

Ethics and Income Inequality:

Uncovering Ethical Earnings in the US and UK Based on Group Identity

Aurelie Charles, University of Bath, Bath, United Kingdom

Sunčica Vujić, University of Antwerp, Antwerp, Belgium

Abstract

The literature in social sciences on identity, stratification, and intersectionality has long shown the importance of group identity in explaining the persistence of income inequality over time. However, methodological individualism and marginalism in economics mean that income inequality is still assessed from the perspective of the individual. By taking a group perspective to individuals, the contribution of this paper is to statistically define ethical and unethical earnings according to the nature of the long-run process of group's earnings vis-à-vis others. The paper thus presents a long-run methodology to uncover ethical and unethical earnings and applies it to the US labour force by race and gender between 1968 and 2011 on the one hand, and to the UK labour force by race and gender between 2001 and 2014 on the other hand. Results show that rent-seeking behaviour is a group phenomenon which extends to most of the US and UK labour force, with strong group and occupational disparities.

Keywords: labour market, income, inequality, social norms, methodology

JEL classification: J31, J71, C32

1. Introduction

The foundation of the Economics discipline and one of its most controversial components relates to its methodological individualism of a single atomistic self separate from its unique social context (Davis, 2011). However, numerous critiques have long claimed how individuals alone, as a unit of analysis, have never been able to fully explain individual behaviour (Hodgson, 2007). A growing body of literature now distinguishes between group and individual behaviour and shows that, in experimental laboratory settings, group behaviour tends to be more self-centred and predictable than individual behaviour (Bornstein *et al.*, 2004; Charness and Sutter, 2012; Muehlheusser *et al.*, 2015). Yet, outside of the laboratory setting, “social variables, not attached to particular individuals, are essential in studying the economy or any other social system and that, in particular, knowledge and technical information have an irremovably social component, of increasing importance over time” (Arrow, 1994, p. 8). The literature on identity (Stryker, 1968; Tajfel and Turner, 1986; Ashforth and Mael, 1989), stratification (Darity and Williams, 1985; Mason, 1996), and intersectionality (hooks, 1981; Crenshaw, 1989) has long shown the importance of group identity in explaining market interactions as a subset of social interactions. As such, the ‘social variables’ mentioned by Arrow are in fact linked to the relationships of power between groups reflecting local cultural norms (Massey *et al.*, 2014). Starting from such a rich literature as a background, this paper assumes that individuals are defined at the intersection of stratified group identities whose social positioning depends on the contextual norms in which they evolve.

Since the 1970s, Western economies have been going through a process of financialisation. As part of this process, there has been a movement of income away from the labour share towards the capital share of income and in particular towards the financial sector (Philippon and Reshef, 2012). The accumulation of earning excesses in the financial sector is now widely recognized to be one of the features of the evolution of income distribution over the past century (Piketty, 2014). More specifically, identity reinforcement and norms exacerbation have been essential factors which have led to financial excesses. In the US, this movement of income went towards a specific demographic group, namely white men in managerial and financial occupations (Arestis *et al.*, 2014). Using cointegration analysis, Arestis and Charles and Fontana (2014) investigate the compensating effects between the earnings of identity groups occurring as a result of the financialisation process in the US. Therefore, it makes us wonder to what extent ethical earnings exist at the group rather than individual level, whereby identity groups earn a disproportionate share of income at the expense of other groups.

The 2007 financial crisis and associated social movements brought to light the accumulation of earnings for top earners at the expense of the majority of the population, and revived the debate around

ethical behaviour in the market place (Lyman, 1920; DeMartino, 2011). Accepting that group behaviour overtakes individual behaviour in the social setting leads us to rethink the way group behaviour influences income movements across the economy over time. Across social sciences, despite the recognition of the importance of group behaviour, the methodology used to measure income inequality is based on the individual, whereby individual income as a dependent variable is regressed against independent variables such as education, experience, gender, race and so on (Tienda and Lii, 1987). In effect, despite being central to the issue of income inequality, group membership of individuals is often ignored (Atkinson *et al.*, 2011), or group membership excludes occupational categories (Schnelder, 2013). Taking a group perspective of individuals, this paper departs from methodological individualism and marginalism by using a long-run methodology on group earnings. The contribution of this paper is to statistically define ethical and unethical earnings according to the long-run trend of group's earnings vis-à-vis others, and to test for their existence in the US and UK labour market. As such, the long-run trend of unethical earnings by group at the occupational level is either overshooting vis-à-vis other groups, and hence represents rent-seeking behaviour at the group level, or constant over time, and hence is not benefiting from national income growth in the long-run.

This paper is organised as follows. Section 2 describes the role of ethics in market interactions and in the labour market in particular, thus showing how a dominant ethical standard can persist over time. Section 3 then defines ethical versus unethical earnings according to its statistical meaning of a long-run stationary, a trend-stationary or a non-stationary process. Finally, Section 4 offers two case studies on the presence of ethical and unethical earnings in the US (1968-2011) and UK (2001-2014) labour forces looking at racial, gender, and occupational stratification.

2. Ethics in the Labour Market

The 2007 financial crisis and associated social movements brought to light the excessive accumulation of earnings for top earners at the expense of the majority of the population, and revived the debate around ethical behaviour in the market place (Lyman, 1920; DeMartino, 2011). This shift of income away from the real sector towards the financial sector is, at the macroeconomic level, a movement of income from a productive to a non-productive sector (Van Treeck, 2009). Whether or not this movement of income can be considered ethical has not been discussed in the traditional economics literature since markets are supposed to be efficient rather than ethical. Lyman (1920) pointed out that the notion of economic justice in the marginalist approach to production means that the income of

production will be distributed such that each unit of capital and labour will receive what it produces. *Laissez-faire* competition in that sense should naturally tend towards economic justice between capital and labour. Once time and identity are accounted for however, power relationships between identity groups mean that “the dynamic character of society and the tendency towards monopoly tend towards the perpetuation of profits, whereas it is on the elimination of profits that economic justice depends” (Lyman, 1920, p. 100). The relationships of power and conflicting interests between groups taking place in the social sphere, including the market place, are totally ignored from the neoclassical paradigm of production. Hence, Graziani claims that overlooking power relationships makes a coherent ideology lies on unrealistic assumptions (Graziani, 1965, 2003). Graziani (2003) in effect argues that contemporary capitalism has grown into the hands of capitalists who are solely in charge of the nature and level of production. The time dimension allows power to be sustained in the hands of a few historically well-endowed groups, which in turn exacerbate inequality at the societal level, as demonstrated by the literature on stratification (Darity and Williams, 1985; Massey, 2007; Grusky and Weisshaar, 2014). For example, in the US context, the dynamics of the US society led to earnings excesses in the hands of a few top-earners at a unique intersection of race, gender, and educational background in managerial and financial occupations (Arestis and Charles and Fontana, 2014).

