Big fish in small pond or small fish in big pond? Money and status in the labor market *

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Abstract

The statement that individuals care for status and for their position within a hierarchy has been subject to sparse economic analysis. I check this assertion by analyzing wages and status in the labor market. The following questions are addressed: Are individuals willing to pay for status in the labor market? Is a high position in a large firm more valued than a similarly high position in a small firm? Three alternative concepts of hierarchy will be used: the prestige of an occupation, based on popular evaluation of its standing; the socio-economic index of the occupation, based on the characteristics of its workers; the ranking of the worker in the wage distribution inside the firm. The *size of the pond* is defined as the diversity (of hierarchical positions) inside the firm or its number of workers. A remarkable longitudinal linked employer-employee dataset is used. I find empirical support to the idea that workers care for status as a concept widely understood and shared by a society, such as the occupational prestige of an occupation, and they are willing to pay for such prestige in groups with high diversity or inequality in prestige. However, the evidence does not lend support to Frank's (1984, 1985) strict version of search for status, as no trade-off between wage and rank inside a firm was detected.

KEYWORDS: linked employer-employee data; wage structure; occupational prestige.
JEL: J63, J31, J41.

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1 Introduction

Individuals care for status and for their position within a hierarchy —this statement has been subject to sparse economic analysis, in contrast to the psychology and sociology literatures. Hamermesh (1975) introduced interdependencies among workers when modeling labor demand and labor supply, as individual effort and productivity would depend, not just on the worker's own wage, but also on a comparison wage, for example the average wage in the firm. Frank (1984, 1985) underlined the existence of, not just one comparison point, but multiple reference points, as workers care about their ordinal position in a hierarchy. He went on to predict that workers would be willing to pay to have a high position in a hierarchy and would, on the contrary, require a compensation to accept a low position. The idea that workers are willing to pay for status in the form of a lower wage is also discussed in Weiss and Fershtman (1998), who model its impact on wage differentials, output, and welfare. Moldovanu et al (2005) focus on the optimal definition of status categories by a principal wanting to maximize performance in an organization made up of agents who care about relative positions (for other models of interdependencies among individuals' preferences, and interactions between money and status in a framework extending beyond the labor market, see for instance van de Stadt et al (1985), Robson (1992), Layard (1980), Frank (1985) or, more recently, Becker et al (2005), Hopkins and Kornienko (2004) or the overview in Frank (2005)).

On the empirical front, the issue has been handled by looking at the impact of pay rank on job and wage satisfaction. Relative positions in the labor market have been shown to influence job satisfaction and to have an impact on worker productivity, through absentism, shirking, and turnover (see the early paper by Hamermesh (1977), or Clark and Oswald (1996), Bygren (2004), Taylor and Vest (1992), Groot and van den Brink (1999), and Ward and Sloane (2000)). Recently, Brown et al (2005) have used laboratory experiments complemented with survey data to show that workers care, not just about their absolute pay level, but also about their pay relative to the mean of their group and, moreover, about the rank they occupy in the pay distribution. On the other hand, Charness and Kuhn (2007)

have challenged the idea that firms adopt a compressed wage distribution because workers care about co-workers' wages and adjust their level of effort accordingly. Evidence from their laboratory experiment indicates instead that workers' effort depends only on own wage and not on co-workers' wages. Neumark and Postlewaite (1998) present an application to female labor force participation, showing that concern over relative incomes may draw women into the labor force.

This paper sets the analysis of the topic in a different framework. Relying on the theoretical background by Frank (1984, 1985), it performs a direct test on the existence of a trade-off between money and status in the labor market. The following questions will be addressed: Are individuals willing to pay for status in the labor market? Is a high position in a large structure valued more highly than a similarly high position in a small structure?

The study is based on a remarkable longitudinal linked employer-employee dataset covering each year over one million workers in manufacturing and services private sector in Portugal. The population of wage-earners in those sectors and their firms are covered, thus reducing problems commonly faced by panel datasets, such as panel attrition and over- or under-sampling of certain groups. Moreover, the legal requirement for the data to be posted in a public space in the firm contributes to its reliability, reducing measurement errors.

