanding retail and food-service-related employment. This pattern of development, referred to as a ‘great growth illusion’ (Florida, 2010), is a false economy of sorts based on residential and commercial construction, expanding retail development and related service employment. Gabe and Florida (2011) found that regions characterized by high shares of employment in retail and food service occupations, along with specializations in construction, fared poorly during the recession. This means that, along with construction

workers, individuals in retail and some service occupations—two large segments of the Service Class—might have been more adversely impacted by the recession than creative workers.

A third factor that might explain the differential impact of the recession on members of the Creative, Service and Working Classes is the economic slowdown's role in enhancing some longer-term structural changes in the US economy (Autor, 2010). Specifically, Autor et al. (2003) suggest that investments in computer technologies are 'substitutes' for workers who perform tasks according to a set plan, while computers are 'complements' to those involved in problem solving and complex communications. Florida (2002, 71) characterizes occupations along similar lines: creative workers are problem solvers (and 'problem finders'), while non-creative workers are more apt to follow instructions dictated by a corporate template. These ideas suggest that members of the Creative Class—engineers, scientists, designers and the like—are more likely to be complements to technological change and thus were impacted less severely by the recession than non-creative workers.

Finally, as the economic crisis was a major worldwide slowdown in economic activity, jobs that rely heavily on export-driven growth were likely hit harder than occupations that are capable of generating locally originating growth.⁷ The traditional export base model relates the economic growth of a region to its ability to produce a good, often manufactured or extracted, that can be sold to those outside the region (North, 1955). According to this theory, the reduction in global economic activity would have lowered the demand for workers in manufacturing or extractive-based occupations—prominently included in the Working Class—that rely heavily on exports. In contrast to the traditional export base model, Markusen's (2007) describes a consumption base theory of development in which, among other factors, investments in arts and culture increase local spending and growth. Since his type of growth is not driven by a region's

ability to export goods to other regions, the locally induced growth spurred by artists and culture providers—key parts of the Creative Class—might have led to less severe economic conditions for workers in these occupations.

Conceptual foundation

An individual's probability of being unemployed (U) is related to his or her human capital and demographic characteristics, as well as industry- and region-specific factors, as shown in Equation (1).⁸

$$\begin{aligned} \Pr(U = 1) = & \beta_0 + \beta_1 \text{ human capital} \\ & + \beta_2 \text{ demographic characteristics} \\ & + \beta_3 \text{ industry factors} + \beta_4 \text{ regional factors} + \varepsilon \end{aligned} \quad (1)$$

The human capital variables used in the empirical analysis include a set of dummy variables to indicate an individual's level of formal education (for example, less than a high school degree, high school graduate/General Education Development, associate degree, etc.) as well as variables to indicate a person's occupational class (for example, Creative, Service or Working Class). Making a distinction between formal education and occupational class is important because, as noted by Florida et al. (2008, 618), formal education provides a measure of "potential talent or skill"; whereas occupations provide an idea of how "human talent or capability is absorbed by and used by the economy".

Although there is some overlap between individuals with a college degree and those in Creative Class occupations, these measures of human capital do not always go hand-in-hand. Table 1 shows that whereas 63% of individuals in creative occupations have at least a 4-year college degree—twice as high as the share of all workers (31%)—almost 20% of those in Service Class occupations and 8% of the Working Class have this amount of formal education. Furthermore, as shown in the final two columns of Table 1, members of

Table 1. College attainment rates by occupational class

Occupations	% in occupational class with degree	% of workforce by occupational class	% of workforce with college degree by occupational class	% of workforce without college degree by occupational class
All occupations	31.1	NA	NA	NA
Creative Class	62.7	35.6	66.1	20.0
Service Class	19.8	38.2	22.4	46.2
Working Class	7.5	22.7	5.0	31.7

Source: Information used to calculate the figures shown in the table is from the 2006–2011 US Current Population Surveys (March), accessed through Integrated Public Use Microdata Series-Current Population Survey (King et al., 2010).

Notes: Values in the final three columns do not sum to 100% because the sample excludes farming, fishing and forestry occupations—which are not included in Florida’s Creative, Service or Working Classes.

the Creative Class account for two-thirds of the US workforce with at least a 4-year college degree, while they represent 20% of the workforce without a college education. These figures suggest that one out of every three US college-educated workers is in a non-creative occupation, while one out of every five US workers without a college degree is a member of the Creative Class.