Ethics in markets are mainly defined by the Kaldor-Hicks criterion but hardly put in practice (DeMartino, 2011, 2015). This compensation test for an efficient state exposes the supremacy of efficiency over ethics. Compensation by those who have been made better off by a social action to those who have been made worse off does not necessarily need to occur, as long as it is a theoretical possibility. The nature of the compensation system, should it be based on money transfers or incommensurable goods, may however not make for the non-compensable harm that the initial social action causes (DeMartino, 2015). For example, a group made better off in monetary terms cannot compensate a group made worse off in monetary and incommensurable terms (such as a loss of purchasing power combined with less access to healthcare). This inconsistency makes the criterion morally grounded in the interest of the group made better off in money terms only. Hence, the ethical standard of this criterion seem to depend on the ethical standard of groups made better off and on the nature of the compensation system. Adler and Posner (1999) for example insists on using well-being to assess the morality of social actions: “[e]ven if virtually everyone preferred, say, projects that benefited an elite that had succeeded in brainwashing the population into believing the elite to be morally superior, it would still remain a moral fact that, as between a project P1 that improves overall well-being and a project P2 that benefits the elite, P1 is morally better” (Adler and Posner, 1999, p. 243). Yet regardless of the of the nature of the compensation system, in a free-market setting, power

will rule the process of *laissez-faire* and determine the standard according to which market exchange is deemed ethical. The rewards of capital and labour productivity will therefore be allocated according to that standard.

Market interactions are first and foremost between market players before being about commodity exchange in the sense that individuals have to agree to a standard against which to value the commodity concerned by the exchange. In effect, Kregel (2012) demonstrates that the choices made by individuals in market exchange rely on their different perception of the desirability of commodities, and that this diversity is somehow homogenised by the price of the commodity. Let us demonstrate this process through the lens of group identity. Each individual will attach more or less value to different characteristics of a commodity. To do so, each player has a unique set of social identities, such as race, gender, age, educational background and so on, which will come into play in each individual's imagination to create an ideal standard. Two players sharing a common identity will share the standard of this common identity. Standards of fairness shared by individuals within a group identity provide stability to norms by setting the rules of resource allocation. Once stability is reached, future games are constrained by these standards until conflict with other groups arises and new common standards have to emerge to reach stability. In that respect, Koford and Miller (1991) argue that the equilibrium reached is likely to involve individuals committed to an ethical standard, and other individuals not committed to this standard. Then, those committed to an ethical standard have a moral obligation to punish those who violate the norm, which sustains the existing norm over time. The "dominant" standard of an identity group will determine whether the outcome is fair or not according to that standard and inequality will persist over time according to this standard.

In the context of labour market interactions, ideals of market identities set the criteria of optimality in the allocation of jobs and wages in the labour market. The identity of the profit-maximizing producer or utility-maximizing consumer are essential to understand market behaviours, but accepting that market agents have multiple identities lead to a more complex view of market agents. If market agents have multiple identities, it follows that the optimality point in the programs of profit-maximization and utility-maximization can be influenced by these multiple identities. In the context of labour market interactions for example, the dominant social identity of the profit-maximizing producer may influence labour demand decisions. Hiring and firing decisions are likely to be influenced by the identity to which the decision-maker belongs, essentially to minimize the uncertainty of dealing with unknown behavioural norms associated with other groups' identity. The "dominant" standard of an identity group in the labour market will determine whether the outcome is fair or not according to that

standard. Hence, the persistence of occupational segregation over time by race, ethnicity and gender is well-documented (Charles, 1992; Chang, 2000; Tomaskovic-Devey *et al.*, 2006) in terms of occupational norm sustainability. As norms emerge, an ideal sets the criteria of optimal behaviour which is identity-specific and serve as a basis for social interactions. Belonging to a group sharing a common ideal engender a sense of identity for its group members. Goette *et al.* (2006) show how group membership creates social ties which lead group members to enforce a norm of cooperation between them.

Being part of a business, country, or international organization creates a sense of identity related to an ideal vision of the business, country or international organization. For example, professional ethics create a sense of belonging to members of a professional group, which may be through a code of conduct. Members share a common vision of what the ideal professional in that group should be, at the workplace and within the society. A medical doctor will not stop treating patients at the doorstep of his or her practice and will step in if someone is in need of medical expertise on the way back home. Belonging to a professional body influence individual behaviour beyond the market sphere and affect group inequality at the societal level. For instance, DeMartino (2011) calls for an ethical code in the economist profession to be accountable for the harm generated at the societal level by economic ideologies and policies. Behaving ethically in the professional context can be enforced through a moral code and thus increases the probability of behaving ethically outside the occupational context. Hence defining group ethics sets an ideal of how group members should behave in the group context, and influences social interactions outside the group context.

3. Ethical Earnings by Group Vis-à-Vis Others

Ethical behaviour has been proven to be more group-based rather than individual-based behaviour with examples covering gender identity (Muehlheusser and Roeder and Wallmeier, 2015), or professional identity (Cohn *et al.*, 2014). Groups behave rationally according to a group ethic which provides individuals who conform to this ethical standard a sense of belonging to the group. The following section shows that looking at income disparity between identity groups over time means group rewards from national income growth can be considered as unethical or ethical compared with others.

Economic justice is based on the premises that everyone should receive the income they deserve whereby each unit of labour and capital receive their rewards from the production process (Lyman, 1920). The time dimension of the production process brings to this marginalist view the problem of power relationships in the distribution of production revenues. Adding the identity element to the

production process means that the units of labour can be understood from the perspective of groups based on race, ethnicity, gender, age, occupation and so on. Each group behaves rationally according to the group's interest and a dominant group influences the distribution of the rewards of labour productivity according to the group interest. In the labour market, groups of interest may be composed of employers, employees, or stakeholders, whose norms of fairness may differ from one another depending on the perspective adopted. The fair wage-effort approach to efficiency wages takes the relational perspective of both employers and employees (Akerlof and Yellen, 1990). This hypothesis argues that wages are set above market clearing levels essentially because employers have a perception of how much they should pay for a given work or effort, as much as employees have a perception of how much they should be paid for a given work or effort. In other words, the market identity of agents influences their perception of fairness and labour market outcomes as a result, including job opportunities and relative wages. Based on the fair-wage hypothesis, Charles (2011) shows how the cultural perception of the Mexican gender identity translates into an increasing gender wage gap between male and female maquiladora workers over time. For employers and employees, both supply of labour and demand for labour depend on the price of labour. However, given that the monitoring of individual performance and effort is difficult, determining the price of labour for a type of worker must rely on a perceived social value of one of the identities of worker. Assuming that effort is not measurable and varies across individuals, the assessment of the value of a particular identity relies to some extent on the social perception of this identity outside the workplace. For example, as demonstrated by Brown and Yang (2015) in the jockey profession and Estrin *et al.* (2014) in the case of social entrepreneurs, social norms place a relative value on gender groups.

Let us assume an economy with two group identities i and j , both belonging to a third identity group k . Therefore, individuals are composed of group identities i and k , or composed of group identities j and k . MR_A , MR_S , MC_A , MC_S are marginal revenues (MR) and marginal costs (MC), which can be actual (A) or adjusted according to the social perception of a group identity (S). The fair wage-effort hypothesis (Charles, 2011) states that if $MC_S^i < MC_A^i$ and $MC_S^j > MC_A^j$ then, regardless of the value of MR_A^k , where $MR_A^k = f(MC_A^i, MC_A^j)$, the resulting wage inequality occurs: $MR_A^j > MR_A^i$.