The empirical model will consider the firm as the comparison group, consistent with Frank's model and with empirical literature that has shown that individuals make comparisons with groups they are close to, namely, in the framework of the labor market, their co-workers. To define status, three alternative concepts of hierarchy will be used: the prestige of an occupation, based on popular evaluation of its standing; the socio-economic index of the occupation, based on the characteristics of its workers; the ranking of the worker in the wage distribution of the firm. The use of the first two measures relies on the work by Ganzeboom and Treiman (1996). The third corresponds directly to Frank's model. Given the aim of checking whether a high hierarchical position in a large structure is valued more highly than a similarly high position in a small structure, different alternatives will be used to define the size of the *pond*. Two alternatives take into account the diversity of the hierarchy, by computing the dispersion of its positions using

the Gini index and the coefficient of variation, two measures of dispersion widely used in the literature. The underlying idea is that a larger (more diverse) pond is one with sharper distinctions in hierarchical positions. Indeed, if placed within a totally flat organization, where everyone would have equal standing, there would be no scope for an individual to pay for status at the top of the hierarchy, simply because there would be no such hierarchy; conversely, more stretched hierarchies would leave more scope for individuals to want to buy positions at the top. Naturally, the size of the pond will alternatively be defined as the number of workers in the firm. Using alternative concepts of status and firm size/diversity, the aim is to check the robustness of the results to alternative empirical implementation of the concepts.

Section 2 briefly describes Frank's theoretical model and presents its empirical predictions. Section 3 describes the data set and discusses the concepts used. Section 4 presents the empirical model and discusses the results. Concluding comments are presented in section 5.

2 Theoretical background: predictions when status matters

Frank's (1984, 1985) argument departs from two basic ideas: there is interdependence of preferences, in the sense that individuals care for their position in a hierarchy, comparing their own standing with the standing of others or, in other words, status matters; individuals are free to choose the groups they join, in particular the firm they work for (and the neighborhood they live in, etc).

Given the distaste for being ranked low in a comparison group, individuals would presumably choose to associate with those who are similar to them, thus sorting into homogenous groups. According to Frank, what prevents this from being the standard situation is the fact that some individuals are willing to pay for status. Given the heterogeneity in their willingness to pay for status, heterogenous associations will form, as status seekers transfer resources to those who care less about status. "[V]ariations in the monetary valuations people place on status create opportunities for mutual gains through exchange, without which heterogenous local hierarchies could never coalesce" (Frank, 1985: 48). Status within one's

hierarchy would thus be a tradable good like any other.

In the framework of the labor market, the firm is seen as the comparison group of relevance, a local hierarchy of co-workers. The search for status would lead some workers to be willing to pay for improved status in the form of a lower wage (relative to their marginal productivity); conversely, a lower status within a firm would be compensated with a higher wage (relative to the worker's marginal productivity).[1] Otherwise, the worker would have an incentive to join a firm where the productivities and wages of co-workers would be closer to his own. This trade-off between wage and status would be the key to explain the observed compression of the distribution of wages within firms, when compared to the distribution of worker productivities.

The major prediction of the model is thus that wage differentials within the firm understate the differentials in worker productivity (see proposition 1 in Frank, 1984: 552). In the economy, for workers with equal productivity, the wage would vary depending on the rank position: those occupying a high rank in a firm would have given up part of their wage to pay for status, while those occupying a low rank in a firm would be compensated with a wage premium. The graph in Frank (1985: 54) illustrates this point particularly well and it is reproduced in figure 1. This is the first hypothesis under empirical scrutiny, which I will refer to as Frank's strict hypothesis of a trade-off between money and status.[2]

A closely related, though broader, hypothesis under scrutiny will consider alternative definitions of status —instead of the rank in the local hierarchy internal to the firm, the prestige of the occupation, as widely recognized by the population in general. The idea that the value attached to a high hierarchical position may be higher in large firms than in small ones will be subject to testing.

[1] Though Frank argues that on average it would still hold that workers in each firm would be paid their marginal productivity.