As discussed in the previous section, we would expect that working in a Creative Class occupation would have decreased an individual’s probability of being unemployed during the Great Recession.⁹ The factors contributing to better employment prospects for creative workers include the recession’s close ties to the mortgage/housing market crisis, which adversely impacted construction workers (members of the Working Class), as well as the connection between housing growth during the early 2000s and retail and food-service-related employment, which—after the housing market downturn—might have lowered employment in some Service Class occupations. Two additional factors expected to lower the probability of being unemployed for members of the Creative class include the recession’s role in enhancing technology-induced structural changes in the US economy (Autor, 2010), and the idea that artistic and cultural (Creative Class) occupations are more closely tied to local consumption than export-oriented growth (Markusen, 2007).

Along with the explanatory variables used to indicate an individual’s occupational class and his or her level of formal education, the regression models also control for demographic characteristics such as age, gender, marital status, race and ethnicity—factors found in other studies to be associated with an individual’s probability of being unemployed (Azmat et al., 2006; Daly et al., 2007; Elsby et al., 2010; Fairlie and Sundstrom, 1997; Katz, 2010; Mincer, 1989). The role of industry factors in affecting a person’s employment status is captured using a set of dummy variables to indicate an individual’s major industrial North American Industry Classification System category, and we account for region-specific factors by re-estimating the main regression model using data on individuals located in different types of metropolitan areas (by population size, share of the workforce in creative occupations and regional unemployment rates).

US unemployment rates between 2006 and 2011

The empirical analysis presented in the paper uses individual-level data from the 2006–2011 US Current Population Surveys. This information is from March of each year, which means that the 2008–2009 data are from time periods during the recession, the 2006–2007 data are from before the recession and the 2010–2011 data are from after its official end date.¹⁰ All of the major occupational classes experienced

increases in unemployment rates in the years ‘before’ to ‘during’ the recession, as well as the period of ‘during’ to ‘after’ the economic downturn (see [Table 2](#)). However, Creative Class occupations had an unemployment rate of 4.1% in the years following the recession’s official end date, which—although higher than the 1.9 unemployment rate for similar occupations in 2006–2007—was well below the overall unemployment rate of 4.7% prior to the beginning of the recession. In the 2 years following the recession, Working Class occupations had an unemployment rate of 14.6%—over three times greater than the unemployment rate for creative occupations—and Service Class occupations had an unemployment rate of 9.3% over that period.

Over all three periods, Creative Class occupations had substantially lower unemployment rates than Service and Working Class occupations. With a ‘before’ to ‘after’ increase in unemployment rates of 2.2 percentage points, creative occupations also had the smallest absolute change in unemployment over the period of 2006–2007 to 2010–2011. For Service Class occupations, the 5.0% unemployment rate in 2006–2007 increased by 4.3 percentage points to a 9.3% unemployment rate in the years following the recession’s official conclusion. On a percentage change basis, however, Service Class occupations had a lower increase in unemployment rates (86%) than Creative Class occupations (116%) between 2006–2007 and 2010–2011. Of the three

major occupational groups, Working Class occupations experienced the largest absolute (8.1 percentage points) and relative (125%) increases in unemployment rates.

[Table 3](#) shows variations in US unemployment rates over the period of 2006–2011 among the major occupational groups within the same educational cohort. As discussed earlier in the paper, the unemployment rate for those with at least a 4-year college degree was lower—before, during and after the recession—than the unemployment rate for individuals without a college education. An analysis of differences among the occupational classes within the same educational cohort, however, reveals that members of the Creative Class always had a lower probability of being unemployed than individuals with similar amounts of education in the Service and Working Classes. Furthermore, members of the Creative Class without a college degree had a lower unemployment rate in all three periods than individuals with at least a four-year college education in Service and Working Class occupations.

Just as the data show substantial differences in unemployment rates between 2006 and 2011 among the occupational classes, we also find considerable variation in employment prospects across major industrial categories. As shown in [Table 4](#), the highest post-recession unemployment rates are found in the construction; management of companies and enterprises; arts, entertainment and recreation; and

Table 2. US unemployment rates by occupational class.

Occupations	Before recession	During recession	Change before to during	After recession	Change during to after	Change before to after
All occupations	4.7	6.9	2.2	9.4	2.5	4.7
Creative Class	1.9	3.0	1.1	4.1	1.1	2.2
Service Class	5.0	6.9	1.9	9.3	2.4	4.3
Working Class	6.5	11.1	4.6	14.6	3.5	8.1

Source: Information used to calculate unemployment rates is from the US Current Population Survey (March), accessed through IPUMS-CPS (King et al., 2010).

Notes: ‘Before recession’ unemployment rates are based on data from 2006 and 2007, ‘during recession’ rates are based on data from 2008 and 2009 and ‘after recession’ rates are based on data from 2010 and 2011. The official dates of the 2008 recession were from December 2007 to June 2009.

Table 3. US unemployment rates by college attainment status.