Bringing the fair wage-effort hypothesis to the societal level allows us to define ethical earnings by group as follows. Let us assume national output: $Y = f(K, L) = rK + wL$ with K for capital and r for its marginal product or rate of profit, and with L for labour and w for its marginal product or wage. The sum of earnings from capital and labour $z = \sum(r + w)$ is then distributed between all identity groups such that $Z = z(i, j, k)$. Over time, assuming Z_t follows a trend-stationary process such that $Z_t = \alpha +$

$\beta t + \varepsilon_t$ where α is a constant, t is a deterministic trend, and ε_t is a white noise term, then given that $MR_A^j > MR_A^i$, the long-run process of earnings by identity group will be as follows:

- (1) $z(k)_t = \alpha + \beta t + \phi z(i)_{t-1} + \varepsilon_t$ (trend-stationary process, if $\phi < 1$)
- (2) $z(i)_t = \phi z(i)_{t-1} + \varepsilon_t$ (stationary process around zero, if $\phi < 1$)
 $z(i)_t = \alpha + \phi z(i)_{t-1} + \varepsilon_t$ (stationary process around a non-zero value, if $\phi < 1$)
- (3) $z(j)_t = \phi z(i)_{t-1} + \varepsilon_t$ (non-stationary process, if $\phi = 1$)
 $z(j)_t = \alpha + \phi z(i)_{t-1} + \varepsilon_t$ (non-stationary process, if $\phi = 1$)
 $z(j)_t = \alpha + \beta t + \phi z(j)_{t-1} + \varepsilon_t$ (non-stationary process, if $\phi = 1$)

The nature of the long-run process gives us a classification of ethical versus non-ethical earnings. Starting from a general model of unit root test,

$$\Delta Z_t = \varphi Z_{t-1} + \alpha + \beta t + \varepsilon_t$$

Earnings are ethical if:

$$\Delta z(k)_t = \varphi z(k)_{t-1} + \alpha + \beta t + \varepsilon_t \text{ (if } \varphi < 0 \text{ trend-stationary process),}$$

and unethical if:

$$\Delta z(i)_t = \varphi z(i)_{t-1} + \alpha + \varepsilon_t \text{ (if } \varphi < 0 \text{ stationary process around non-zero value),}$$

$$\text{or } \Delta z(i)_t = \varphi z(i)_{t-1} + \varepsilon_t \text{ (if } \varphi < 0 \text{ stationary process around zero value),}$$

or;

$\Delta z(j)_t = \varepsilon_t$ (if $\varphi = 0$ non-stationary process) with ε_t following the random walk of the evolving inequalities $MC_S^i < MC_A^i$ and $MC_S^j > MC_S^i$.

In other words, assuming that the earnings of identity k follow a time trend, the earnings of i are stationary and the earnings of j are non-stationary.¹

Earnings are ethical or unethical in the sense that there is a lack of moral principle for taking an increasing share of income over time at the expense of other groups. Therefore, ethical earnings, represented by the earnings of identity k , are defined statistically as earnings following a trend-

stationary process. Unethical earnings are either non-stationary or stationary. If the earnings variable of an identity group is non-stationary, it means that there is a persistent cumulation of past effects (Hendry and Juselius, 2001) leading to sustained changes in earnings. If the earnings variable of an identity group is stationary, it means that their earnings remain constant over the period. Stationary earnings are not benefiting from the increase in national output over the period and they are compensating for a movement of income towards non-stationary earnings. In the case of unethical earnings, we can talk about rent-seeking behaviour by group j at the expense of the earnings of group i which remain stationary.

With the dynamics of capital accumulation and societal stratification, fair wages between identity groups become ethical earnings regarding the allocation of national income growth between identity groups. The underlying ethical code here is for groups to receive the income rewards in line with the standard set by identity k (taken to be occupational in the next empirical section) at the intersection of identity i and j . Earnings from increasing national income are considered unethical either when the earning trend shows above-trend cumulative changes, thus reflecting rent-seeking behaviour by group, or when earnings are stagnating over time. Stationary earnings reflect the fact that a movement of income at the macroeconomic level has been going towards groups experiencing cumulative changes in earnings. As such, the Kaldor-Hicks compensation criterion is applicable in its simplest form of money transfers.

4. Unit Root Testing for Ethical Earnings by Race and Gender

Despite the recognition of the importance of group behaviour in determining income inequality, the empirical methodology used in the literature is still mainly based on the individual, with individual income used as dependent variable against control variables such as education, experience, gender, race and so on (Tienda and Lii, 1987). Departing from methodological individualism requires taking groups at the primary unit of analysis. In the context of the US labour market, racial and gender discrimination remain a prominent feature regardless of age, experience, or education (Bertrand and Mullainathan, 2004; Schnelder, 2013). Therefore, the main hypothesis tested is whether similar gender and racial identities at the occupational level earn ethical or unethical earnings, as defined above, compared to other gender and racial identities. Provided that the hypothesis holds, this would suggest that rent-seeking behaviour is a group phenomenon regardless of individual characteristics and would be in line with the experimental research by Bornstein and Kugler and Ziegelmeier (2004).

Using Augmented Dickey-Fuller (ADF) tests, the methodology consists of testing whether the earnings of each identity group in each occupation are non-stationary, trend-stationary or stationary over the analysed period. By doing so, we are able to categorise the pattern followed by the earnings of each group across occupations as ethical or non-ethical. We use nominal instead of real earnings to account for money illusion including price stickiness, and lack of inflation-indexation on labour contracts and laws. We use means rather than median earnings in order to account for the information provided by outliers. In other words, we are interested in exploring the raw information provided by groups' earnings at the top or bottom of the income stratification.

4.1 US occupations (1968-2011)

Using the Current Population Survey (CPS) data (King *et al.*, 2010), this first case study looks at the long-run behaviour of earnings by gender and racial groups across occupations in the US labour force from 1968 to 2011. In accordance with the literature on the US stratification using CPS data (Arestis and Charles and Fontana, 2014), the gender and racial identity group included are white men (wm), black men (bm), Hispanic men (hm), white women (wf), black women (bf), and Hispanic women (hf). We use the current annual weekly earnings of the above mentioned identity groups for 27 consistent occupational groups over the period 1968-2011, as displayed in Tables 1 to 6, respectively. Earnings are the annual average of usual weekly earnings of employed full-time wage and salary workers by group.

Apart from health and personal services with 89 and 78 percent female labour force, Table 1 shows that white men experience non-stationary earnings across all occupations. In comparison, Table 2 and 3 show that black and Hispanic men experience trend-stationary and/or stationary earnings in many occupations, in professional occupations in particular. Black men experience stationary and trend-stationary earnings in a wider variety of occupations than Hispanic men. For example, in managerial occupations, the earnings of Hispanic men are non-stationary while the earnings of black men are stationary. Looking at the female part of the labour force, Tables 4 to 6 show a similar racial and ethnic dichotomy whereby white women experience non-stationary earnings across most occupations, while black and Hispanic women experience non-stationary earnings in only a few occupations. Here, trend-stationary and stationary earnings for the black and Hispanic groups go beyond professional occupations and affect most part of the labour force. Overall, answering the question whether earnings by group are ethical or unethical in the US labour force is dominated by the fact that earnings of white workers display cumulative past effects across most occupations and gender groups.

4.2 UK Occupations (2001Q2-2014Q4)

Using the Labour Force Survey (LFS) data, this second case study looks at the long-run behaviour of earnings by gender and racial groups across occupations in the UK labour force in the period from 2001 to 2014. The gender and racial identity group included are white women (*wf*), non-white women (*nwf*), white men (*wm*), and non-white men (*nwm*). We use the weekly gross (net) pay in the main job and the data is aggregated from the individual level as means per quarter. The nine occupational groups using SOC 2000 codes “occupation” are consistent over the period 2001Q2-2014Q4. The results for each identity group *wf*, *nwf*, *wm*, and *nwm* are displayed in Tables 7 to 10, respectively.

