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Ricardo da Silva Freguglia

Amir Borges Ferreira Neto

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How much does talent matter?
Evidence from the Brazilian Formal Cultural Industry

Ricardo da Silva Freguglia
Department of Economics
Federal University of Juiz de Fora
Juiz de Fora, MG, 36036-900, Brazil
Phone: +55(32)2102-3543
Email: ricardo.freguglia@ufjf.edu.br

Amir Borges Ferreira Neto
Department of Economics
College of Business and Economics
West Virginia University
1601 University Ave., PO Box 6025
Morgantown, WV 26506-6825
Email: amneto@mix.wvu.edu

Abstract: The goal of this paper is to evaluate how much does talent – the individual non-observed characteristics – matter to explain the wage differences between workers from the cultural industry and workers from other formal industries in Brazil. To do so we use the data from 2003 to 2008 of the Rais-Migra – MTE, which is a true panel of formal workers from Brazil, and use fixed effects estimators to capture the talent measure and the Blinder (1973) and Oaxaca (1973) decomposition to seek for evidences of wage difference. The results imply that the talent is important in the determination of wages especially when considering formal workers in the cultural activities, occupations and workers in both cultural activities and occupation. The Oaxaca decomposition provides evidence that when considering talent, each of the groups paid their workers more per se, proving that not only the talent matter, but also that the formal cultural environment in Brazil positively discriminates their workers.

Keywords: Wage Differentials, Cultural Industry, Talent, Fixed Effects, Brazil.
JEL Codes: J31, Z11

1. Introduction

According to the United Nations the creative sector represented 7.3% of world's GDP in the early 2000s and the international trade associated with creative industries grew around 8.7% between 2000 and 2005 (UN, 2009). Evidence for the United States (National Endowment for the Arts, 2011) shows that the cultural industries' Value Added in 2009 was US$ 278.4 billions[1] and more than doubled between 1987 and 2012. As for Brazil, its cultural sector has been growing steadily over the last several years. According to the Brazilian Bureau of Statistics (IBGE, 2013), around 5% of people were employed in cultural industries and these industries represented 11% of countries' Gross Domestic Product (GDP). Moreover, João Pinheiro Foundation (FJP, 1998) asserts that workers in cultural industries receive 30% more than others workers. Table 1 some evidence of the cultural industries in Brazil.

Wage differentials between industries are well documented in the economics literature. Krueger and Summers (1987, 1988), Gittleman and Wolff (1993), Keane (1993), Dickens and Katz (1987), Kahn (1998), Shippen (1999) are just some of the papers that investigate the nature of the gap between wages. Along with these, Blackburn and Neumark (1991), Jackubson (1991), Abowd *et al* (1999) and Carruth *et al* (2004) are also noteworthy as they point towards the importance of the non-observed characteristics to explain such differences and the use of fixed effects estimators.

Filer (1986), Thorsby (1994), Benhamou (2003), Wassal and Alper (2006) and Wetzels (2008) have studied the wage differential between artists and workers from other industries and conclude that there is a gap in cultural and non-cultural wages. Benhamou (2007) investigates the job market for the cultural sector analyzing hiring, careers, and wages. In general, artists and workers from the cultural industries have lower wages compared to those from other industries. This can be related to the fact that cultural workers are usually at informal jobs, or that this is part time work most of the time (Wassal and Alper, 1992; Throsby, 1992; Towse and Khakee, 1992). On the other hand, Towse (2006) points out that talent is compared to the innate ability of people, i.e. it cannot be measured by traditional models and, indeed, affects the wages from artists and cultural workers.

With the importance of the cultural industry in Brazil in mind (Casimiro Filho and Guilhoto, 2003; Brazilian Bureau of Statistics – IBGE, 2010; Diniz and Machado, 2011) and noting that there are gaps in the wage of artists and cultural workers from other workers, the objective of this paper is to evaluate how much talent matters in the Brazilian case. In other words, we try to estimate how much the non-observed characteristics contributes to the wage differential between workers in cultural and non-cultural industries, while controlling for other characteristics such as education,

[1] US$70.9 bi for performing arts, sports and museums, US$59.8 bi for motion pictures and sound recording and US$147.7 bi for publishing (including softwares).

gender, tenure and job characteristics in the Brazilian formal industry[2]. We use data from 2003 to 2008 from RAIS, which is a true panel of formal workers from Brazil. RAIS is an annual administrative survey and it can be considered a labor census of formal employment[3], not covering informal employment and illegal activities. We employ fixed effects estimators to capture the talent measure and the Blinder (1973) and Oaxaca (1973) decomposition to seek for evidences of wage difference.

It is important to highlight that there are few works (Ferreira Neto et al, 2012; Machado et al, 2013) in the literature that analyze the wage in the Brazilian cultural industries. Also we have no knowledge of a paper that used a true panel to analyze the difference in wages between cultural workers and others for the Brazilian case. Hence, this paper contributes to the empirical literature expanding the insights in the Brazilian industry earning gaps and in the use of a dataset that may shed more light on the importance of talent.