Industry	Before recession	During recession	Change before to during	After recession	Change during to after	Change before to after
College degree	1.9	3.1	1.2	4.2	1.1	2.3
Creative Class	1.5	2.4	0.9	3.2	0.8	1.7
Service Class	2.7	4.0	1.3	5.9	1.9	3.2
Working Class	4.1	7.1	3.0	8.7	1.6	4.6
No college degree	5.9	8.6	2.7	11.7	3.1	5.8
Creative Class	2.4	3.9	1.5	5.7	1.8	3.3
Service Class	5.4	7.4	2.0	10.0	2.6	4.6
Working Class	6.6	11.4	4.8	15.1	3.7	8.5

Source: Information used to calculate unemployment rates is from the US Current Population Survey (March), accessed through IPUMS-CPS (King et al., 2010).

Notes: ‘Before recession’ unemployment rates are based on data from 2006 and 2007, ‘during recession’ rates are based on data from 2008 and 2009 and ‘after recession’ rates are based on data from 2010 and 2011. The official dates of the 2008 recession were from December 2007 to June 2009.

accommodation and food services industries – in each case, above 12% over the 2010–2011 time period – while post-recession unemployment rates were less than 6% in the educational services; utilities; health care and social assistance; and professional, scientific and technical services industries. The largest ‘before’ to ‘after’ recession increases in unemployment rates were in the construction (11.3 percentage points), management of companies and enterprises (6.9 percentage points) and manufacturing (6.0 percentage points) sectors.

The unemployment rates shown in Tables 2–4 are based on individuals located across the entire US, which masks substantial disparities in labour market conditions across US regions. As of June 2009, the US metropolitan areas with the highest unemployment rates – for example, El Centro, California (28.1% unemployment rate); Yuma, Arizona (22.6%) and Elkhart-Goshen, Indiana (19.4%) – had substantially worse job prospects than places such as Bismarck, North Dakota (3.7% unemployment rate); Iowa City, Iowa (4.0%) and Ames, Iowa (4.1%). Such a large spread in unemployment rates across US metropolitan areas is likely attributed to, among other factors, differences in the extent to which they were exposed to the mortgage crisis and housing market

boom turned to bust.¹¹ Mian and Sufi (2009a, 2010) found that mortgage credit increased between 2002 and 2005 in places with high shares of subprime borrowers, and this growth was not supported by corresponding changes in incomes. The rapid expansion of household leverage over this period was a ‘powerful predictor’ of the recession’s impact on US regions.

Regression analysis

Our empirical analysis examines an individual’s probability of being unemployed between 2006 and 2011 through a probit regression analysis (see Equation (1)) of a data set containing information on over 600,000 members of the US workforce. The explanatory variables used in the regression models include measures of human capital – formal education and occupational class – and control for an individual’s demographic characteristics (for example, age, race and gender) and major industrial category. We account for the influence of regional factors by re-estimating the main regression model using data on individuals located in metropolitan areas that differ on the basis of population size, share of the workforce in creative occupations and the unemployment rate near the end of the recession. Table 5 defines and reports

Table 4. US unemployment rates by major industrial category.

Industry	Before recession	During recession	Change before to during	After recession	Change during to after	Change before to after
All industries	4.7	6.9	2.2	9.4	2.5	4.7
Forestry, fishing, hunting and agriculture support	5.8	7.7	1.9	10.4	2.7	4.6
Mining, quarrying, and oil and gas extraction	2.9	7.5	4.6	7.5	0.0	4.6
Utilities	2.0	3.6	1.6	4.3	0.7	2.3
Construction	7.9	14.2	6.3	19.2	5.0	11.3
Manufacturing	4.3	8.1	3.8	10.3	2.2	6.0
Wholesale trade	3.5	5.1	1.6	7.4	2.3	3.9
Retail trade	5.0	7.3	2.3	9.5	2.2	4.5
Transportation and warehousing	4.0	6.4	2.4	9.0	2.6	5.0
Information	3.5	5.9	2.4	8.0	2.1	4.5
Finance and insurance	2.5	4	1.5	6.6	2.6	4.1
Real estate and rental and leasing	3.4	5.7	2.3	7.6	1.9	4.2
Professional, scientific and technical services	2.7	4.4	1.7	5.6	1.2	2.9
Management of companies and enterprises	9.3	13.3	4.0	16.2	2.9	6.9
Administrative and support and waste management and remediation services	6.7	7.1	0.4	10.6	3.5	3.9
Educational services	1.8	2.3	0.5	3.2	0.9	1.4
Health care and social assistance	2.6	3.5	0.9	5.2	1.7	2.6
Arts, entertainment and recreation	7.2	8.1	0.9	12.7	4.6	5.5
Accommodation and food services	7.2	9.4	2.2	12.4	3.0	5.2
Other services (except public administration)	3.6	4.7	1.1	7	2.3	3.4

Source: Information used to calculate unemployment rates is from the US Current Population Survey (March), accessed through IPUMS-CPS (King et al., 2010).