Starting with the comparison between white and non-white women in Tables 7 and 8, the white female group experiences non-stationary earnings in four out of the nine types of occupations. In comparison, the non-white female group experiences trend-stationary earnings in all occupations. Similarly for the male groups, the white male group experiences non-stationary earnings in four out of the nine types of occupations. In comparison, the non-white male group experiences trend-stationary earnings in all occupations. Overall, answering the question whether earnings by group are ethical or unethical in the UK labour force is dominated by the fact that earnings of white workers display cumulative past effects across many occupations and gender groups.

5. Conclusion

The literature in social sciences on identity, stratification, and intersectionality has long shown the importance of group identity in explaining the persistence of income inequality over time. However, methodological individualism and marginalism in economics mean that income inequality is still assessed from the perspective of the individual with individual income as dependent variable, individual characteristics as control variables, and a time trend to assess the path-dependency of inequality. By taking a group perspective to individuals, the contribution of this paper is to extend the fair wage-effort hypothesis to the macro-level in order to define ethical earnings. Ethical earnings are defined statistically according to their trend-stationary long-run process. Earnings are ethical or unethical in the sense that there is a lack of moral principle for taking a greater share of income than what the economy is able to produce from one period to another, and for taking this increasing share at the expense of other groups. The paper presents a long-run methodology to uncover ethical and unethical earnings based on unit root tests for stationarity, non-stationary, and trend-stationarity. The magnitude of earning excesses in the financial sector has been argued to be one of the causes of the 2007 crisis. At the intersection of occupational, gender and racial norms, the two case studies show

that rent-seeking behaviour is a group phenomenon, not specific to financial and managerial occupations, but it extends to most of the US and UK labour forces. There is in effect a pattern of unethical earnings across occupations for a dominant group, mainly white male or female, at the expense of other racial, ethnic, and gender groups.

References

Adler, M. D. and Posner, E. A. (1999) 'Rethinking Cost-Benefit Analysis', *Yale Law Journal*, **109**, 317-337.

Akerlof, G. A. and Yellen, J. L. (1990) 'The Fair-Wage-Effort Hypothesis and Unemployment', *The Quarterly Journal of Economics*, **105**, 255-283.

Arestis, P., Charles, A. and Fontana, G. (2014) 'Identity Economics Meets Financialisation: Gender, Race, and Occupational Stratification in the Us Labour Market', *Cambridge Journal of Economics*, **38**, 1471-1491.

Arrow, K. J. (1994) 'Methodological Individualism and Social Knowledge', *The American Economic Review*, **84**, 1-9.

Ashforth, B. E. and Mael, F. (1989) 'Social Identity Theory and the Organization', *Academy of Management Review*, **14**, 20-39.

Atkinson, A. B., Piketty, T. and Emmanuel, S. (2011) 'Top Incomes in the Long Run of History', *Journal of Economic Literature*, **49**, 3-71.

Bertrand, M. and Mullainathan, S. (2004) 'Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination', *The American Economic Review*, **94**, 991-1013.

Bornstein, G., Kugler, T. and Ziegelmeyer, A. (2004) 'Individual and Group Decisions in the Centipede Game: Are Groups More "Rational" Players?', *Journal of Experimental Social Psychology*, **40**, 599-605.

Brown, A. and Yang, F. (2015) 'Does Society Underestimate Women? Evidence from the Performance of Female Jockeys in Horse Racing', *Journal of Economic Behavior and Organization*, **111**, 106-118.

Chang, M. L. (2000) 'The Evolution of Sex Segregation Regimes', *American Journal of Sociology*, **105**, 1658-1701.

Charles, A. (2011) 'Fairness and Wages in Mexico's Maquiladora Industry: An Empirical Analysis on Labour Demand and the Gender Wage Gap', *Review of Social Economy*, **69**, 1-28.

Charles, M. (1992) 'Cross-National Variation in Occupational Sex Segregation', *American Sociological Review*, **57**, 483-502.

Charness, G. and Sutter, M. (2012) 'Groups Make Better Self-Interested Decisions', *Journal of Economic Perspectives*, **26**, 157-176.

Cohn, A., Fehr, E. and Maréchal, M. A. (2014) 'Business Culture and Dishonesty in the Banking Industry', *Nature, Letters*, 86-89.

Crenshaw, K. W. (1989) 'Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics', *University of Chicago Legal Forum*, **129**, 139-67.

Darity, W. A., Jr. and Williams, R. (1985) 'Peddlers Forever? Culture, Competition, and Discrimination', *American Economic Review*, **75**, 256-261.

Davis, J. B. (2011) *Individuals and Identity in Economics*, New York, Cambridge University Press.

DeMartino, G. (2011) *The Economist's Oath: On the Need for and Content of Professional Economic Ethics*, Oxford University Press.

DeMartino, G. (2015) *Harming Irreparably: Economists, Neoliberalism, and the Matter of Kaldor-Hicks*, ASSA/ASE meetings, Boston.

Estrin, S., Stephan, U. and Vujčić, S. (2014) *Do Women Earn Less Even as Social Entrepreneurs?*, IZA Discussion Paper No 8650.

Goette, L., Huffman, D. and Meier, S. (2006) 'The Impact of Group Membership on Cooperation and Norm Enforcement: Evidence Using Random Assignment to Real Social Groups', *The American Economic Review*, **96**, 212-216.

Graziani, A. (1965) *Equilibrio Generale Ed Equilibrio Macroeconomico (General Equilibrium and Macroeconomic Equilibrium)*, Naples, ESI.

Graziani, A. (2003) *The Monetary Theory of Production*, Cambridge, Cambridge University Press.

Grusky, D. B. and Weisshaar, K. (2014) *Social Stratification: Class, Race, and Gender in Sociological Perspective*, Fourth Edition, Westview Press Inc.

Hendry, D. F. and Juselius, K. (2001) 'Explaining Cointegration Analysis: Part II', *The Energy Journal*, **0**, 75-120.

Hodgson, G. M. (2007) 'Meanings of Methodological Individualism', *Journal of Economic Methodology*, **14**, 211-226.

hooks, b. (1981) *Ain't I a Woman?: Black Women and Feminism*, Boston, South End Press.

King, M., Ruggles, S., Alexander, J. T., Flood, S., Genadek, K., Schroeder, M. B., Trampe, B. and Vick, R. (2010) *Integrated Public Use Microdata Series, Current Population Survey: Version 3.0*, Minneapolis, MN: Minnesota Population Center [producer and distributor].

Koford, K. J. and Miller, J. B. (1991) *Social Norms and Economic Institutions*, The University of Michigan Press.

Kregel, J. (2012) 'Diversity and Uniformity in Economic Theory as an Explanation of the Recent Economic Crisis', *Levy Economics Institute of Bard College Working Paper Series, Working Paper No. 730*.

Lyman, E. W. (1920) 'The Ethics of the Wages and Profit System', *International Journal of Ethics*, **31**, 93-108.

Mason, P. L. (1996) 'Race, Culture, and the Market', *Journal of Black Studies*, **26**, 782-808.

Massey, D. S. (2007) *Categorically Unequal: The American Stratification System*, New York, Russell Sage Foundation.

