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journal homepage: www.elsevier.com/locate/jeboAffirmative action through extra prizes[☆]Matthias Dahm^{a,*}, Patricia Esteve-González^b^a University of Nottingham, School of Economics, University Park, Nottingham, NG7 2RD, UK^b Lancaster University, Department of Economics, Lancaster, LA1 4YX, UK

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ABSTRACT

Some affirmative action policies establish that a set of disadvantaged competitors has access to an extra prize. We analyse the effects of creating an extra prize by reducing the prize in the main competition. Contestants differ in ability and agents with relatively low ability belong to a disadvantaged minority. All contestants compete for the main prize, but only disadvantaged agents can win the extra prize. We show that an extra prize is a powerful tool to ensure participation of disadvantaged agents. Moreover, for intermediate levels of the disadvantage of the minority, introducing an extra prize increases total equilibrium effort compared to a standard contest. Thus, even a contest designer not interested in affirmative action might establish an extra prize in order to enhance competition.

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1. Introduction

Some affirmative action policies establish that a set of disadvantaged competitors has access to an extra prize. Examples include regional Governments offering their own funding competitions for research projects, besides general funding opportunities from the central Government; international awards complemented by a prize for national competitors; the World Chess Championship offering additional competitions for specific groups; or a prize for the best academic paper by a young scientist. The purpose of the present paper is to investigate the incentive effects of this particular prize structure that is commonly used as an affirmative action instrument. Our main result is to show that this policy is not only appealing from a normative point of view but that it also has the potential to enhance competition. It can thus be desirable on efficiency grounds, fostering thereby the social acceptance of the policy.

We analyse the effects of extra prizes in a contest model. These models have been insightful in a variety of competitive situations, including rent-seeking, promotional competition, labour market tournaments, sports competitions or conflict.

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Following Stein (2002) or Franke et al. (2013), we investigate an asymmetric contest in which contestants differ in ability. Agents with relatively low ability belong to a 'disadvantaged minority'.¹

A standard result in contest theory says that the most inefficient (or least able) agents might not actively participate in the competition (Stein, 2002). And indeed, 'minority representation' is an important concern in real competitions. For instance, in California the Disabled Veteran Business Enterprise and Small Business Certification Programs establish explicit target market shares for these disadvantaged groups. Similarly, the European Union has target shares for female representation on firms' boards and some universities in the U.K. have widening participation programs aiming at broadening the range of students who attend university so that they are representative of the home population. The challenge is then to design affirmative action policies that can reconcile the conflicting aims of reaching both (i) a sufficient level of minority representation and (ii) a sufficient level of competition. Avoiding trade-offs between these objectives is important because it influences the political support for and the prevalence of affirmative action policies. Ayres and Cramton (1996), for example, report that various California ballot initiatives tried to end state-sponsored affirmative action because of the belief that eliminating affirmative action could help to solve budget problems.

In our model the contest designer can create an extra prize at the cost of reducing the prize in the main competition. All contestants compete for the main prize, but only disadvantaged agents can win the extra prize. This fits, for example, quotas for disadvantaged minorities, like gender quotas, in which the establishment of the quota reduces the budget available in the main competition. Disadvantaged agents thus should have an incentive to exert higher effort but it is far from obvious that the overall level of competition will be strengthened, as advantaged agents have lower incentives to invest.

We show that disadvantaged agents indeed do have an incentive to exert higher effort and that we can think of the effects of extra prizes 'as raising the effective ability of disadvantaged agents' thereby creating a 'level playing field'. In our model the introduction of an extra prize results in more homogeneous 'effective abilities' of contestants. This leads to our first major result that an extra prize is a powerful tool to ensure participation of disadvantaged agents. With an extra prize of moderate size both groups of agents are active; using the language of the affirmative action literature, there is diversity. Moreover, as the extra prize becomes larger, the incentives of advantaged agents to participate decline and the least able active advantaged agents drop out, while for disadvantaged agents the opposite happens. For these agents the incentives to participate increase and the most able inactive disadvantaged agents become active.

Our main result is to show that extra prizes have the potential to strengthen competition. The reason is that, as the disadvantaged minority competes stronger, advantaged agents might exert more effort than they otherwise would, resulting in a higher overall level of competition. More precisely, we show that for intermediate levels of the disadvantage of the minority, introducing an extra prize increases total equilibrium effort compared to a standard contest (for example in Stein, 2002). We also show by means of an example that the magnitude of the increase of total effort due to the extra prize might potentially be quite important. Thus, even a contest designer not interested in affirmative action might establish an extra prize in order to enhance competition.

We are not aware of an empirical study that fits exactly our model. The predictions of our model are, however, in line with empirical evidence. Brown (2011) shows that large differences in ability might reduce effort. Balafoutas and Sutter (2012) provide experimental evidence that related (but different) affirmative action policies can have an important impact on minority participation, while not harming the efficiency of the competition, as predicted by our model.²

A distinctive feature of our model is that some agents might win more than one prize with a sole effort choice. In some situations this is a reasonable description of reality. For instance, in chess the World Championship does not exclude women, juniors or seniors, but each of these groups have in addition their separate championship. In Spain some (but not all) regional levels of Government (Comunidades Autónomas) provide research funding, in addition to funding from the central Government. In 2011, the Catalan film 'Black Bread' won both the (Spanish) Goya Award and the (Catalan) Gaudí Award in the category of Best Film.³ In 2009, a local firm won both the main (international) prize and the prize for Catalan competitors in the fireworks contest organized yearly by the City Council of Tarragona.⁴ In 2013, a prominent firm organized a photo competition in Germany that awarded both a main annual prize and a secondary monthly prize, based on a single submission. Currently, entrepreneurs younger than 40 years have access to a special competition in order to obtain funding for the establishment of companies, in addition to the main competition organized by the Spanish Ministry of Industry.⁵

In other situations it might not be true exactly that a contestant can be allocated two prizes. But it might be the case that at the time effort is chosen, the contestant might not know whether he will compete for the main or the extra prize. Consider a quota system. At the time of investment (for example in education) minority members might still have the option of participating as a minority member, in addition to participating in the main competition. Consider widening participation

¹ For a survey of the contest literature see Corchón (2007), Konrad (2009) or Corchón and Serena (2017). See also Cornes and Hartley (2005) and Ryvkin (2013) for general models of asymmetric contests. Throughout the paper we follow the language of the affirmative action literature and use for example the term 'disadvantaged minority' for the agents favoured through affirmative action.

² See also Cornes and Schotter (1999); Franke (2012b); Schotter and Weigelt (1992) and Calsamiglia et al. (2013) for further evidence of performance enhancing incentive effects of affirmative action.

³ See <http://www.premiosgoya.com/> and <http://www.academiadelcinema.cat/en/gaudi-awards>, accessed on 29/03/2018.

⁴ See <http://www.tarragona.cat/cultura/festes-i-cultura-popular/concurs-internacional-de-focs-artificials-ciutat-de-tarragona>, accessed on 29/03/2018. In the current edition of the competition the extra prize is open to competitors from the Iberian peninsula.

⁵ See www.enisa.es/es/financiacion/info/lineas-enisa/jovenes-emprendedores, accessed on 29/03/2018.

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