Notes: 'Before recession' unemployment rates are based on data from 2006 and 2007, 'during recession' rates are based on data from 2008 and 2009 and 'after recession' rates are based on data from 2010 and 2011. The official dates of the 2008 recession were from December 2007 to June 2009.

summary statistics for the variables included in the analysis.

The dependent variable measures a person's employment status, with values of one and zero indicating being unemployed (6.5% of the sample) and having a job, respectively. Consistent

with information from other sources (Florida, 2002), we find the largest share of individuals reporting Service Class occupations (41.9%), followed by Creative Class (32.5%) and Working Class (22.2%) occupations. About 30% of the sample have at least a 4-year college

Table 5. Variable definitions and summary statistics (n = 610,513).

Variable name	Variable definition	Mean	Standard deviation
Unemployed	=1 if person is in labour force and unemployed; =0 if person is in labour force and employed	0.065	NA
Creative Class	=1 if person reports an occupation of computer and mathematical; architecture and engineering; life, physical and social science; education, training and library; arts, design, entertainment, sports and media; management; business and financial operations; legal or health care practitioners and technical; =0 otherwise	0.325	NA
Service Class	=1 if person reports an occupation of health care support; food preparation and food-service related; building and grounds cleaning and maintenance; personal care and service; sales and related; office and administrative support; community and social services or protective services; =0 otherwise	0.419	NA
Working Class	=1 if person reports an occupation of construction and extraction; installation, maintenance and repair; production or transportation and material moving; =0 otherwise	0.222	NA
Age	Person's age (in years)	40.9	13.4
No high school	=1 if person is not a high school graduate/GED; =0 otherwise	0.121	NA
High school	=1 if person's highest level of education is a high school graduate/GED; =0 otherwise	0.478	NA
Associate degree	=1 if person's highest level of education is an associate degree; =0 otherwise	0.098	NA
Bachelor's degree	=1 if person's highest level of education is a bachelor's degree; =0 otherwise	0.198	NA
Graduate degree	=1 if person's highest level of education is a graduate or professional degree; =0 otherwise	0.105	NA
Hispanic	=1 if person is Hispanic; =0 otherwise	0.157	NA
White	=1 if person is white; =0 otherwise	0.808	NA
Black	=1 if person is black; =0 otherwise	0.106	NA
Asian	=1 if person is Asian; =0 otherwise	0.051	NA
Other race	=1 if person indicated a race other than white, black or Asian; =0 otherwise	0.036	NA
Male	=1 if person is male; =0 otherwise	0.521	NA
Married	=1 if person is married; =0 otherwise	0.592	NA
Before recession	=1 if observation is from 2006 or 2007; =0 otherwise	0.336	NA
During recession	=1 if observation is from 2008 or 2009; =0 otherwise	0.336	NA
After recession	=1 if observation is from 2010 or 2011; =0 otherwise	0.327	NA

Source: All variables are from the US Current Population Survey (2006–2011), accessed through IPUMS-CPS (King et al., 2010).

Notes: The sample is limited to labour force participants. Creative, Service and Working Class definitions are from Florida (2002).

degree—19.8% have a bachelor's degree and 10.5% have a graduate degree—and the typical individual in the data set is white (80.8%) and married (59.2%), with males representing a slightly higher share of the sample (52.1%) than females.

Table 6 presents marginal effects corresponding to probit regression results on the effects of an individual's major occupational class on his or her probability of being unemployed between 2006 and 2011.¹² We estimate two regression models focusing on each of the major occupational classes, where the first model (columns 1, 3 and 5) examines the effect of the major occupational class on unemployment over the entire period and the second model (columns 2, 4 and 6) examines the extent to which the impact associated with an occupational class changed during and/or after the recession. The regression models are specified in a manner that isolates the effect of one of the occupational classes compared to the other two so that, for example, the marginal effect corresponding to the Creative class indicator in the first column of results is interpreted as the effect on being unemployed associated with having a creative occupation as compared to a non-creative occupation.

Since the sample includes observations from three time periods—before, during and after the recession—the regressions include dummy variables that indicate if the observation is from 2008 to 2009 (during the recession) or 2010 to 2011 (after the recession). A variable that measures the interaction between the *During Recession* indicator and membership in, for example, the Creative class captures the extent to which the effect on being unemployed related to having a creative occupation differs in the years during the recession as compared to before its start.

