Superstars and mediocrities: A solution based on personal income taxation☆

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A R T I C L E I N F O

A B S T R A C T

The markets for talent often produce large income inequality and therefore raise political attention. While such inequality can be due to superstar dynamics or factor complementarities, Terviö ("Superstars and Mediocrities: Market Failure in The Discovery of Talent", *the Review of Economic Studies*, 2009) first proposed a market failure that was previously unknown to the literature, pointing to long-term contracts as a solution. I extend the model in Terviö (2009) to include personal income tax policy reforms and demonstrate that tax design can be employed as a solution to the market failure when long-term contracts are unfeasible. With reasonably small enough entry payments that novice workers would sustain to compensate employers for the possibility to be discovered as high-talent types, both a progressive tax and a tax incentive on entry wages are found effective. The tax incentive on entry wages, though, can be used even with very large deductible entry payments and with overall negative net entry wages.

1. Introduction

Market failures caused by information asymmetries taking the forms of adverse selection and moral hazard have been studied in depth. To the extent that information is incomplete but symmetric among economic agents, the usual prior is that a market may exist that correctly prices risk. It is when asymmetries in information occur that strategic behaviours may undermine the correct functioning of markets and "lemon" mechanisms (Akerlof, 1970) produce socially less-than-optimal outcomes.

In Terviö (2009) a previously undocumented source of market failure was identified which relies on symmetric uncertainty about individual abilities. In that model, individuals do not know how talented they are and the discovery process of workers' ability is hampered by the fact that novices are unable to fully compensate employers for the chance to find out their own ability level. This constrained ability to "pay to work" in the industry impedes reaching first-best optimal outcomes (such as the equilibria derived in MacDonald, 1982; Miller, 1984; and MacDonald, 1988) where novice workers would sustain fully the cost of learning. As a result, less novices enter the market and more mediocre workers remain than

socially optimal. Because the failure is also due to inability to commit to long-term contracts (which would allow employers to capture the upside potential of novice employees), in principle it is also related to the literature on labour mobility and contract design (for instances particularly related to employed researchers: Pakes and Nitzan, 1983; Stole and Zwiebel, 1996a; Stole and Zwiebel, 1996b; and d'Andria, 2016).

The contribution of Terviö (2009) is very relevant for the study of some industries featuring highly skewed earnings distributions and where superstars dynamics (Rosen, 1981) might occur. Markets for artists, performers, sportsmen, managers, scientists and entrepreneurs may eventually be affected by this kind of market failure. Policy-wise a possible solution envisaged in Terviö (2009) is to impose longer-term contracts that would allow employers to retain workers who were discovered to be of high-ability type, thus allowing employers to gain more from the discovery of high-ability types. The problem with such policy is that it is hardly feasible in practice. To motivate the latter claim one can use multiple rationales. First, long-term contracts would distort other aspects of the markets that are not captured by the simple model here discussed, for instance they would impair the assortative matching of workers' ability with the most productive firms when firm productivity changes in time. Overall the efficiency gains obtained by long-term contracts with respect to the market failure described in Terviö (2009) would imply a trade-off that is yet to be studied and somewhat quantified. Second, the kind of workers potentially affected (e.g. football players, musicians, managers, etc.) is usually highly mobile internationally, and a long-term contract would not be easily enforced in other countries if a worker with a large revealed ability decided not to comply with it. Third, in most countries the law limits termination clauses and restrictive covenants not to be any more restrictive on the employee than reasonably necessary to protect the employer's business. Therefore such laws could impair the ability for a policy-maker to impose long-term contracts selectively in some industries only, where the market failure is expected to be relevant.

I propose a set of policies based on wage taxation as an alternative solution to the market failure. To the author's knowledge this is the first time these results are proposed and formally derived. Under the assumption that entry payments are small compared to wages, a more pronounced tax progressivity is found to increase entry thus being welfare improving. Alternatively a reduced tax rate on entry wages bears similar effects. If entry payments are made deductible from the tax, a reduced tax rate on entry wages is found effective even with very large entry payments.

2. Extended model with personal taxation

I extend here the original model in Terviö (2009) to include personal income taxes. All notation not related to taxes remains the same as in the original model to maximise comparability.[1] The description of the original model in the following is limited to the essential elements as more complete exposition can be readily found in Terviö (2009).

Workers are assumed endowed with ability θ drawn from a cumulative distribution function F. Ability produces output equal to θ when combined with other inputs at a cost $c > 0$. In each time period workers are either novices or veterans. Novices are first-time entrants in the industry and their ability θ is unknown to anybody, including themselves. At the end of a first entry period, ability is revealed and a novice either exits the industry or becomes a veteran who works in the industry for T more periods. All workers can opt at any point in time for an outside gross wage w_0. The industry total output q is constrained by a downward-sloping demand $p^d(q)$.

I use the following additional notation: t_0 is the tax rate levied on outside wages, that is, the tax rate generally applied to all labour income sources for jobs earning a wage w_0; t_V is the rate on wages earned by veterans (for simplicity I assume a single tax bracket for all wages above w_0); t_E is the tax rate on wages earned by novices. The existence of a distinct rate t_E implies the assumption that the policy maker can distinguish novices from veterans. However, note that any tax scheme where $t_E \leq t_0 \leq t_V$ is essentially equivalent to a general progressive tax. This is because, by models' assumptions which will be detailed in the following text, in the present setting it is always true that gross wages are such that novice wage is lower than the outside option wage, and the latter is never larger than the wage of veterans. Intuitively this happens because novices are willing to pay for the possibility to enter the market and eventually benefit from veteran rents, while the marginal veteran (the one with lowest skill) accepts a wage equal to w_0 as he or she has no upside potential to expect any more.

Throughout the paper I assume that the outside gross wage w_0 and the tax rate t_0 are both exogenous to the model. The reason for such a choice stems from the observation that, though still very important as a source of value generation, the combined impact on the general economy of the industries that are potentially most affected by the market failure under discussion is somewhat limited. For instance according to data published by the U.S. International Trade Administration for 2015, the value added from core copyright industries (defined broadly to include filmed entertainment, publishing, music, videogames) amounted to USD 1.2 trillion or equivalently 6.9% of U.S. GDP. The U.S. sports market, including media rights, would amount to USD 60–70 billion (according to the PwC Sports Outlook 2015). Consequently, it is hardly the case that the general level of wages, and therefore of the outside wage w_0, will be affected relevantly by the characteristics of these markets. A similar observation applies to the design of the general tax system: as t_0 represents the tax rate levied on wages

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[1] I prefer though to employ the term *ability* rather than *talent* because the latter seems to imply some form of innate aptitude, while the former better captures the overall joint effect of past education and learning-by-doing, genetic disposition, match with current majority preferences. In modelling terms this distinction makes no difference and ability here works exactly in the same way as talent in the original model in Terviö (2009).