[2] The second proposition in Frank (1984), not subject to testing here, states that the closer the interaction among workers, the more compressed will be the wage distribution with respect to the distribution of workers productivities (as a result of the fact local comparisons, with individuals who are closer, matter more than global comparisons). The model does not progress into the endogenous definition of the number of groups, their size and composition, or the price of status. These would all be "determined in a complex way by the distributions of individual preferences and abilities. In labor markets involving large numbers of individuals, there will in general be a rich menu of choices within which preferences regarding status vis-à-vis coworkers can be accommodated." (Frank, 1984: 552)

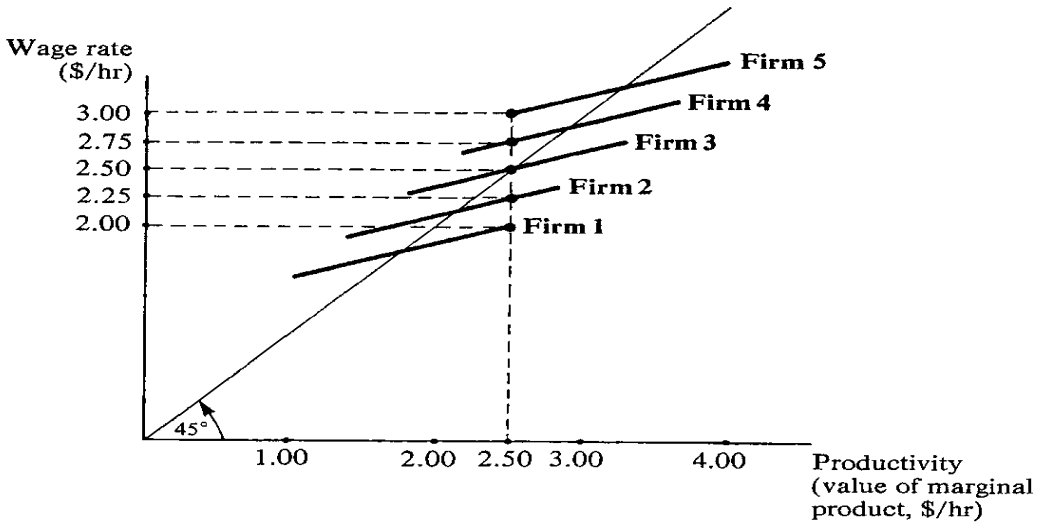

Figure 1: COMPETITIVE WAGE SCHEDULES WHEN PERCENTILE RANKINGS MATTER. Source: Frank, 1985: 54.

3 Data set and discussion of concepts

Response to an annual inquiry (*Quadros de Pessoal*) by the Ministry of Employment is mandatory to every firm employing wage-earners in the private sector in Portugal. Information on all the personnel working for the firm in a reference week must be reported. Public administration and domestic service are not covered, and the coverage of agriculture is low, given its low share of wage-earners. For the remaining sectors, the mandatory nature of the survey leads to an extremely high response rate. Reported data include the firm's location, industry, employment, sales, and the worker's gender, age, occupation, schooling, tenure, earnings, and duration of work. The administrative nature of the inquiry and the legal obligation for the data to be posted in a public space in the company contribute to its reliability. Data from 1991 to 2000 are used.

A worker identification code, based on a transformation of the social security number, enables tracking him/her over time. Extensive checks have been performed to guarantee the accuracy of the data, using gender, date of birth, highest schooling level achieved, and date of hiring.

The study focuses on full-time wage-earners aged 18 to 65, whose wage is not below the national minimum wage.[3] Given the aim of looking at hierarchies within the firm, a minimum firm size threshold had to be imposed and only workers

[3]May drop apprentices and handicapped workers.

observed in firms with at least 10 workers will be analyzed[4] (the sensitivity of the results to other thresholds will be checked.). Similarly, only occupations with a minimum of 100 workers observed in the dataset have been kept for analysis. Given that worker fixed effects will be included in the empirical model under estimation, workers observed just once over the whole period are dropped from the analysis.[5] The final dataset under analysis includes over 9 million observations on 1.8 million workers.

Gross hourly wages were computed as $hw = \frac{bw+sen+reg}{normh}$, where bw stands for monthly base-wage, sen are seniority-indexed components of pay, reg are other regularly paid benefits, and $normh$ refers to the normal duration of work expressed in hours. Wages were deflated using the Consumer Price Index (base 2000). Outliers in wage levels[6] and in wage growth[7] have been dropped.

Descriptive statistics are presented in table 5 in appendix.