The remainder of the paper is organized as follows: Section 2 presents the intuitive model; section 3 describes the data used and our econometric approach; section 4 discusses the results; and section 5 concludes.

2. Conceptual Model

The Walrasian competitive model of labor markets states that the equilibrium wage is determined by marginal productivity. For example, two agents with identical productive characteristics would necessarily receive identical wages. However, similar individuals under different working conditions may receive the so-called compensating differences. Indeed, the disutility (utility) undergone by one individual following the performance of a task in an unfavorable (favorable) situation may lead to wage compensation (discount).

Pioneering observations by Slichter (1950), and later by Dickens and Katz (1987), Krueger and Summers (1988) and Katz and Summers (1989) have challenged this simple description of wage determination. These authors demonstrated that workers with the same observable individual characteristics and working conditions but employed in different industries were paid differently in the U.S. Comparable results have been obtained for a large number of countries in the past (Araï et al., 1996; Hartog et al., 1997, 2000; Lucifora, 1993; Vainiomäki and Laaksonen, 1995; Kara, 2006; Tiagi, 2010; Aza and Prakash, 2015).

Furthermore, not only is the structure of inter-industry wages quite persistent, it is also strongly correlated between countries. However its scale varies considerably between industrialized

[2] IBGE (2013) shows that informal cultural workers (unregistered and self-employed) are 55% of cultural workers in 2007 to 2009, 51% in 2011 and 52% in 2012. Hence, our analysis captures around half the workers in cultural industries.
[3] Formal labor force in Brazil can be defined as the workers who hold a labor card, hence are eligible to benefits.

countries (Helwege, 1992; Zanchi, 1992). In addition, many studies (Barth and Zweimüller, 1992; Edin and Zetterberg, 1992; Gannon et al., 2007; Kahn, 1998; Teulings and Hartog, 1998) suggest that in countries with strong corporatism, regardless of the period studied, the industry effects are significantly weaker.

In this sense, the existence of a wage premium from different industries increasingly raises some questions over the assumption of a perfectly competitive labor market. Indeed, it suggests that individual wages are not solely determined by personal productive characteristics and task descriptions, but also by employer features in each sector. Nevertheless, there are still uncertainty in wage determination.

Thus, following Wassal and Alper (2006) and Towse (2006), Becker's theory of human capital is widely used even in the case of cultural workers and artists. Hence, we can expand Mincer's (1974) wage function, including not only schooling or formal training, experience of the worker and are worker's characteristics as determinant of wages, but also the characteristics of the job such as region, size of the firm, among others. In the case of artist, Towse (2006) states that innate ability is the talent, and it plays a larger role in arts than in non-artistic jobs. Moreover, she argues that the human capital theory is a good starting point to understand the wage determination of the artistic class.

3. Methodological Approach

3.1 Data

For our analysis on wage differentials we use the longitudinal micro-data from the Relatório Anual de Informações Sociais – Migração (RAIS-Migra), from the Labor Ministry of Brazil, for the six years between 2003 and 2008. This dataset is derived from RAIS, an annual administrative survey that makes available information to identify workers eligible to receive social benefits and to monitor the labor market. It also provides extensive employment coverage, besides being a rich source of economic information at the individual level.[4] In this regard, it can be considered a labor census of formal employment. RAIS census does not cover informal employment and illegal activities, and RAIS-Migra follows longitudinally the professional course of workers by industry and occupational features in the labor market, providing the conduction of studies on mobility of formal workers.

Due to the large number of observations available, a random sample was generated in order to run the wage differentials regressions. This sample draws 1% of the total number of individuals from the original data base, generating a pooled and unbalanced[5] sample of 4,044,788 individuals. It is important to reiterate that this dataset contemplates only formal individuals, and most of artistic-cultural workers are in informal jobs. Nevertheless, it is crucial to highlight that the

[4] See Arbache (2001) for further explanation about RAIS data base.
[5] By using an unbalanced dataset, we account for the heterogeneity that may exist, and we can use a larger dataset.

use of this dataset enables us to use an econometric approach that controls the unobserved characteristics of the individuals, which can be assumed to be mainly their innate ability or talent itself.

The wage in the original dataset is set based on how many monthly minimal wages the individual receives. We transformed this variable by the following steps: (i) multiplication of the number of minimal wage by the nominal wage in each year; (ii) deflation of nominal wage from step (i) to obtain the real wage using IPCA (Índice de Preços ao Consumidor – Amplo); (iii) correction of real wage by the cost of living index[6]; (iv) division of corrected real wage by the number of hours worked in a month; and (v) log of the real hourly wage from step (iv). The variable that measures experience equals the tenure in months on the job. In order to avoid bias we dropped the observations that: a) the genre of the individual changed over the years; b) the education regressed (e.g. from college education to high-school education) over the years; and c) if the age is not increasing. We created three cultural dummy variables: one of workers in cultural industries (*dcnae*) using the Brazilian 5 digit industry classification[7]; one of workers in cultural occupations (*dcbo*) using a 4 digit occupation classification; and one of workers in both cultural occupations and industries (*dcult*). The latter will be called the 'cultural sector' henceforth. As there is not a well-established definition for the cultural industries and occupations we decided to follow the definition used by IBGE (Brazilian Statistics and Geography Agency).