Massey, D. S., McCall, L., Tomaskovic-Devey, D., Avent-Holt, D., Monin, P., Forgues, B. and Wang, T. (2014) 'Understanding Inequality through the Lens of Cultural Processes: On Lamont, Beljean and Clair 'What Is Missing? Cultural Processes and Causal Pathways to Inequality'', *Socio-Economic Review*, **12**, 609-636.

Muehlheusser, G., Roider, A. and Wallmeier, N. (2015) 'Gender Differences in Honesty: Groups Versus Individuals', *Economics Letters*, **128**, 25-29.

Philippon, T. and Reshef, A. (2012) 'Wages and Human Capital in the U.S. Finance Industry: 1909-2006', *Quarterly Journal of Economics*, **127**, 1551-1609.

Piketty, T. (2014) *Capital in the Twenty-First Century*, Harvard University Press.

Schnelder, M. P. A. (2013) 'Illustrating the Implications of How Inequality Is Measured: Decomposing Earnings Inequality by Race and Gender', *Journal of Labor Research*, **34**, 476-514.

Stryker, S. (1968) 'Identity Salience and Role Performance', *Journal of Marriage and the Family*, **4**, 558-564.

Tajfel, H. and Turner, J. (1986) 'The Social Identity Theory of Intergroup Behavior'. In Worchel, S. and Austin, W. (eds) *Psychology of Intergroup Behavior*, Chicago, Nelson-Hall, pp. 7-24.

Tienda, M. and Lii, D.-T. (1987) 'Minority Concentration and Earnings Inequality: Blacks, Hispanics, and Asian Compared', *American Journal of Sociology*, **93**, 141-165.

Tomaskovic-Devey, D., Stainback, K., Taylor, T., Zimmer, C., Robinson, C. and McTague, T. (2006) 'Documenting Desegregation: Segregation in American Workplaces by Race, Ethnicity, and Sex, 1966-2003', *American Sociological Review*, **71**, 565-588.

Van Treeck, T. (2009) 'The Political Economy Debate on 'Financialization' - a Macroeconomic Perspective', *Review of International Political Economy*, **16**, 907-944.

Notes to all Earnings' Tables for US occupations (Tables 1 to 6)

Source: Authors' calculations from the US Current Population Survey (CPS), received through IPUMS.

Note: Table provides an ADF test-statistic, with the lag length in parentheses. τ_t refers to the ADF test-statistic from a model with a constant and trend. τ_μ refers to the ADF test-statistic from a model with a constant only. Lag selection is based on Schwarz's Bayesian information criterion (SBIC). Relevant critical values of the ADF unit root test at 5% significance level are as follows (Fuller, 1976, p. 371):

$\tau^{\tau}(0.05) = -1.95, \tau_{\mu}^{\tau}(0.05) = -2.93, \tau_{\tau}^{\tau}(0.05) = -3.50$. All unit root test results are estimated by Stata. Labels refer to the annual average of usual weekly earnings of employed full-time wage and salary workers for: wm = white men, wf = white women, bm = black men, bf = black women, hm = Hispanic men, hf = Hispanic women. Occupations follow the OCC1990 classification (https://cps.ipums.org/cps-action/variables/OCC1990#description_section) which is consistent over time.

Notes to all Earnings' Tables for UK occupations (Tables 7 to 10)

Source: Authors' calculations from the UK Labour Force Survey (LFS), received through the Data Archive, University of Essex.

Note: Table provides an ADF test-statistic, with the lag length in parentheses. τ_t refers to the ADF test-statistic from a model with a constant and trend. τ_μ refers to the ADF test-statistic from a model with a constant only. Lag selection is based on the Schwartz information criteria (SIC). Relevant critical values of the ADF unit root test at 5% significance level are as follows (Fuller, 1976, p. 371): $\tau^{\tau}(0.05) = -1.95, \tau_{\mu}^{\tau}(0.05) = -2.93, \tau_{\tau}^{\tau}(0.05) = -3.50$. Relevant critical values of the F -test at 5% significance level are as follows (Dickey and Fuller, 1981, p. 1063): (a) F -test for $H_0 : \alpha = 0, \rho = 1$ in $y_t = \alpha + \rho y_{t-1} + u_t$ (AR(1) with a drift), $F^{\tau\tau}(0.05) = 4.86$ and F -test for $H_0 : \alpha = 0, \rho = 1$ in $y_t = \alpha + \delta t + \rho y_{t-1} + u_t$ (AR(1) with a drift and a linear time trend), $F^{\tau\tau}(0.05) = 6.73$; and (b) F -test for $H_0 : \alpha = 0, \delta = 0, \rho = 1$ in $y_t = \alpha + \delta t + \rho y_{t-1} + u_t$ (AR(1) with a drift and a linear time trend), $F^{\tau\tau}(0.05) = 5.13$. All unit root test results are estimated by Stata. Labels refer to: wm = white men, wf = white women, nwm = non-white men, nwf = non-white women, grss = gross weekly earnings, net = net weekly earnings.

Table 1. US White men (WM): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 1968-2011 (43 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share in 2011(%)
<i>Exec., Adm. and Man. occupations</i>				
1. Managerial occupations	wm: $\tau_t = -1.276$ (1)			41.3
2. Management related occupations	wm: $\tau_t = -1.879$ (1)			55.5
<i>Professional occupations</i>				
3. Engineers and Scientists	wm: $\tau_t = -1.724$ (1)			23.7
4. Health diagnosing occ.	wm: $\tau_t = -0.797$ (1)			77
5. Teachers	wm: $\tau_t = -2.145$ (2)			74.5
6. Social Scientists and Urban Planners	wm: $\tau_t = -2.576$ (1)			53.2
7. Social, Recreations, and Religious Workers	wm: $\tau_t = -2.598$ (1)			63.8
8. Lawyers and Judges	wm: $\tau_t = -1.858$ (4)			36.2
9. Writers, Artists, Entertainers, and Athletes	wm: $\tau_t = -2.379$ (1)			47
10. Technicians	wm: $\tau_t = -1.728$ (1)			51.2
11. Sales occupations	wm: $\tau_t = -1.290$ (1)			51.3
12. Administrative support occ.	wm: $\tau_t = -2.285$ (1)			73.8
<i>Service occupations</i>				
13. Household services	wm: $\tau_t = -2.566$ (2)			90
14. Protective services	wm: $\tau_t = -1.621$ (1)			21.2
15. Food services	wm: $\tau_t = -3.091$ (1)			56.4
16. Health services		wm: $\tau_t = -5.396$ (0)	wm $\tau_\mu = -4.826$ (0)	88.8
17. Cleaning and Building	wm: $\tau_t = -2.171$ (1)			32.4
18. Personal services		wm: $\tau_t = -3.490$ (1)	wm $\tau_\mu = -2.950$ (0)	78.5
19. Farming, forestry, fishing	wm: $\tau_t = -1.960$ (1)			17.6
<i>Precision production, craft, and repairs occ.</i>				
20. Mechanics	wm: $\tau_t = -2.570$ (1)			3.8
21. Construction trades	wm: $\tau_t = -1.743$ (2)			2.2
22. Extractive occupations	wm: $\tau_t = -2.418$ (2)			0.5
23. Precision occupations	wm: $\tau_t = -2.185$ (1)			32.7
<i>Operators, fabricators, and labourers</i>				
24. Operators	wm: $\tau_t = -2.643$ (2)			33
25. Transportation occupations	wm: $\tau_t = -1.958$ (1)			11.8
26. Material moving occupations	wm: $\tau_t = -1.740$ (1)			15.2
27. Military occupations	wm: $\tau_t = -1.601$ (1)			9.7