3.1 Defining the comparison group

The choice individuals make as to the comparison group they adopt has deserved particular attention in the literature, for example by Patchen (1961), Bygren (2004), Goodman (1974), Oldham et al (1986), Dornstein (1988), Taylor and Vest (1992), or Law and Wong (1998). Most evidence indicates that comparisons in the labor market are most relevant, and that individuals care in particular for reference groups they are closer to or a part of, such as co-workers, namely because they have more information on those groups.[8] The synthesis of this literature seems to be that relative positions matter and that individuals usually compare themselves to those who are similar to them, their peers, reacting more to local than to global comparisons. In Frank's words, "the interpersonal comparisons that carry greatest weight for a person are those that involve the people with whom he or she associates most closely" (Frank, 1984: 552). In the empirical analysis that follows, I will stick to Frank's view that, in the labor market, the firm is the relevant local

[4]Dropping 22% of the observations in the database.
[5]Corresponding to 8% of the observations in the dataset.
[6]Wages above 10 times percentile 99.
[7]Ratio of wages in two consecutive years smaller than 1/6 or larger than 6.
[8]Bygren (2004) however finds that Swedish workers adopt more general groups for their comparisons, such as their occupation or the overall labor market, which could be due to the high unionization level in the country and the centralized nature of wage-setting.

hierarchy that workers take as their comparison group.

3.2 Which hierarchical scale to consider?

One first natural way to define a hierarchy of positions in the labor market is to use the prestige of the occupations. Ganzeboom and Treiman (1996) provide three alternative measures of occupational status, adopting the most recent classification of occupations —the International Standard Classification of Occupations 1988 (ISCO88) defined by the International Labor Office. Their major contribution has been a procedure to assign to the new classification of occupations three alternative scales of status that had been previously defined. Since this standard classification of occupations has by now been adopted by several national and international statistical agencies, these authors have generated three codings of occupational status that can be widely applied, both in national and international studies. The current Portuguese dataset follows closely the ISCO88 classification, and thus it is clear-cut to assign alternative measures of occupational status to each occupation. Another strength of the work of this authors is the very detailed classification of occupations adopted, at the 4-digit level, which yields approximately 400 occupations.

The following definitions of occupational status were considered by Ganzeboom and Treiman (1996):

- Treiman's (1977) Standard International Occupational Prestige Scale (SIOPS). SIOPS is a prestige scale, based on popular evaluation of occupational standing. To build this ranking, the author relied on studies of occupational prestige conducted in 60 different countries. This kind of scale departs from an inquiry to a sample of the population in each country, who is asked to rank a series of occupational titles according to their prestige or social standing. These ratings are then standardized and averaged to form a prestige scale, which ranges between 0 and 100.

- Ganzeboom et al (1992) International Socio-Economic Index of Occupational Status (ISEI) follows the spirit of early work by Duncan (1961). The scale is a weighted average of certain characteristics of workers in each occupation, in particular the educational level and income. As such, and as opposed to

the previous scale, it does not involve any subjective judgment by individuals concerning the standing of an occupation. The authors relied on data from 16 different countries to produce this ranking, which also ranges between 0 and 100.[9]

- Erikson and Goldthorpe's Class Categories. This is a nominal class category, with a non-ordered nature, which includes 10 categories. Given its very aggregate nature and the fact that it is not an ordered ranking of occupations, it does not fit the purpose of this study and will therefore not be used.

The use of the two scales of occupational status just described assumes that they are valid in countries that might not have been part of the underlying surveys. That is likely to be the case because, first of all, a wide set of countries, spanning all continents and levels of development, was included in the surveys used. Secondly, there is certain consensus over the idea that the ranking of occupations according to social status changes little across countries and over time (in Treiman's terminology, that ranking is common to all complex societies), while at the same time there is "near-perfect consensus across population subgroups in the prestige evaluation of occupations" (Treiman, 1977: 60). The ranking of occupational prestige is thus taken as a hierarchy that is widely understood, common knowledge widely shared by the population in general.

An alternative was considered, which closely matches Frank's reasoning: the rank position of the worker within the wage distribution of his/her firm. Each worker was assigned his/her wage rank within the firm, which was then standardized to fall in the interval from 1 (lowest position in the firm) to 100 (highest position in the firm). The measure can thus be interpreted as the worker's percentile rank in the wage distribution:

$$relative\ rank_{ij} = \left(\frac{R_{ij}}{N_j}\right) * 100, \tag{1}$$

where i refers to the worker, j to the firm, N_j is total employment in firm j, and R_{ij} ranges between 1 and N_j, 1 being the lowest paid and N_j the highest paid worker in the firm.