Tables 2 and Chart 1 present data on the wages. From the former we can see that between 2003 and 2008 the average real wage grew about 21%. Additionally, the hourly real wage also grew in this period. Chart 1 shows the shift in the log of hourly real wages between 2003 and 2008 on the right, while on the left it presents the log of pooled wages for each cultural group (*dcnae*, *dcbo*, *dcult* and for all the dataset).

As we are investigating the gap between wages from workers in the cultural groups to those who are not in such groups, it is important to see how the cultural groups' dummy-variables behave in our dataset. Table 3 presents descriptive data for the cultural groups, in which we observe that 2% of our data work in cultural activities, 2% in cultural occupations and 0.5% in the cultural sector. From the standard deviation column, there is some variation in the variables – both between and within – which is important when estimating our models.

In table 4 we present some descriptive results for the variables used as controls for each cultural group and for the whole dataset (*all*). People in cultural groups are on average older and more

[6] The ICV (a Brazilian cost of living index) used in this paper was computed by Azzoni *et al* (2003).
[7] We use the Classificação Nacional de Atividades Econômicas (CNAE) codes for industries, which are derived for Brazil from the International Standard Industrial Classification of All Economic Activities, and the Classificação Brasileira de Ocupações (CBO) for occupations, which are derived for Brazil from the International Statistical Classification of Occupations.

experienced. The number of women is quite similar considering the cultural groups and the full dataset. People in the cultural sector earn on average more than those in cultural industries and cultural occupations only, and even more than the average person in the data. The results for education – people with fundamental, high-school and superior education completed – are very similar among the cultural groups and between such groups and the dataset.

3.2 Econometric approach

Using the expanded Mincer (1974) equation, the baseline model to be estimated is:

$$\text{Ln } w_{it} = DCNAE_{it}\beta_1 + DCBO_{it}\beta_{2+} DCULT_{it}\beta_{3+} X_{it}\lambda + \mu_i + \varepsilon_{it} \qquad \text{(i)}$$

where w_{it} is the wage; X_{it} is the matrix of covariates: dummy variable for gender (feminine), dummies for Brazilian states, dummies for level of education (Fundamental, High School, and College), age, age squared, experience (tenure in years), experience squared, dummies of size of firms and dummies for type of contract; μ_i represents the individuals unobserved characteristics; and ε_{it} is the term of error.

First, we use a pooled OLS (POLS) including all years jointly as a large cross-section. To avoid year changes to affect the results, a vector of year dummies are also included as control variables. One possible sources is the possibility of the unobservable characteristics – ability, motivation and creativity, for example – to be correlated to other wage determinants, such as education, region, occupation, etc[8]. Once the dataset we are using is a longitudinal panel data of workers, we deal with this endogeneity problem by considering the unobserved heterogeneity, i.e., using random or fixed effects estimators[9]. Note that, the use of fixed effect estimators may not eliminate the endogeneity problem, as a random shock can increase wages independently of the work sector, for example. As the unobserved characteristics of each worker will not change over the years, we assume then that we have a fixed effects model.

To capture the premium that the cultural sector may pay in the Brazilian case, following the evidences from Ferreira Neto, Freguglia and Fajardo (2012) we use the Oaxaca decomposition. Greene (2003) describes it as follows[10]:

Let N_c be the number of workers in the cultural sector and N_{nc} the number of workers in the non-cultural sectors. A mincerian regression for wages for each worker could be presented as

$$\ln w_{c,i} = X_{c,i}\beta_c + \varepsilon_{c,i} \qquad i=1,2,...,N_c \qquad \text{(iii)}$$

[8] See Wooldridge (2002).
[9] The formal Hausman's tests were done pointing to the use of fixed effects estimator in lieu of random effects one.
[10] Greene (2003) presents the methodology comparing the differences between men and women, however in this paper we present it following the same model, but considering cultural and non-cultural sector.

and

$$\ln w_{nc,j} = X_{nc,j}\beta_{nc} + \varepsilon_{nc,j} \qquad j=1,2,...,N_{nc} \qquad \text{(iv)}$$

where, X is the vector of socio-economic variables, β is the vector of parameters to be estimated, ε is the vector of errors.