Clearly, a person's occupational class significantly influences his or her probability of being unemployed. Marginal effects shown in the first column of results indicate that, other things being equal, belonging to the Creative

class lowers an individual's probability of not having a job by 2.0 percentage points over the period of 2006–2011. Estimates shown in the second column suggest that the negative effect on unemployment associated with having a Creative Class occupation was larger (that is, more negative) in the years after the recession (2010–2011) than before its official start.¹³ These results show that having a Creative Class occupation reduces an individual's probability of being unemployed by 1.7% points and that this effect decreased by 0.5 percentage points—to a total impact of 2.2 percentage points—after the recession.

Moving to the centre two columns of results, we see that having a Service Class occupation has a very slight negative effect on an individual's probability of being unemployed between 2006 and 2011, and that this occupational group's influence on unemployment changed over the period. Belonging to the Service class increases an individual's probability of being unemployed by 0.5 percentage points, but this effect turned slightly negative in the years during the recession as well as after its official end date. As shown in the last two columns of Table 6, having a Working Class occupation is associated with a 2.9 percentage point increase in being unemployed over the period of 2006–2011. This impact was significantly higher during and after the recession as compared to the influence of having a Working Class occupation on unemployment in the years before the recession began.

The marginal effects reported in Table 6 also indicate that, along with his or her occupational class, an individual's level of formal education is associated with the probability of being unemployed.¹⁴ Looking at the first column of results, we see that—relative to an omitted category of having a high school diploma/GED—individuals without a high school education had a 2.2 percentage point higher probability of being unemployed, while those with an associate, bachelor's or graduate degree were 1.2, 1.7 and 2.2 percentage points less likely

Table 6. Probit regression results: effects of occupational class on unemployment

Variable	Marginal effects (standard errors, clustered by metropolitan area, in parentheses)									
Creative Class	-0.020* (0.001)	NA								
Creative Class × during recession	NA	-0.002 (0.002)	NA							
Creative Class × after recession	NA	-0.005* (0.002)	NA							
Service Class	NA	NA	-0.005* (0.001)	0.005* (0.002)	NA	NA	NA	NA	NA	NA
Service Class × during recession	NA	NA	NA	-0.011* (0.001)	NA	NA	NA	NA	NA	NA
Service Class × after recession	NA	NA	NA	-0.010* (0.002)	NA	NA	NA	NA	NA	NA
Working Class	NA	NA	NA	NA	NA	0.029* (0.001)	NA	0.013* (0.002)	NA	0.019* (0.002)
Working Class × during recession	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Working Class × after recession	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.022* (0.003)
Age	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)	-0.001* (0.0002)
Age^2	8.75E-06* (2.00E-06)	8.83E-06* (2.00E-06)	1.04E-05* (2.00E-06)	1.03E-05* (2.00E-06)	1.04E-05* (2.00E-06)	1.03E-05* (2.00E-06)	1.03E-05* (2.00E-06)	1.17E-05* (2.00E-06)	1.17E-05* (2.00E-06)	1.17E-05* (2.00E-06)
No high school	0.022* (0.001)	0.022* (0.001)	0.023* (0.001)	0.023* (0.001)	0.023* (0.001)	0.023* (0.001)	0.023* (0.001)	0.021* (0.002)	0.021* (0.002)	0.021* (0.002)
Associate degree	-0.012* (0.001)	-0.012* (0.001)	-0.014* (0.001)	-0.014* (0.001)	-0.014* (0.001)	-0.014* (0.001)	-0.014* (0.001)	-0.013* (0.001)	-0.013* (0.001)	-0.013* (0.001)
Bachelor's degree	-0.017* (0.001)	-0.017* (0.001)	-0.023* (0.001)	-0.023* (0.001)	-0.023* (0.001)	-0.023* (0.001)	-0.023* (0.001)	-0.019* (0.001)	-0.019* (0.001)	-0.019* (0.001)
Graduate degree	-0.022* (0.001)	-0.022* (0.001)	-0.029* (0.001)	-0.029* (0.001)	-0.029* (0.001)	-0.029* (0.001)	-0.029* (0.001)	-0.025* (0.001)	-0.025* (0.001)	-0.025* (0.001)
Hispanic	0.001 (0.002)	0.001 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Black	0.040* (0.002)	0.040* (0.002)	0.040* (0.002)	0.042* (0.002)	0.042* (0.002)	0.042* (0.002)	0.042* (0.002)	0.041* (0.002)	0.041* (0.002)	0.041* (0.002)
Asian	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.0003 (0.002)	0.0003 (0.002)	0.0003 (0.002)
Other race	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)	0.023* (0.002)
Male	0.001 (0.001)	0.001 (0.001)	0.0002 (0.001)	0.0002 (0.001)	0.0002 (0.001)	0.0002 (0.001)	0.0002 (0.001)	-0.004* (0.001)	-0.004* (0.001)	-0.004* (0.001)
Married	-0.027* (0.001)	-0.027* (0.001)	-0.028* (0.001)	-0.028* (0.001)	-0.028* (0.001)	-0.028* (0.001)	-0.028* (0.001)	-0.027* (0.001)	-0.027* (0.001)	-0.027* (0.001)
During recession	0.027* (0.001)	0.027* (0.002)	0.027* (0.001)	0.027* (0.001)	0.027* (0.001)	0.027* (0.001)	0.027* (0.001)	0.027* (0.001)	0.027* (0.001)	0.019* (0.002)
After recession	0.050* (0.002)	0.052* (0.002)	0.050* (0.001)	0.050* (0.001)	0.050* (0.001)	0.050* (0.001)	0.057* (0.002)	0.050* (0.002)	0.050* (0.002)	0.022* (0.003)