[9] Though achieving actual values between 16 and 90.

3.3 What defines the size of the *pond*?

One aim of the analysis is to check whether a high position in a large firm is valued more highly than a similar position in a small firm. Alternative concepts of the *size of the pond* are considered: the diversity or dispersion of hierarchical positions inside the firm, and its size as commonly understood (number of employees). According to the diversity concept, a larger pond would be one with sharper distinctions in hierarchical positions, a more stretched hierarchical structure. The underlying reasoning is that in a totally flat organization, where everyone has equal standing, there is no scope to pay for status at the top of the hierarchy, because there is no such hierarchy; conversely, more stretched hierarchies would leave more scope for individuals to want to buy positions at the top. Two widely accepted measures of dispersion (the Gini index and the coefficient of variation) are used to measure the degree of dispersion in the hierarchy of the firm.

The measures of diversity and size will be combined with each hierarchical scale defined (two definitions of occupational status and wage rank) in the empirical analysis.

4 Money and status in the labor market

This section tests whether inside the firm workers are willing to trade wage for status. I will consider, on one hand, the strict version of Frank's theoretical reasoning, i.e. that equally productive workers will receive different wages depending on their rank position inside a local hierarchy (firm), with the ones at the top of the wage scale paying for that status and the ones at the bottom receiving a compensating pay differential. I will moreover check whether this price for status, if any, differs according to the size of the firm, with a high hierarchical position in a large firm being more valued than a high hierarchical position in a small firm. I will also broaden the scope of the test, to consider alternative definitions of the hierarchy and the size of the firm/pond.

These tests will be performed by estimating (log) wage regressions that include, apart from the traditional Mincer-type regressors, a measure of the hierarchical position of the worker, an indicator of the size or diversity of the firm, as well as the

interaction of these two variables. Moreover, given the aim of comparing workers with similar productivity, controls for worker unobservable quality are included in the model (worker fixed effects), apart from the observables that influence productivity. More precisely, the equation under estimation is:

$$Y_{ijt} = \beta_1' X_{ijt} + \beta_2' Z_{jt} + \alpha_1 h_{ijt} + \alpha_2 sizepond_{jt} + \alpha_3 h_{ijt} * sizepond_{jt} + \mu_i + \varepsilon_{ijt}, \quad (2)$$

where Y is (log) real wage, i stands for worker, j for firm, and t for the year. X is a set of worker observable attributes, which includes schooling (2 dummy variables, for high school, and university), a quadratic term on age, tenure (years working for the current firm), and white collar job; Z is a set of firm attributes, including industry (16 dummies) and location (one dummy for Lisbon); year dummies are included. X and Z are meant to control for the worker productivity. h is an indicator of the hierarchical position of the worker, measured alternatively as the prestige of the occupation ($prestige1$), the socio-economic index of the occupation ($prestige2$), or the worker wage rank inside the firm ($rank$). Frank's model would predict that, after controlling for worker productivity, those who value status more would pay to be at the top of their hierarchy, which would be associated with a negative coefficient α_1 on rank. *sizepond* is a measure of the diversity or size of the firm: when taking the occupational prestige as the hierarchy, the Gini index of prestige, the coefficient of variation of prestige, or the firm size itself, are considered; when taking the wage rank as the hierarchy, just the size of the firm is considered (further discussion of this issue is provided below). The Gini index and the coefficient of variation are two dispersion measures widely used and often included as independent variables, for example in studies of the impact of wage dispersion within the firm on its performance or its average pay level (see for example Eriksson (1999), Main et al (1993), Pfeffer and Langton (1993), who used the coefficient of variation, or Frick et al (2003), who used the Gini index). Inclusion of the interaction term $h_{ijt} * sizepond_{jt}$ aims at testing whether high positions in a large or diverse hierarchy are more valued than similar positions in a small hierarchy. If so, we would expect the coefficient α_3 to be negative, reflecting the trade off between money and status: workers would be willing to give up part of their wage to pay for the status of a high position in a large *pond*. The panel nature of the dataset enables accounting for time-invariant worker unobserved

heterogeneity and μ_i is worker fixed effect. ε_{ijt} is a stochastic error.