As we are interested in the wage differentials, we subtract (iii) from (iv):

$$E(\ln w_{nc,j}) - E(\ln w_{c,i}) = X_{nc,j}'\beta_{nc} - X_{c,i}'\beta_c$$
$$= X_{nc,j}'\beta_{nc} - X_{nc,j}'\beta_c + X_{nc,j}'\beta_c - X_{c,i}'\beta_c$$
$$= X_{nc,j}'(\beta_{nc} - \beta_c) + (X_{nc,j} - X_{c,i})'\beta_c$$

The second term of the decomposition shows the differences explained by human capital, which would be the sole difference if the Walrasian competitive model were true, and the wages were determined only by the marginal productivity. The first term instead, shows the differences in the wages attributed to the differences that the human capital cannot explain (GREENE, 2003).

Vaz and Hoffmann (2007) analyze the wage differential between the public and private sector in the Brazilian economy. The authors state that in this case the interpretation can be somehow different from the one commonly used in the discrimination literature. In this sense, one part would explain the wages according to the productive characteristics from the individuals of each group (E) and the other would explain the different criteria of remuneration of each sector (D). Thus:

$$E = (X_{nc,j} - X_{c,i})'\beta_c$$

$$D = X_{nc,j}'(\beta_{nc} - \beta_c)$$

4. Results

We present the results following the methodology section. First, in table 5 we present the results for models OLS(1) and FE(1)[11] which present the baseline estimation. Second, in table 6 we present the Blinder-Oaxaca decomposition for each dummy of interest (*dcnae*, *dcbo* and *dcult*) considering both the OLS and FE models in order to compare them. Finally, in subsection 4.1 we present table 7 with the models OLS(2) to OLS(4) and FE(2) to FE(4), that are a robustness check for models OLS(1) and FE(1), respectively.

For the model OLS(1) the results suggests that: a) workers in cultural activities (*dcnae*) earn 8% more than other workers, those in cultural occupation (*dcbo*) earn 2.15% more, and those in the cultural "sector" (*dcult*) earn 13.4% more than other workers; b) women are paid 29% less than men;

[11] When analyzing the results for the fixed effects it will be said that the difference is due to innate ability or talent. However, it is known that not only talent is captured explaining the difference, but also it captures the information of omitted variables, among other factors. Nonetheless, to facilitate the discussion talent will be said to be the reason.

c) experience is positive but near to zero, showing little influence in the remuneration, and experience squared shows a negative coefficient, as expected; d) regarding the age, each additional year represents an increase of 4.7%, and the age squared is negative, as expected; d) focusing on the education, we have that workers with fundamental education completed earn 19.5% less than those That completed high school and those with college degree earn 97% more than workers with high school.

As for model FE(1), i.e., taking talent into account, we have several changes in the coefficient of the cultural dummies. For the cultural activities (*dcnae*) the coefficient becomes negative, for the cultural occupation (*dcbo*) the coefficient becomes no longer statistically significant, and for the cultural "sector" (*dcult*) the results imply a reduction from 13% to 3% of gains. For the control variables our results suggests that: i) women are paid 3% less than men, compared to 29% in the OLS(1) model; ii) experience and experience squared have similar results from the model OLS(1); iii) age plays a more significant role, as each year contributes to a 10% increase rather than a 5% increase; iv) as for the education variables, fundamental education pays less than high-school education, college degree education contributes to a increase of 16.5% compared to high school degree.

These results imply that when taking the innate ability of each worker into account, such variables are less important in determining their wage. Moreover, observing the cultural groups variables, the ones we are primarily interested in, the situation changes greatly. For the cultural occupation and cultural activity the results do not hold from models OLS(1) to FE(1) as we could expect. However, when looking at the cultural "sector" just as Ferreira Neto et al (2012) did, the results are maintained. The authors show that cultural workers are better paid than other workers considering the entire labor market. Moreover, they show that there is positive discrimination from the cultural sector. However, the results from table 5 cannot fully express the 'discrimination' from the cultural sector, or if the cultural industries and cultural occupation also 'discriminate' against their workers, as they are unable to show how much a group of workers earns more or less only because they belong to a determined group.

Table 6 presents the results of the Blinder-Oaxaca decomposition for each dummy for each group for both models – OLS(1) and FE(1). We have that (U) is the unexplained portion of the differential (difference between model constants); (D) is the portion due to discrimination. If the number is positive, the advantage is to the high group (dummy of interest equal to one) and if it is negative, the low group (dummy of interest equal to zero) has the advantage.

First, we should look at the raw differential (R). The results hint at a positive difference, implying that workers in cultural activities, occupations and "sector" are better paid, similar to the results in table 5 model. The difference appears to be greater for cultural activities and occupation

(22%) compared to "cultural sector" (both cultural industries and occupations) in which the raw difference is 18.8%

The interesting measure though is (D), or the discrimination portion. Analyzing (D) for cultural activities (*dcnae*) in the OLS model it is 10.6% and in the FE model it rises to 31.7%. This suggests that controlling the model for talent (in the FE model we consider it), cultural activities would pay 31.7% more than other activities for formal workers. Focusing on the cultural occupations (*dcbo*) the results show an increase in the discrimination portion from 1.7% (OLS) to 18% (FE). The same inference is valid for *dcnae*. When considering talent, the results imply that cultural occupations pay more than other occupations, and this difference would be 18% greater. Finally, comparing the OLS(1) and FE(1) model for the so-called "cultural sector" (*dcult*) the results show an increase from 40.1% to 48.2%, suggesting that formal workers engaged in cultural activities with a cultural occupation earn 48.2% more than other workers. It is possible to draw a more interesting conclusion from table 6. Cultural industries (*dcnae*), occupations (*dcbo*) and cultural sector (*dcult*) did not necessarily contribute to a higher wage. However, being in such groups means that the worker is going to be positively discriminated.