Table 2. US Black men (BM): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 1968-2011 (43 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share in 2011(%)
<i>Exec., Adm. and Man. occupations</i>				
1. Managerial occupations		bm: $\tau_t = -4.135$ (1)		41.3
2. Management related occupations	bm: $\tau_t = -2.886$ (3)			55.5
<i>Professional occupations</i>				
3. Engineers and Scientists		bm: $\tau_t = -3.609$ (1)	bm: $\tau_\mu = -2.910$ (1)	23.7
4. Health diagnosing occ.		bm: $\tau_t = -4.054$ (1)	bm: $\tau_\mu = -2.600^*$ (1)	77
5. Teachers		bm: $\tau_t = -3.227^*$ (1)	bm: $\tau_\mu = -3.115$ (1)	74.5
6. Social Scientists and Urban Planners		bm: $\tau_t = -4.107$ (1)	bm: $\tau_\mu = -3.302$ (1)	53.2
7. Social, Recreations, and Religious Workers	bm: $\tau_t = -2.307$ (3)			63.8
8. Lawyers and Judges		bm: $\tau_t = -5.081$ (1)	bm: $\tau_\mu = -3.090$ (1)	36.2
9. Writers, Artists, Entertainers, and Athletes		bm: $\tau_t = -4.802$ (1)	bm: $\tau_\mu = -3.991$ (1)	47
10. Technicians	bm: $\tau_t = -2.383$ (2)			51.2
11. Sales occupations			bm: $\tau_\mu = -2.880$ (1)	51.3
12. Administrative support occ.		bm: $\tau_t = -3.494$ (1)		73.8
<i>Service occupations</i>				
13. Household services		bm: $\tau_t = -7.449$ (0)	bm: $\tau_\mu = -7.215$ (0)	90
14. Protective services	bm: $\tau_t = -2.445$ (1)			21.2
15. Food services	bm: $\tau_t = -2.207$ (3)			56.4
16. Health services		bm: $\tau_t = -5.271$ (0)	bm: $\tau_\mu = -5.221$ (0)	88.8
17. Cleaning and Building	bm: $\tau_t = -2.746$ (1)			32.4
18. Personal services	bm: $\tau_t = -3.122$ (1)			78.5
19. Farming, forestry, fishing	bm: $\tau_t = -2.142$ (3)			17.6
<i>Precision production, craft, and repairs occ.</i>				
20. Mechanics	bm: $\tau_t = -2.159$ (2)			3.8
21. Construction trades	bm: $\tau_t = -2.537$ (1)			2.2
22. Extractive occupations	bm: $\tau_t = -0.965$ (3)			0.5
23. Precision occupations	bm: $\tau_t = -2.547$ (1)			32.7
<i>Operators, fabricators, and labourers</i>				
24. Operators	bm: $\tau_t = -1.554$ (1)			33
25. Transportation occupations	bm: $\tau_t = -2.920$ (1)			11.8
26. Material moving occupations	bm: $\tau_t = -2.264$ (1)			15.2
27. Military occupations	bm: $\tau_t = -1.836$ (2)			9.7

Note: *indicates statistical significance at the 10% level, significance at the 5% level otherwise.

Table 3. US Hispanic men (HM): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 1971-2011 (40 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share in 2011(%)
<i>Exec., Adm. and Man. occupations</i>				
1. Managerial occupations	hm: $\tau_t = -2.389$ (1)			41.3
2. Management related occupations	hm: $\tau_t = -1.102$ (2)			55.5
<i>Professional occupations</i>				
3. Engineers and Scientists		hm: $\tau_t = -4.570$ (0)	hm: $\tau_\mu = -4.493$ (0)	23.7
4. Health diagnosing occ.		hm: $\tau_t = -3.414$ (1)		77
5. Teachers		hm: $\tau_t = -6.897$ (0)	hm: $\tau_\mu = -7.029$ (0)	74.5
6. Social Scientists and Urban Planners		hm: $\tau_t = -7.033$ (0)	hm: $\tau_\mu = -6.984$ (0)	53.2
7. Social, Recreations, and Religious Workers		hm: $\tau_t = -5.496$ (0)	hm: $\tau_\mu = -4.563$ (0)	63.8
8. Lawyers and Judges		hm: $\tau_t = -1.616$ (1)		36.2
9. Writers, Artists, Entertainers, and Athletes		hm: $\tau_t = -6.252$ (0)	hm: $\tau_\mu = -6.293$ (0)	47
10. Technicians	hm: $\tau_t = -2.770$ (1)			51.2
11. Sales occupations	hm: $\tau_t = -2.374$ (1)			51.3
12. Administrative support occ.	hm: $\tau_t = -2.624$ (1)			73.8
<i>Service occupations</i>				
13. Household services	hm: $\tau_t = -2.941$ (1)			90
14. Protective services	hm: $\tau_t = -3.064$ (1)			21.2
15. Food services	hm: $\tau_t = -2.371$ (1)			56.4
16. Health services		hm: $\tau_t = -5.992$ (0)	hm: $\tau_\mu = -6.069$ (0)	88.8
17. Cleaning and Building	hm: $\tau_t = -2.026$ (1)			32.4
18. Personal services		hm: $\tau_t = -4.577$ (0)	hm: $\tau_\mu = -4.501$ (0)	78.5
19. Farming, forestry, fishing	hm: $\tau_t = -0.871$ (3)			17.6
<i>Precision production, craft, and repairs occ.</i>				
20. Mechanics	hm: $\tau_t = -1.950$ (1)			3.8
21. Construction trades	hm: $\tau_t = -0.080$ (2)			2.2
22. Extractive occupations		hm: $\tau_t = -3.385^*$ (1)	hm: $\tau_\mu = -2.744^*$ (1)	0.5
23. Precision occupations	hm: $\tau_t = -2.370$ (1)			32.7
<i>Operators, fabricators, and labourers</i>				
24. Operators	hm: $\tau_t = -0.710$ (3)			33
25. Transportation occupations	hm: $\tau_t = -1.601$ (2)			11.8
26. Material moving occupations	hm: $\tau_t = -1.030$ (2)			15.2
27. Military occupations	hm: $\tau_t = -0.476$ (4)			9.7

Note: *indicates statistical significance at the 10% level, significance at the 5% level otherwise.