Notes: The regression models also include two sets of dummy variables, not shown in the table, that control for an individual's major industrial category and metropolitan area. $n = 452,451$.

*Statistical significance at the 1% level.

to be unemployed, respectively. The marginal effect associated with having a Creative Class occupation (−2.0 percentage points) is slightly lower than the reduction in the probability of being unemployed related to having a graduate degree, but higher than the marginal effects associated with having an associate or bachelor's degree as a person's highest level of formal education.

Several of the demographic characteristics (for example, age, race and marital status) used as control variables in the probit regression models have statistically significant marginal effects on an individual's probability of being unemployed. Although not shown in the table, the dummy variables indicating an individual's major industrial category and metropolitan area are also important determinants of employment status. Wald tests of joint significance show that, as a group, the industry and metropolitan area controls have a significant effect on an individual's probability of being unemployed.

The final three tables of results show the marginal effects associated with having a Creative Class occupation on the probability

of being unemployed in different types of US metropolitan areas. Tables 7–9 summarize the results from regressions using data on individuals located in metropolitan areas that differ by population size, share of the workforce in creative occupations and unemployment, respectively. This approach, which groups individuals into sub-samples based on the similarity of his or her metropolitan area, allows us to “strip away” the influence of these regional factors on unemployment, but it also illustrates how the effect of having a Creative Class occupation on unemployment differs across regions.

For all three of the regional variables, we grouped the metropolitan areas into 10 categories based on their decile rankings.¹⁵ As shown in Table 7, the groups of metropolitan areas varied considerably in terms of average population size, from 127,030 to about 5.0 million people. These groups, categorized based on population size, also differed somewhat in terms of average unemployment rates and the share of the workforce in creative occupations. The marginal effects associated with having a Creative Class occupation on the probability of being

Table 7. Summary probit regression results: effects of Creative Class occupations on unemployment across the metropolitan area population size hierarchy.

Population size decile	Average population	Unemployed	% Workforce Creative Class	Marginal effect of Creative Class
1	127,030	0.067	0.275	−0.017* (0.005)
2	163,625	0.059	0.310	−0.018* (0.005)
3	208,865	0.052	0.313	−0.025* (0.003)
4	260,664	0.066	0.289	−0.022* (0.004)
5	335,653	0.058	0.324	−0.017* (0.004)
6	422,593	0.069	0.303	−0.019* (0.003)
7	564,167	0.057	0.329	−0.018* (0.003)
8	791,383	0.055	0.327	−0.018* (0.003)
9	1,487,974	0.061	0.329	−0.018* (0.002)
10	4,986,888	0.062	0.356	−0.018* (0.001)

Source: Population figures used to determine decile rankings are from the US Census Bureau, 2009 American Community Survey. *Notes:* Standard errors are shown in parentheses. Marginal effects are from probit regression models that include the explanatory variables shown in Table 6, as well as dummy variables that control for an individual's major industrial category and metropolitan area.

*Statistical significance at the 1% level.

unemployed are remarkably similar for the very smallest (deciles 1 and 2) and the moderate- to larger-sized metropolitan areas (deciles 5–10)—ranging from -0.017 to -0.019 . The influence of having a Creative Class occupation on unemployment, however, is slightly more pronounced (that is, a larger negative impact) in the third and fourth population size deciles, which have average populations of around 200,000–250,000 people.