Finally, analyzing the percentage of (D) in terms of (R) and (E) in terms of (R): for cultural activities and occupations in the OLS model, the endowments represented more in terms of R than the discrimination, however when using the FE model this relation is reversed. For the cultural sector we have in both OLS and FE models that the discrimination (D) portion seems more important than the endowment (E) in terms of (R). It is noteworthy that in the FE model for *dcnae*, and *dcult* the D portion is higher than 100%.

4.1. Robustness Checks

Table 7 presents robustness checks for models OLS(1) and FE(1). These checks consisted of interacting the *dcult* variable with several others and included these new variables in the results in steps, to capture any possible mechanism from which both cultural activity and occupation would influence the wages. The results suggest we have a robust estimation, as the coefficients remain statistically significant and their value do not change abruptly[12].

5. Final Remarks

This paper aims to evaluate how much talent contributes to the wages of cultural workers while analyzing wage gaps between workers from the formal industry in Brazil. We empirically

[12] Another possible source of endogeneity is the main results is the selection of workers into one of the considered sectors (cultural and non-cultural). To deal with this we also consider a dynamic estimation. We use the method described by Arellano and Bond (1991) and the most important results are similar to the ones found in the main regression. These results are available upon request.

attempt to address an issue that no one has been able to address before, at least to our knowledge. To measure the talent effect we used a fixed effects model considering talent as the unobservable characteristic of workers.

We analyzed the workers in cultural industries, workers in cultural occupations and those workers in both cultural industries and occupations – cultural sector. Thus, we were able to compare differences according to the definition, shedding new light, in a different fashion, on the labor market in the formal cultural industry in Brazil.

Our results suggest that talent is an important factor in the determination of wages, especially when considering formal workers in the cultural industries, occupations and sectors. Using the Blinder-Oaxaca decomposition, implied that each of the groups mentioned above paid their workers even more just because they belong to the cultural group. Therefore, not only talent seems to matter but also the formal cultural environment in Brazil may be positively discriminating their workers.

Because we are able to distinguish the activity and occupation of the workers we are able to hint at the possible mechanism of this "positive discrimination". The results suggest that the main driver of the discrimination is the activity rather than the occupation. On the one hand, this corroborates the previous studies in the literature which found artists are not positively discriminated (Benhamou, 2007; Wetzels, 2008); if anything, our results suggest they cannot be differentiated from their counterparts. On the other hand, our results may be capturing a "Hollywood"-type effect (BLS, 2017; Sanchez and Paniagua, 2017), as the movie and Radio-TV industries should account for most of the workers in the cultural industry. Hence, future work should be concentrated in disentangling these mechanisms and understanding what make the Brazilian formal-artistic environment different than other artistic environment elsewhere.

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Table 1 – Cultural industry in Brazil

Year	Enterprises			People Employed			Mean Wage		
	Total	Cultural	%	Total	Cultural	%	Total	Cultural	%
2007	4,420,345	367,228	8.31%	42,641,175	1,857,281	4.36%	14.14	14.89	105.36%
2008	4,607,261	381,801	8.29%	44,574,884	1,953.597	4.38%	15.71	16.11	102.55%
2009	4,846,639	392,824	8.11%	46,682,448	2,000,573	4.29%	16.75	17.43	104.08%
2010	5,128,568	399,958	7.80%	49,733,384	2,102,698	4.23%	18.27	19.73	107.95%
Year	Gross Output*			Value Added*			Government Expense**		
	Total	Cultural	%	Total	Cultural	%	Total	Cultural	%
2007	2,219,537,560	250,897,181	11.30%	898,366,912	110.981.900	12.35%	1760998	4,416	0.25%
2008	2,607,912,852	281,297,126	10.79%	1,064,158,675	123,835,107	11.64%	1,906,212	5,581	0.29%
2009	2,596,215,980	287,742,349	11.08%	1,123,210,713	128.043.009	11.40%	2,115,535	6,190	0.29%
2010	3,048,519,913	328,878,588	10.79%	1,341,834,571	152.866.854	11.39%	2,303,791	7,251	0.31%

*In R$1,000.00. **In R$1,000,000.00
Source: IBGE: Sistema de Informações e Indicadores 2007-2010