Note that the wage rank definition of a hierarchy was not combined with the measures of diversity (Gini and coefficient of variation), because the dispersion of ranks is meaningless —by definition, wage ranks are uniformly distributed between 1 and 100. Taking the dispersion of wages (instead of ranks) would as well lack sense. Indeed, firms with higher wage dispersion have, by definition, wider wage differences across workers / positions in the hierarchy (it cannot be the case that, to be at the top of a firm with high wage dispersion, workers would give up part of their wage). It is however feasible and interesting to look at the wage differences between ranks inside firms that differ in their size (instead of their wage dispersion).

Results are presented in tables 1 and 2. Relying on the concept of hierarchy as a scale of prestige that is widely recognized in a society (table 1), we find that prestige is invariably rewarded in the labor market (see the first line in all specifications). The wage return on a 10 percentage point increase in the prestige scale is approximately 2%-3%(specifications 1 and 2, where prestige is not interacted with another variable).

Concentrate now on the impact of the firm size or its diversity on wages (column 2). The well-known result that larger firms pay higher wages is confirmed. The elasticity of wages with respect to firm size is 0.02%. On the other hand, more heterogenous firms (in terms of the prestige of occupations that they encompass) pay on average lower wages (see the estimated coefficients on the Gini index and coefficient of variation). An increase of 10 percentage points in the Gini index of diversity inside the firm (Gini of *prestige*1) is associated with a decline of 0.3% in wages. Stated alternatively, if a worker moved from a firm with one standard-deviation below to one standard-deviation above the average Gini index of *prestige*1, his/her wage would decrease 0.3% (0.5% when considering the Gini index of *prestige*2 or the coefficient of variation of *prestige*1; 0.7% when considering the coefficient of variation of *prestige*2).

However, allowing the price of status to differ across firms with different degrees of internal diversity (column 3) uncovers that more diverse firms pay on average a *higher* wage to its workforce (note the positive coefficient on the dispersion measure), but it is to workers with higher occupational prestige that they pay a lower

	(1)	(2)	(3)
prestige1	.003***	.003***	.004***
	(1.00e-05)	(1.00e-05)	(.00003)
Gini p1		-.0003***	.004***
		(.00002)	(.00007)
p1*Gini p1			-.0001***
			(1.85e-06)
prestige1	.003***	.003***	.004***
	(1.00e-05)	(1.00e-05)	(.00003)
cv p1		-.032***	.183***
		(.001)	(.004)
p1*cv p1			-.006***
			(.0001)
prestige1	.003***	.003***	.002***
	(1.00e-05)	(1.00e-05)	(.00003)
size firm (log)		.022***	.015***
		(.0001)	(.0002)
p1* size firm			.0002***
			(5.46e-06)
prestige2	.002***	.002***	.005***
	(1.00e-05)	(1.00e-05)	(.00002)
Gini p2		-.0004***	.006***
		(.00002)	(.00005)
p2*Gini p2			-.0002***
			(1.11e-06)
prestige2	.002***	.002***	.005***
	(1.00e-05)	(1.00e-05)	(.00002)
cv p2		-.032***	.291***
		(.001)	(.002)
p2*cv p2			-.009***
			(.00006)
prestige2	.002***	.002***	.001***
	(1.00e-05)	(1.00e-05)	(.00003)
size firm (log)		.022***	.017***
		(.0001)	(.0002)
p2* size firm			.0001***
			(4.25e-06)
Obs.	9356632	9356632	9356632

Table 1: (Log) wage regression, worker fixed effects, part 1

Note: Each panel reports results on three different specifications of the model. All specifications include controls for schooling (2 dummies), experience (quadratic term on age), tenure, white-collar, industry (16 dummies), location (1 dummy), and year. A more complete set of results is presented in table 5 in appendix, taking the first regression reported (prestige1 and Gini index, specification 3) as the example. All other full sets of results are available from the author upon request. Source: Computations based on Portugal, MTSS (1991-2000).

wage. In fact, the estimated coefficient on the interaction between the prestige index and the measure of firm diversity is systematically negative. Thus, when further asking the question as to who is it that more diverse firms reward worse, one finds that the workers with more prestigious occupations are the ones subject to a higher wage penalty in such firms. This suggests that workers would be willing to pay for occupational prestige in a large (more precisely, more heterogenous) *pond*. Quantitatively, for a worker in a firm one standard-deviation below the average Gini index of *prestige*1, an increase of 10 percentage points in status would cost 0.7% of the salary; in a firm one standard-deviation above the average Gini, the same increase in prestige would cost 1.6% of the salary (results for the other measures of status point to a similar difference in the price of status between large and small firms). In synthesis, the price (foregone wage) for a 10 percentage point increase in status is higher in larger (i.e. more diverse) firms. Note, however, that the overall wage of the worker still includes the impact of the higher prestige and of the higher diversity inside the firm in isolation, and both are positive.