The descriptive information shown in Table 8 suggests—consistent with the findings reported by Stolarick and Currid-Halkett (2012)—that metropolitan areas with the lowest shares of creative workers tended to have higher average unemployment rates than places with a greater percentage of the workforce in the Creative Class. The impact of having a creative occupation on the likelihood of being unemployed, however, tends to be slightly stronger (that is, larger negative values)—with the exception of the second and third deciles—in metropolitan areas with lower shares of creative workers. The marginal effects associated with Creative Class

occupations range from -0.016 to -0.018 in the top four deciles in terms of a metropolitan area’s Creative Class share, but they are -0.020 or below (that is, larger negative values) in 4 of the 6 bottom deciles.

Finally, the results shown in Table 9 suggest that the impacts of having a creative occupation on employment status are more beneficial (that is, larger reduction in the probability of being unemployed) in metropolitan areas with the highest unemployment rates (deciles 9 and 10) than in places with more favourable employment prospects. The marginal effects associated with Creative Class occupations range from -0.015 to -0.019 in the bottom eight deciles in terms of a metropolitan area’s unemployment rate, but they are -0.024 and -0.022 in the ninth and tenth deciles, respectively. Although a complete analysis of the differences in the effects of Creative Class occupations on the probability of being unemployed across metropolitan areas is beyond the scope of this paper, the marginal effects summarized in Tables 7–9 suggest that belonging to the Creative class lowers an

Table 8. Summary probit regression results: effects of Creative Class occupations on unemployment across metropolitan areas with different shares of creative workers.

Creative Class workforce share decile	Unemployed	% Workforce Creative Class	Marginal effect of Creative Class
1	0.068	0.247	-0.020^* (0.003)
2	0.067	0.261	-0.015^* (0.005)
3	0.075	0.270	-0.016^* (0.005)
4	0.061	0.294	-0.024^* (0.004)
5	0.060	0.303	-0.020^* (0.003)
6	0.058	0.317	-0.021^* (0.002)
7	0.060	0.327	-0.018^* (0.002)
8	0.061	0.333	-0.017^* (0.001)
9	0.061	0.342	-0.016^* (0.002)
10	0.056	0.415	-0.018^* (0.002)

Source: Creative Class workforce figures used to determine decile rankings are from the US Bureau of Labour Statistics, 2009 Occupational Employment Statistics.

Notes: Standard errors are shown in parentheses. Marginal effects are from probit regression models that include the explanatory variables shown in Table 6, as well as dummy variables that control for an individual’s major industrial category and metropolitan area.

*Statistical significance at the 1% level.

Table 9. Summary probit regression results: effects of Creative Class occupations on unemployment across metropolitan areas with different unemployment rates.

Unemployment rate decile	Unemployed	% Workforce Creative Class	Marginal effect of Creative Class
1	0.044	0.377	-0.016* (0.002)
2	0.049	0.336	-0.018* (0.003)
3	0.057	0.356	-0.017* (0.002)
4	0.058	0.351	-0.018* (0.003)
5	0.059	0.342	-0.015* (0.001)
6	0.059	0.329	-0.019* (0.002)
7	0.060	0.334	-0.017* (0.002)
8	0.069	0.320	-0.017* (0.004)
9	0.076	0.302	-0.024* (0.003)
10	0.090	0.273	-0.022* (0.004)

Source: Unemployment figures used to determine decile rankings are from the US Bureau of Labour Statistics, March 2009.

Notes: Standard errors are shown in parentheses. Marginal effects are from probit regression models that include the explanatory variables shown in Table 6, as well as dummy variables that control for an individual's major industrial category and metropolitan area.

*Statistical significance at the 1%.

individual's probability of not having a job in all types of US regions.

Summary and conclusions

Our research has examined an individual's probability of being unemployed over the period of 2006–2011, with a particular emphasis on the influence of his or her major occupational class. The paper examined the effects of major occupational group—that is, membership in the Creative, Service and Working Classes—on an individual's employment status in the years before, during and after the Great Recession of 2008. Descriptive analysis of individual-level data from the 2006–2011 Current Population Surveys shows that Creative Class occupations had relatively low unemployment rates compared to the overall US economy prior to the official start of the recession (1.9% versus 4.7%), during the economic slowdown (3.0% versus 6.9%) and in the years immediately following the recession (4.1% versus 9.4%). In all three periods, the major group of Creative Class occupations had substantially lower rates of unemployment than Service

and Working Class occupations. For example, Working Class occupations had an unemployment rate of 14.6% in 2010–2012, after the recession ended, up from the 6.5% unemployment rate for these occupations in 2006–2007 before the Great Recession's official onset.