Table 2 – Descriptive data on wages

Variable	Year	Obs.	Mean	Std. Dev.	Min	Max
Real wage	2003	350,192	1,063.91	1,956.21	0.00	48,239.32
	2008	442,988	1,290.60	2,360.99	0.00	61,880.65
	Pooled	2,106,094	1,220.36	2,203.69	0.00	61,880.65
Hourly real wage	2003	350,187	7.08	16.44	0.00	2,569.68
	2008	442,836	8.58	19.09	0.00	2,025.20
	Pooled	2,105,927	8.12	18.02	0.00	3,617.62
Log of hourly	2003	280,370	1.67	0.86	-0.65	7.85
real wage	2008	351,046	1.88	0.86	-0.35	7.61
	Pooled	1,702,493	1.80	0.86	-0.66	8.19

Source: The authors

Table 3 – Descriptive data on the cultural groups

Variable		Mean	Std. Dev.	Min	Max
Cultural industries	Overall	0.03	0.17	0.00	1.00
(dcnae)	Between		0.15	0.00	1.00
	Within		0.08	-0.80	0.86
Cultural occupations	Overall	0.02	0.14	0.00	1.00
(dcbo)	Between		0.12	0.00	1.00
	Within		0.06	-0.81	0.85
Cultural sector	Overall	0.005	0.07	0.00	1.00
(dcult)	Between		0.06	0.00	1.00
	Within		0.03	-0.83	0.84

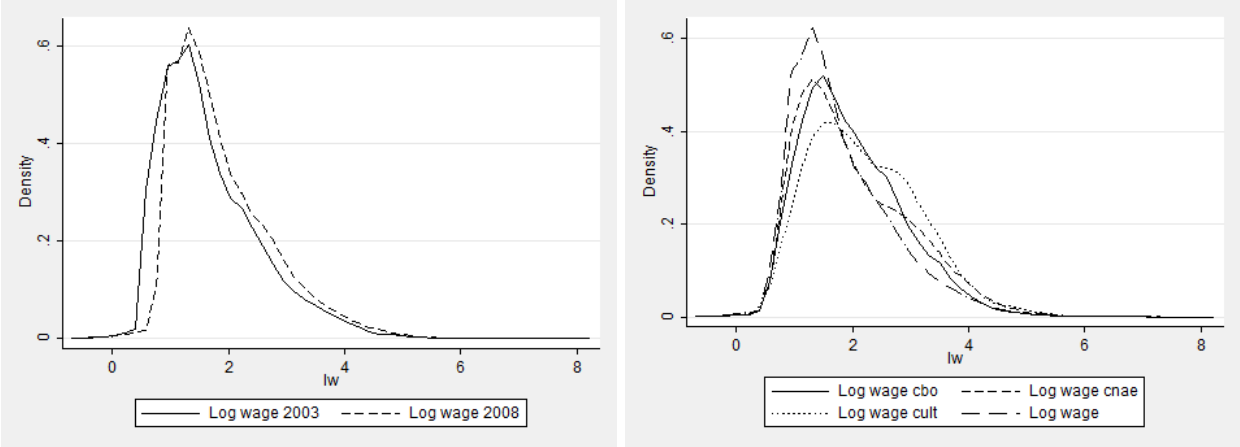
Source: The authors

Descriptive data

Variable	Obs.	Mean	Std. Dev.	Min	Max
Hourly real wage	2,119,329	8.14	18.26	0	3618
Ln wage	1,712,685	1.80	0.86	-1	8
Cultural Activity	2,119,587	0.03	0.18	0	1
Cultural Occupation	2,119,587	0.02	0.14	0	1
Cultural Activity*Occupation	2,119,587	0.01	0.07	0	1
Age	2,119,587	35.64	11.12	18	75
Female	2,119,587	0.39	0.49	0	1
Experience	2,119,587	66.97	83.81	0	828
Fund. educ.	2,119,312	0.01	0.09	0	1
High School educ.	2,119,312	0.16	0.37	0	1
Sup. educ.	2,119,312	0.35	0.48	0	1
Age squared	2,119,587	1393.78	873.29	324	5625
Experience sq.	2,119,587	11509.14	26888.94	0	685418
0 to 5 employees	2,119,587	0.11	0.31	0	1
50 to 100 employees	2,119,587	0.11	0.32	0	1
500 + employees	2,119,587	0.33	0.47	0	1
Urban-perm under CLT	2,119,360	0.74	0.44	0	1
Temporary	2,119,360	0.01	0.11	0	1
Apprentice	2,119,360	0.00	0.02	0	1

Source: The authors

Chart 1 – Log of wage – by year and by cultural groups



Source: The authors

Table 5 – Results of OLS and FE regressions.