Table 4. US White women (WF): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 1968-2011 (43 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share in 2011(%)
<i>Exec., Adm. and Man. occupations</i>				
1. Managerial occupations	wf: $\tau_t = -1.672$ (1)			41.3
2. Management related occupations	wf: $\tau_t = -0.656$ (3)			55.5
<i>Professional occupations</i>				
3. Engineers and Scientists	wf: $\tau_t = -3.181$ (1)			23.7
4. Health diagnosing occ.	wf: $\tau_t = -1.237$ (2)			77
5. Teachers	wf: $\tau_t = -0.221$ (2)			74.5
6. Social Scientists and Urban Planners	wf: $\tau_t = -2.603$ (1)			53.2
7. Social, Recreations, and Religious Workers	wf: $\tau_t = -0.462$ (1)			63.8
8. Lawyers and Judges	wf: $\tau_t = -2.182$ (2)			36.2
9. Writers, Artists, Entertainers, and Athletes	wf: $\tau_t = -2.957$ (1)			47
10. Technicians	wf: $\tau_t = -1.567$ (1)			51.2
11. Sales occupations	wf: $\tau_t = -2.697$ (1)			51.3
12. Administrative support occ.	wf: $\tau_t = -1.663$ (1)			73.8
<i>Service occupations</i>				
13. Household services	wf: $\tau_t = -0.102$ (2)			90
14. Protective services		wf: $\tau_t = -3.704$ (1)		21.2
15. Food services	wf: $\tau_t = -0.373$ (3)			56.4
16. Health services	wf: $\tau_t = -2.603$ (1)			88.8
17. Cleaning and Building	wf: $\tau_t = -2.282$ (1)			32.4
18. Personal services	wf: $\tau_t = -2.530$ (1)			78.5
19. Farming, forestry, fishing	wf: $\tau_t = -1.699$ (2)			17.6
<i>Precision production, craft, and repairs occ.</i>				
20. Mechanics	wf: $\tau_t = -1.738$ (1)			3.8
21. Construction trades	wf: $\tau_t = -3.022$ (3)			2.2
22. Extractive occupations		wf: $\tau_t = -4.714$ (0)	wf: $\tau_\mu = -4.109$ (0)	0.5
23. Precision occupations		wf: $\tau_t = -2.278$ (1)		32.7
<i>Operators, fabricators, and labourers</i>				
24. Operators	wf: $\tau_t = -2.084$ (3)			33
25. Transportation occupations		wf: $\tau_t = -3.287^*$ (3)		11.8
26. Material moving occupations	wf: $\tau_t = 0.703$ (3)			15.2
27. Military occupations	wf: $\tau_t = -2.273$ (1)			9.7

Note: *indicates statistical significance at the 10% level, significance at the 5% level otherwise.

Table 5. US Black women (BF): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 1968-2011 (43 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share in 2011(%)
<i>Exec., Adm. and Man. occupations</i>				
1. Managerial occupations	bf: $\tau_t = -0.981$ (4)			41.3
2. Management related occupations	bf: $\tau_t = -2.047$ (2)			55.5
<i>Professional occupations</i>				
3. Engineers and Scientists		bf: $\tau_t = -2.334$ (1)		23.7
4. Health diagnosing occ.	bf: $\tau_t = -1.749$ (1)			77
5. Teachers	bf: $\tau_t = -2.878$ (1)			74.5
6. Social Scientists and Urban Planners		bf: $\tau_t = -3.595$ (1)	bf: $\tau_\mu = -2.632^*$ (1)	53.2
7. Social, Recreations, and Religious Workers		bf: $\tau_t = -4.394$ (1)	bf: $\tau_\mu = -3.543$ (1)	63.8
8. Lawyers and Judges		bf: $\tau_t = -4.363$ (1)		36.2
9. Writers, Artists, Entertainers, and Athletes		bf: $\tau_t = -4.036$ (1)	bf: $\tau_\mu = -3.750$ (1)	47
10. Technicians	bf: $\tau_t = -2.972$ (2)			51.2
11. Sales occupations	bf: $\tau_t = -0.164$ (3)			51.3
12. Administrative support occ.	bf: $\tau_t = -1.625$ (2)	bf: $\tau_t = -3.320^*$ (2)		73.8
<i>Service occupations</i>				
13. Household services	bf: $\tau_t = -2.189$ (3)			90
14. Protective services		bf: $\tau_t = -6.674$ (1)		21.2
15. Food services	bf: $\tau_t = -2.189$ (2)			56.4
16. Health services	bf: $\tau_t = -2.226$ (2)			88.8
17. Cleaning and Building		bf: $\tau_t = -5.687$ (0)	bf: $\tau_\mu = -5.455$ (0)	32.4
18. Personal services	bf: $\tau_t = -2.314$ (2)			78.5
19. Farming, forestry, fishing	bf: $\tau_t = -1.792$ (3)			17.6
<i>Precision production, craft, and repairs occ.</i>				
20. Mechanics		bf: $\tau_t = -3.212^*$ (0)	bf: $\tau_\mu = -3.305$ (1)	3.8
21. Construction trades		bf: $\tau_t = -7.352$ (0)	bf: $\tau_\mu = -5.385$ (0)	2.2
22. Extractive occupations	--	--	--	0.5
23. Precision occupations		bf: $\tau_t = -3.651$ (3)		32.7
<i>Operators, fabricators, and labourers</i>				
24. Operators		bf: $\tau_t = -3.575$ (2)		33
25. Transportation occupations		bf: $\tau_t = -4.276$ (1)		11.8
26. Material moving occupations			bf: $\tau_\mu = -5.511$ (0)	15.2
27. Military occupations		bf: $\tau_t = -3.769$ (1)	bf: $\tau_\mu = -2.766^*$ (1)	9.7

Note: *indicates statistical significance at the 10% level, significance at the 5% level otherwise. (--) indicates not enough observations to run ADF tests.

Table 6. US Hispanic women (HF): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 1971-2011 (40 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share in 2011(%)
<i>Exec., Adm. and Man. occupations</i>				
1. Managerial occupations	hf: $\tau_t = -1.845$ (4)			41.3
2. Management related occupations		hf: $\tau_t = -4.992$ (2)		55.5
<i>Professional occupations</i>				
3. Engineers and Scientists		hf: $\tau_t = -3.382^*$ (3)	hf: $\tau_\mu = -2.829^*$ (3)	23.7
4. Health diagnosing occ.		hf: $\tau_t = -4.782$ (1)		77
5. Teachers		hf: $\tau_t = -3.556$ (1)	hf: $\tau_\mu = -2.682^*$ (1)	74.5
6. Social Scientists and Urban Planners		hf: $\tau_t = -3.386^*$ (1)	hf: $\tau_\mu = -2.645^*$ (1)	53.2
7. Social, Recreations, and Religious Workers		hf: $\tau_t = -6.694$ (0)	hf: $\tau_\mu = -5.963$ (0)	63.8
8. Lawyers and Judges	hf: $\tau_t = -2.097$ (1)			36.2
9. Writers, Artists, Entertainers, and Athletes		hf: $\tau_t = -4.599$ (1)	hf: $\tau_\mu = -3.669$ (1)	47
10. Technicians	hf: $\tau_t = -2.015$ (2)			51.2
11. Sales occupations	hf: $\tau_t = -2.721$ (4)			51.3
12. Administrative support occ.	hf: $\tau_t = -1.880$ (1)			73.8
<i>Service occupations</i>				
13. Household services		hf: $\tau_t = -3.186^*$ (1)		90
14. Protective services		hf: $\tau_t = -2.493$ (1)		21.2
15. Food services		hf: $\tau_t = -4.029$ (1)		56.4
16. Health services		hf: $\tau_t = -3.567$ (1)	hf: $\tau_\mu = -2.735^*$ (1)	88.8
17. Cleaning and Building		hf: $\tau_t = -3.970$ (2)		32.4
18. Personal services	hf: $\tau_t = -2.338$ (2)			78.5
19. Farming, forestry, fishing	hf: $\tau_t = -0.814$ (3)			17.6
<i>Precision production, craft, and repairs occ.</i>				
20. Mechanics		hf: $\tau_t = -5.771$ (0)	hf: $\tau_\mu = -5.249$ (0)	3.8
21. Construction trades		hf: $\tau_t = -6.571$ (0)	hf: $\tau_\mu = -6.608$ (0)	2.2
22. Extractive occupations	--	--	--	0.5
23. Precision occupations		hf: $\tau_t = -4.685$ (1)	hf: $\tau_\mu = -3.888$ (1)	32.7
<i>Operators, fabricators, and labourers</i>				
24. Operators	hf: $\tau_t = -1.766$ (2)			33
25. Transportation occupations		hf: $\tau_t = -4.364$ (3)		11.8
26. Material moving occupations		hf: $\tau_t = -4.890$ (0)	hf: $\tau_\mu = -4.935$ (0)	15.2
27. Military occupations		hf: $\tau_t = -4.389$ (0)	hf: $\tau_\mu = -3.484$ (0)	9.7

Note: *indicates statistical significance at the 10% level, significance at the 5% level otherwise. (--) indicates not enough observations to run ADF tests.