No such trade-off between money and status in a large *pond* can be detected when one considers the actual size of the firm and not its diversity. Indeed, more prestigious occupations receive a wage premium in large firms (see the positive coefficient on the interaction in column 3), on top of the return on prestige and firm size in isolation.

The results so far indicate that occupational prestige is rewarded in the labor market, but workers seem to pay for prestige in larger ponds, in the form of a negative compensating wage differential. There seems to be a trade-off between prestige and money when the comparison group of co-workers is made up of more heterogenous individuals. However, what seems to matter for the definition of the size of the *pond* is its diversity, how unequal the positions are, and not strictly its size. It is not really the size of the pond by itself that matters. Being high among unequals is what seems to be paid for.

Turn now to the test on the strict version of Frank's reasoning. Narrowing the concept of status to the wage rank inside the firm, contrasting results are reached (see table 2). If workers were in fact willing to pay for a high rank position inside their firms, one would find in the overall economy, after controlling for the worker

productivity, declining returns on rank. The results do not support this strict version of the model. Instead, after controlling for the worker productivity, there is a wage premium associated with being in the top ranks of a firm. Quantitatively, a 10 percentage point increase in rank position inside a firm raises the wages by 5% to 6%, which is a considerable magnitude.

I further checked whether a top position in a large firm would be associated with a higher status that workers would be willing to pay for, when compared to a top position in a small firm (line 3). Results are not supportive of this hypothesis either. Indeed, the returns on rank position inside a firm are higher at larger firms.

	(1)	(2)	(3)
w rank	.006***	.006***	.005***
	(3.87e-06)	(3.86e-06)	(1.00e-05)
size firm (log)		.022***	.010***
		(.0001)	(.0001)
rank* size f.			.0003***
			(1.96e-06)
Obs.	9356632	9356632	9356632

Table 2: (Log) wage regression, worker fixed effects, part 2
Note: All three specifications of the model include controls for schooling (2 dummies), experience (quadratic term on age), tenure, white-collar, industry (16 dummies), location (1 dummy), and year. Full sets of results are available from the author upon request. Source: Computations based on Portugal, MTSS (1991-2000).

Two further robustness checks have been performed. The relative rank measure may not be truly comparable across firms with different numbers of employees. For example, in a firm with ten workers, the lowest paid worker will have relative rank equal to 10 (see equation 1), as his/her position covers the percentiles 1 to 10. In a firm with a hundred workers, the corresponding value will be 1, and therefore comparison of the ranks in those two firms might not be insightful. I check whether results still hold once the firm size threshold is raised to one hundred workers, thus providing more comparable information on ranks across firms. Results, available from the author upon request, are roughly unchanged.

Similarly, results remain roughly unchanged when only worker attributes (and no firm attributes) are included in the regression to capture the worker productivity.

Several factors may justify the lack of empirical support for Frank's strict version of the model of search for status. Frank himself refers to offsetting forces

that may operate. Workers may engage in global comparisons (with neighbors, school colleagues, etc) and try to maximize income in a broader comparison group —the class reunion effect, according to Frank (1985: 56-58). The empirical results on the relevance of a general concept of hierarchy that is widely recognized and accepted, and not so much a hierarchical scale defined strictly within a firm, which is not likely to be known outside, lends some support to this offsetting force. Also, high quality workers may bring such a contribution to the overall performance and reputation of the place, or have such a positive impact on the learning of their colleagues, that hey are entitled to a wage premium —the halo and learning effects (Frank, 1985:57-58; 1984:555). A different line of reasoning is the tournament theory (Lazear and Rosen, 1981), which predicts that the pay distribution inside the firm will be more stretched than the distribution of worker productivity, in sharp contrast with Frank's theory.

5 Conclusion

Use of a rich longitudinal dataset covering every worker inside all firms in the private sector enabled a direct test on Frank's hypothesis that workers care for status and are willing to pay for it.