VARIABLES	OLS(1) Lw	FE(1) Lw	VARIABLES	OLS(1) Lw	FE(1) Lw
Dcnae	0.0803***	-0.00591**	Age2	-0.0005***	-0.0007***
	(0.00307)	(0.00283)		(3.69e-06)	(7.33e-06)
Dcbo	0.0215***	0.00433	Fund. comp.	-0.195***	-0.0208***
	(0.00368)	(0.00387)		(0.00126)	(0.00165)
Dcult	0.134***	0.0307***	Sup. comp.	0.972***	0.165***
	(0.00866)	(0.00777)		(0.00190)	(0.00221)
Dfem	-0.293***	-0.0276***	Year FE	Yes	Yes
	(0.00099)	(0.00491)	State	Yes	Yes
Exp	0.00305***	0.00128***	Size of firm	Yes	Yes
	(1.87e-05)	(1.93e-05)	Type of Contract	Yes	Yes
Exp2	-1.65e-06***	-6.85e-07***			
	(5.88e-08)	(7.02e-08)			
Age	0.0471***	0.101***	Observations	1,712,401	1,712,401
	(0.00028)	(0.00056)	R-squared	0.495	0.146

Source: The authors. Note: Number of Pis in FE regression: 502,488. Std. error in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. The Hausman test and the Breusch-Pagan Test were both done, and the p-value were 0.000.

Table 6 – Blinder-Oaxaca Decomposition for OLS and FE models for the cultural groups (in %)

	DCNAE		DCBO		DCULT	
	OLS(1)	FE(1)	OLS(1)	FE(1)	OLS(1)	FE(1)
Amount attributable:	35.7	24.9	33.5	-0.2	25.6	43.1
- due to endowments (E):	11.6	-9.5	17.0	0.7	0.6	-7.5
- due to coefficients (C):	24.1	34.4	16.5	-0.9	25.0	50.6
Shift coefficient (U):	-13.5	-2.7	-14.8	18.9	15.1	-2.4
Raw differential (R) {E+C+U}:	22.2	22.2	18.8	18.8	40.7	40.7
Adjusted differential (D) {C+U}:	10.6	31.7	1.7	18.0	40.1	48.2
Endowments as % total (E/R):	52.2	-42.6	90.7	4.0	1.5	-18.4
Discrimination as % total (D/R):	47.8	142.6	9.3	96.0	98.5	118.4

Source: The authors. Note: Positive number indicates advantage to high group (dummy=1) and negative number indicates advantage to low group (dummy=0).

Table 7 – Robustness checks for OLS model

VARIABLES	OLS(2) Lw	OLS(3) Lw	OLS(4) Lw	OLS(5) Lw	OLS (6) Lw	FE(2) Lw	FE(3) Lw	FE(4) Lw	FE(5) Lw	FE (6) Lw
Dcnae	0.0611***	0.0611***	0.0611***	0.0611***	0.0610***	-0.00539*	-0.00539*	-0.00538*	-0.00545*	-0.0055**
	(0.00305)	(0.00305)	(0.00305)	(0.00305)	(0.00305)	(0.00281)	(0.00281)	(0.00281)	(0.00281)	(0.00281)
Dcbo	0.0209***	0.0209***	0.0210***	0.0209***	0.0209***	0.00587	0.00588	0.00588	0.00602	0.00590
	(0.00362)	(0.00362)	(0.00362)	(0.00362)	(0.00362)	(0.00384)	(0.00384)	(0.00384)	(0.00384)	(0.00384)
Dcult	0.0921***	0.0790***	0.119***	0.198***	0.213***	0.0197**	0.0193**	0.0221*	0.0451***	0.0495***
	(0.00956)	(0.0101)	(0.0130)	(0.0155)	(0.0156)	(0.00899)	(0.00932)	(0.0115)	(0.0142)	(0.0143)
Dfem	-0.311***	-0.311***	-0.311***	-0.311***	-0.311***	-0.032***	-0.032***	-0.032***	-0.032***	-0.032***
	(0.00098)	(0.00098)	(0.00098)	(0.00098)	(0.00098)	(0.00487)	(0.00487)	(0.00487)	(0.00487)	(0.00487)
Dcultfem	0.130***	0.137***	0.122***	0.150***	0.146***	0.0323**	0.0325**	0.0315**	0.0383**	0.0374**
	(0.0165)	(0.0166)	(0.0166)	(0.0171)	(0.0170)	(0.0148)	(0.0149)	(0.0150)	(0.0152)	(0.0152)
Dcultfund		0.100***	0.0623***	-0.0200	-0.00904		0.00274	-0.00015	-0.0230	-0.0231
		(0.0194)	(0.0209)	(0.0229)	(0.0226)		(0.0197)	(0.0208)	(0.0225)	(0.0225)
DcultHS			-0.081***	-0.165***	-0.157***			-0.00547	-0.0287*	-0.0299*
			(0.0155)	(0.0182)	(0.0179)			(0.0130)	(0.0155)	(0.0155)
DcultCollege				-0.168***	-0.180***				-0.048***	-0.054***
				(0.0223)	(0.0222)				(0.0176)	(0.0176)
DculSize1					-0.257***					-0.066***
					(0.0228)					(0.0180)
DcultCont6					0.757***					0.407***
					(0.123)					(0.0534)
Exp and Exp2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age and Age2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	No	No	No	No	No	No
Size of firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Contract	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,712,401	1,712,401	1,712,401	1,712,401	1,712,401	1,712,401	1,712,401	1,712,401	1,712,401	1,712,401
R-squared	0.511	0.511	0.511	0.511	0.511	0.160	0.160	0.160	0.160	0.160
Num. of pis						505,004	505,004	505,004	505,004	505,004