Table 7. UK White females (WF): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 2001Q2-2014Q3 (54 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share across all years and quarters (%)
1 Managers and senior officials		wf (grss): $\tau_{\tau} = -4.47$ (1) wf (net): $\tau_{\tau} = -3.84$ (1)		34.85
2 Professional occupations	wf (grss): $\tau_{\mu} = -2.26$ (3) wf (net): $\tau_{\tau} = -2.86$ (1)			46.38
3 Associate professional and technical occupations		wf (grss): $\tau_{\tau} = -4.82$ (1) wf (net): $\tau_{\tau} = -4.44$ (1)		49.45
4 Administrative and secretarial occupations	wf (grss): $\tau_{\tau} = -1.52$ (1) wf (net): $\tau_{\tau} = -3.18$ (1)			80.46
5 Skilled trades occupations		wf (grss): $\tau_{\tau} = -7.58$ (2) wf (net): $\tau_{\tau} = -7.04$ (2)		8.82
6 Personal service occupations	wf (grss): $\tau_{\mu} = -2.20$ (4) wf (net): $\tau_{\mu} = -1.38$ (4)			84.60
7 Sales and customer service occupations	wf (net): $\tau_{\tau} = -3.45$ (1)	wf (grss): $\tau_{\tau} = -3.76$ (1)		69.48
8 Process, plant and machine operatives		wf (grss): $\tau_{\tau} = -3.53$ (1) wf (net): $\tau_{\tau} = -4.07$ (1)		14.16
9 Elementary occupations	wf (grss): $\tau_{\mu} = -1.33$ (2)	wf (net): $\tau_{\tau} = -3.93$ (1)		47.62

Table 8. UK Non-white females (NWF): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 2001Q2-2014Q3 (54 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share across all years and quarters (%)
1 Managers and senior officials		nwf (grss): $\tau_i = -5.90$ (1) nwf (net): $\tau_i = -4.31$ (1)		34.85
2 Professional occupations		nwf (grss): $\tau_i = -4.50$ (1) nwf (net): $\tau_i = -5.16$ (1)		46.38
3 Associate professional and technical occupations		nwf (grss): $\tau_i = -4.85$ (1) nwf (net): $\tau_i = -6.25$ (1)		49.45
4 Administrative and secretarial occupations		nwf (grss): $\tau_i = -6.08$ (1) nwf (net): $\tau_i = -4.91$ (1)		80.46
5 Skilled trades occupations		nwf (grss): $\tau_i = -4.12$ (1) nwf (net): $\tau_i = -4.13$ (1)		8.82
6 Personal service occupations		nwf (grss): $\tau_i = -4.11$ (1) nwf (net): $\tau_i = -4.76$ (1)		84.60
7 Sales and customer service occupations	nwf (grss): $\tau_i = -3.25$ (1)	nwf (net): $\tau_i = -3.68$ (1)		69.48
8 Process, plant and machine operatives		nwf (grss): $\tau_i = -5.60$ (1) nwf (net): $\tau_i = -5.84$ (1)		14.16
9 Elementary occupations		nwf (grss): $\tau_i = -4.30$ (1) nwf (net): $\tau_i = -4.84$ (1)		47.62

Table 9. UK White males (WM): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 2001Q2-2014Q3 (54 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share across all years and quarters (%)
1 Managers and senior officials		wm (grss): $\tau_i = -4.96$ (1) wm (net): $\tau_i = -5.07$ (1)		34.85
2 Professional occupations		wm (grss): $\tau_i = -6.86$ (1) wm (net): $\tau_i = -6.14$ (1)		46.38
3 Associate professional and technical occupations		wm (grss): $\tau_i = -3.64$ (1) wm (net): $\tau_i = -3.13$ (1)		49.45
4 Administrative and secretarial occupations	wm (net): $\tau_i = -2.58$ (2)	wm (grss): $\tau_i = -4.94$ (1)		80.46
5 Skilled trades occupations		wm (grss): $\tau_i = -4.41$ (1) wm (net): $\tau_i = -3.87$ (1)		8.82
6 Personal service occupations	wm (grss): $\tau_i = -2.01$ (3) wm (net): $\tau_i = -2.93$ (3)			84.60
7 Sales and customer service occupations		wm (grss): $\tau_i = -3.94$ (1) wm (net): $\tau_i = -3.53$ (1)		69.48
8 Process, plant and machine operatives	wm (grss): $\tau_i = -3.13$ (1) wm (net): $\tau_i = -1.94$ (3)			14.16
9 Elementary occupations	wm (grss): $\tau_i = -1.61$ (3) wm (net): $\tau_i = -0.57$ (3)			47.62

Table 10. UK Non-white males (NWM): Augmented Dickey Fuller (ADF) tests on group earnings by occupation in the period 2001Q2-2014Q3 (54 obs.)

	Non-stationary “unethical” earnings	Trend-stationary “ethical” earnings	Stationary “unethical” earnings	Female labour share across all years and quarters (%)
1 Managers and senior officials		nwm (grss): $\tau_i = -4.32$ (1) nwm (net): $\tau_i = -4.34$ (1)		34.85
2 Professional occupations		nwm (grss): $\tau_i = -5.31$ (1) nwm (net): $\tau_i = -5.36$ (1)		46.38
3 Associate professional and technical occupations		nwm (grss): $\tau_i = -5.23$ (1) nwm (net): $\tau_i = -5.36$ (1)		49.45
4 Administrative and secretarial occupations	nwm (grss): $\tau_i = -2.54$ (3)	nwm (net): $\tau_i = -5.30$ (1)		80.46
5 Skilled trades occupations		nwm (grss): $\tau_i = -3.49$ (3) nwm (net): $\tau_i = -5.08$ (1)		8.82
6 Personal service occupations		nwm (grss): $\tau_i = -4.38$ (1) nwm (net): $\tau_i = -3.66$ (1)		84.60
7 Sales and customer service occupations		nwm (grss): $\tau_i = -3.52$ (1) nwm (net): $\tau_i = -3.87$ (1)		69.48
8 Process, plant and machine operatives		nwm (grss): $\tau_i = -4.43$ (1) nwm (net): $\tau_i = -4.42$ (1)		14.16
9 Elementary occupations		nwm (grss): $\tau_i = -3.66$ (1) nwm (net): $\tau_i = -4.00$ (1)		47.62

Endnotes

¹ Note that there is no need to assume an open or closed economy since the movements of capital and labour in and out of the economy will result in the rewards of capital and labour being allocated as above.