I find empirical support to the idea that workers care for status as a concept widely understood and shared by a society, such as the occupational prestige of an occupation, and they are willing to pay for such prestige in groups with high diversity or inequality in prestige. In that sense, workers seem indeed to be willing to pay for status. It pays off to be high in a comparison group made up of unequals.

However, the evidence does not lend support to Frank's strict version of search for status, as no trade-off between wage and rank inside the firm was detected. Status is not really a high rank position inside a firm, it is prestige, as recognized by the whole society.

It may be that the offsetting forces that Frank himself discusses play a crucial role: workers may make global comparisons and search to maximize income in a broader comparison group (neighbors or school mates, for example); also, the contribution that high-quality workers bring to the firm may entitle them to a wage premium. Tournament type of rewarding mechanisms would as well lead to

high wage dispersion inside the firm, when compared to the dispersion of worker productivity, contrary to the prediction by Frank.

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Appendix: Additional tables

Table 3: Descritpive statistics

Variable	Mean	Std. Dev.
Hourly wage (log)	6.62	0.57
Female	0.37	
Schooling		
less than high school	0.79	
high school	0.15	
university	0.06	
Age	37.64	10.8
Tenure	9.98	9.16
White collar	0.41	
Lisbon	0.45	
Size firm (log)	5.06	1.86
Prestige1	34.8	10.86
Prestige2	37.28	13.67
W rank	51.4	28.11
Cv p1	0.25	0.08
Cv p2	0.28	0.11
Cv wages	0.45	0.23
Gini p1	11.55	4.72
Gini p2	13.21	6.02
Gini wages	17.71	8.29
Industry		
food, bev, tob.	0.05	
textiles	0.17	
wood	0.03	
paper	0.02	
chemicals	0.03	
mineral products	0.03	
metals	0.04	
machinery	0.07	
electric, gas, water	0.02	
construction	0.09	
trade	0.15	
restaur, hotels	0.04	
transp, communic	0.08	
banking, insurance	0.07	
real estate, serv co.	0.04	
other serv.	0.06	
other	0.02	
N	9,356,632	

Source: Computations based on Portugal, MTSS (1991-2000).

Table 4: (Log) wage regression, worker fixed effects

Variable	Coefficient	(Std. Err.)
Schooling		
high school	0.05256**	(0.00078)
university	0.20569**	(0.00148)
age	0.05013**	(0.00022)
age sq. / 100	-0.03234**	(0.00011)
tenure	0.00359**	(0.00003)
white collar	0.00406**	(0.00038)
Lisbon	0.04984**	(0.00047)
Industry		
textiles	-0.03224**	(0.00115)
wood	-0.03228**	(0.00133)
paper	0.01704**	(0.00177)
chemicals	0.02522**	(0.00121)
mineral products	0.05764**	(0.00155)
metals	-0.00537**	(0.00114)
machinery	0.03925**	(0.00106)
electric, gas, water	0.08453**	(0.00317)
construction	-0.02740**	(0.00109)
trade	-0.00836**	(0.00086)
restaur, hotels	-0.04269**	(0.00134)
transp, communic	0.05334**	(0.00117)
banking, insurance	0.18939**	(0.00162)
real estate, serv co.	-0.00031	(0.00102)
other serv.	0.00140	(0.00125)
other	0.01066**	(0.00131)
Year		
1993	-0.00100**	(0.00038)
1994	0.02113**	(0.00066)
1995	0.00554**	(0.00085)
1996	-0.00544**	(0.00104)
1997	0.01763**	(0.00124)
1998	0.04631**	(0.00144)
1999	0.06493**	(0.00163)
2000	0.06104**	(0.00183)
prestige1	0.00411**	(0.00003)
Gini p1	0.00352**	(0.00007)
p1*Gini p1	-0.00011**	(0.00000)
Intercept	4.97432**	(0.00693)
N	9356632	
Adjusted-R^2	0.910	
$F_{(34,7534085)}$	88395.03	

Note: ** Significant at the 1% level. Identification of the impact of education on wages is feasible given that a share of the workforce is observed changing —increasing —its education level (these shares are 2%, 2%, 2%, and 1%, respectively for workers initially observed with 4, 6, 9, and 12 years of education). Source: Computations based on Portugal, MTSS (1991-2000).