Source: The authors. Note: Robustness error in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table A1 – Definition of each variable

Variable	Definition
Age	Age of individual
Age2	Age squared
Exp	Tenure
Exp2	Experience squared
Female	Dummy for gender – equals 1 if female
Fund. Comp.	Dummy of education – equals 1 if Fundamental education is completed
Med. Comp.	Dummy of education – equals 1 if High School education is completed
Sup. Comp.	Dummy of education – equals 1 if Superior education is completed
Dcnae	Dummy of cultural activity – equals 1 if belongs to cultural activity (appendix 2.1)
Dcbo	Dummy of cultural occupation – equals 1 if belongs to cultural occupation (appendix 2.2)
Dcult	Dummy of cultural sector – equals 1 dcnae and dcbo equals to 1
Duf*	duf1 to duf27 – equals to 1 if belongs to respective state
Dano*	dano1 to dano6 – equals to 1 if belongs to the year
Deduc*	deduca1 to deducca9 – equals 1 if belongs to the level of education
Lw	Log of hourly real wage

Source: The authors

Table A2 – Cultural industries in CNAE

Code	Definition
22000	Publishing, printing and recording;
33004	Manufacturing of apparel, instruments and optical, photographical and cinematographic material;
53062	Commerce of books, newspapers and stationary;
92011	Production of cinematographic movies and video tapes;
92012	Distribution and projection of movies and videos;
92013	Radio related activities;
92014	Television related activities;
92015	Other artistic activities and performances;
92020	News agencies related activities;
92030	Libraries, archives, museums and other cultural industries;
92040	Sports related activities and others related to leisure;
71030	Renting personal and household goods;
74030	Advertising.

Source: IBGE. Note: Translation by the authors.

Table A3 – Cultural Occupation in CBO

Code	Definition
2330	Professors and instructors (with superior education) in professional education;
2531	Marketing, advertising and commercialization professionals;
2611	Jornalism related professionals;
2612	Information related professionals;
2613	Archive and museum experts;
2614	Linguists, translators and interpreters;
2615	Writers and editors;
2616	Specialists in publishing;
2617	Broadcasters and commentators;
2621	Producers of performances;
2622	Choreographers and dancers;
2623	Actors and directors of performances and others related;
2624	Composers, musicians and singers;
2625	Industrial designers, sculptors, painters and related (including artisans);
2627	Interior decorators and set designers;
3313	Professors (High School (mid-level) formation) in professional education;
3322	Lay Professors in Professional education;
3331	Instructors e professors in free schools;
3524	Enforcement agents for performance and media;
3544	Auctioneers and appraisers;
3711	Technicians in librarianship;
3712	Technicians in museology;
3713	Technicians in graphic arts;
3721	cinematographer;
3722	Photographers;
3723	Technicians in machine operations for data transmission;
3731	Technicians in operating radio station;
3732	Technicians in operating television station;
3741	Technicians in operating sound equipment;
3742	Technicians in operating scenography devices;
3743	Technicians in operating projection apparatus;
3751	Decorators and window dressers with High School (mid-level) education;
3761	Dancers of folk dances;
3762	Musicians and singers of folk music;
3763	Clowns, acrobats and related;
3764	Presenters of performances;
3765	Models;
4151	Clerks of library services and documentation;
7421	Makers of musical instruments;
7501	Supervisors of jewelry and related;
7502	Supervisors of glassware, ceramics and related;
7519	Jewelers and craftsmen of precious and semiprecious metals;
7521	Glassblowers, molders of glass and related;
7522	Cutters, polishers, blasters and recorders of glass and related;
7523	Potters (preparation and manufacturing);
7524	Glassblowers and potters (finishing and decoration);
7606	Supervisors of graphic arts;
7611	Workers of weaving preparation;
7612	Operators of weaving preparation;
7613	Operators of loom and similar machines;
7660	Polyvalent workers in graphic arts;
7661	Workers in graphic prepress;
7662	Workers in graphic printing;
7663	Workers in graphic finishing;
7664	Workers in photolab;
7681	Workers in craft weaving;
7682	Craft workers in clothing manufacturing;
7683	Craft workers in manufacturing footwear and leather and hides artifacts;
7686	Typographical workers, typesetters and related;
7687	Bookbinders and regenerators of books (small batches or unit);
9152	Repairers of musical instruments;
9912	Maintainers of leisure equipments.

Source: IBGE. Note: Translation by the authors.