Findings from our probit regression analysis further indicate that—controlling for educational attainment, several demographic characteristics and major industrial category—an individual's occupational class has a significant effect on his or her likelihood of being unemployed. Specifically, we find that, other things being equal, having a Creative Class occupation lowered an individual's probability of being unemployed by 2.0 percentage points between 2006 and 2011, while having a Working Class occupation increased the likelihood of not having a job. Additionally, we find that the impact on the probability of being unemployed associated with having a Creative Class occupation decreased in the 2 years following the recession. Conversely, the impact on an individual's employment status associated with having a Working Class occupation became more detrimental during

and after the recession. Having a Service Class occupation has very little effect on an individual's probability of being unemployed over the entire period of 2006–2011, but this occupational group's influence on unemployment changed—that is, larger reduction in unemployment rate—in the years during and after the recession. Our main results related to the impact of Creative Class occupations on the probability of being unemployed are robust to re-estimating the regression models using samples of the population in metropolitan areas that differ on the basis of population size, share of the workforce in creative occupations and unemployment rate.

The empirical evidence presented in the paper suggests that having a Creative Class occupation lowers an individual's probability of being unemployed—in fact, the effect is larger than the marginal effect associated with having a four-year college degree (compared to someone with only a high school diploma)—and that the impact of having a creative occupation became more beneficial in the two years following the recession. These results, along with our findings related to the other major occupational groups, are indicative of a structural change taking place in the US economy. This shift is characterized by high—and growing—unemployment in Working Class occupations, whereas the relative position of creative workers improved in the years following the recession. Although we cannot pinpoint a specific factor (or group of factors) that have caused such a shift, our results are consistent with a reduction in Working Class employment opportunities associated with the housing market crash (Kolesnikova and Liu, 2011) as well as the Great Recession's role in enhancing longer-term, technology-induced structural changes occurring in the US economy (Autor, 2010).¹⁶ If these trends continue, they will contribute to the sort of Great Reset described by Florida (2010) as an economic transformation that favours knowledge-based creative activities.

Endnotes

¹ Seasonally adjusted employment figures and unemployment rates are from the US Bureau of Labour Statistics. The US unemployment rate peaked at 10.1% in October 2009. In June 2011, the US unemployment rate was only slightly lower (9.2%) than where it stood 2 years earlier at the end of the recession (9.5%).

² Groshen and Potter (2003) examine the role of structural change in the 'jobless recovery' of 2001–2003.

³ A notable exception is the recent study by Stolarick and Currid-Halkett (2012), which finds that a region's share of creative workers had a negative effect on US metropolitan area unemployment rates during the economic crisis. This study examines regional unemployment rates during the recession, whereas the current paper uses micro-level data to examine the effect of Creative Class occupations on an individual's probability of being unemployed.

⁴ Creative, Service and Working Class definitions are from Florida (2002).

⁵ These statements are from a 7 June 2011, US Bureau of Economic Analysis news release, entitled 'Economic Recovery Widespread across States in 2010'.

⁶ Kolesnikova and Liu (2011) note that construction industry employment decreased by 20% during the recession and that some of these job losses "are likely to be permanent".

⁷ For example, Katz (2010) notes that workers in goods producing industries—important to Working Class Occupations—were disproportionately harmed by the recession.

⁸ This is the same general framework used by Azmat et al. (2006) to examine the effect of gender on unemployment, while controlling for other demographic characteristics (for example, age, education and marital status).

⁹ Previous studies have uncovered positive labour market and other economic outcomes associated with high creativity and the share of creative workers in a region (Gabe, 2011; Knudsen et al., 2008; McGranahan et al., 2011). Other occupational-based attributes that contribute to economic development benefits include cognitive, analytical, people and social intelligence skills (Bacolod et al., 2009;

Florida et al., 2011) and high knowledge related to information technology and business services (Abel and Gabe, 2011; Gabe, 2009).

¹⁰ The unemployment rate in March 2007 was 4.4%, the lowest rate over the 5 years of 2003–2007 (although other months over this period also had unemployment rates of 4.4%).

¹¹ Other factors, contributing to differences in unemployment prior to the Great Recession, include differences in amenities across regions.

¹² The regression analysis focuses on individuals living in a US metropolitan area, which are indicated with dummy variables in the probit models.

¹³ A Wald test of joint significance, conducted due to the inclusion of the interaction variables in the regression model, shows that having a Creative Class occupation has a significant effect (p -value = 0.000) on an individual's probability of being unemployed.

¹⁴ A Wald test of joint significance shows that educational attainment has a significant effect (p -value = 0.000) on an individual's probability of being unemployed.

¹⁵ This analysis is based on individuals located in US metropolitan areas.

¹⁶ In addition to factors that are suggestive of structural changes in the economy, the higher unemployment rates for those in Working Class occupations could be the result of cyclical factors that are present during recessionary periods.

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