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journal homepage: [www.elsevier.com/locate/jebo](http://www.elsevier.com/locate/jebo)Electoral competition with third party entry in the lab<sup>☆</sup>

Nikolas Tsakas\*, Dimitrios Xefteris

Department of Economics, University of Cyprus, P.O. Box 20537, Nicosia 1678, Cyprus



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## ABSTRACT

Electoral competition between two vote-share maximizing candidates in the context of the unidimensional spatial model leads to platform convergence: both candidates end up proposing the ideal policy of the median voter (Downs, 1957). Palfrey (1984) famously argued that if third candidate entry is expected after the two main candidates choose their platforms, the unique equilibrium is such that the two main candidates locate substantially far from each other. By conducting a laboratory experiment, we put this popular idea to test, for the first time. We allow entry to take place with four different probabilities and find that, indeed, the degree of polarization of the two main candidates' platforms increases as third candidate entry becomes more likely to occur, providing strong evidence in support of Palfrey (1984)'s formal results and underlying intuition.

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## 1. Introduction

Downs (1957) argued that two vote maximizing candidates would converge towards the median voter. Despite the strong and clear intuition behind the Downsian prediction, in reality we observe that candidates propose non-identical platforms: if anything, electoral competition in contemporary politics, especially in the U.S.A., appears more polarized rather than convergent (see, for instance, Shor and McCarty, 2011). Hence, there have been many attempts in the literature to explain this departure from the described theoretical prediction. Among the most prominent attempts, Calvert (1985), (Wittman, 1977, 1983, 1990) and Roemer (1994) proposed that polarized platforms may arise in a variation of the Downsian model in which the candidates, apart from electoral incentives, also have policy motives, while Alesina and Rosenthal (2000) and Ortuño Ortín (1997) stressed the role of institutions (power-sharing vs. winner takes all) in the degree to which the platforms of policy-motivated candidates diverge. All these interesting theories, though, assume that the objectives of the candidates are substantially different to pure vote-share maximization, and hence the fact that they predict policy divergence is critically driven by this.

Palfrey (1984) extended the Downsian model, considering that after the two main candidates propose their platforms, there is the prospect of a third candidate entering the race. He demonstrated that in equilibrium the two main candidates no longer converge to the ideal policy of the median voter; they locate equidistantly away from the median voter, proposing substantially differentiated platforms. The underlying intuition behind this result is that each of the two main candidates

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\* Corresponding author.

E-mail addresses: [tsakas.nikolaos@ucy.ac.cy](mailto:tsakas.nikolaos@ucy.ac.cy) (N. Tsakas), [xefteris.dimitrios@ucy.ac.cy](mailto:xefteris.dimitrios@ucy.ac.cy) (D. Xefteris).

wants to avoid being “sandwiched” by the other main candidate and the entrant, and these dynamics drive them far away from each other. To our knowledge, Palfrey (1984) was the first to plausibly explain why platforms of two purely vote-share motivated candidates may diverge – to mitigate the consequences of a potential third party entry– and this is why it earned a predominant position in the literature. Indeed, a long series of studies regarding the effects of third party entry can be traced back to Palfrey (1984). Results for alternative concepts of office-motivation, entry protocols, electoral rules, and heterogeneous candidates’ characteristics can be found in Weber (1992, 1997), Callander (2005); Callander and Wilson (2007); Greenberg and Shepsle (1987); Rubinchik and Weber (2007); Shapoval et al. (2016); Xefteris (2016a) and Buisseret (2017).<sup>1</sup>

In this paper, we put the entry theory to test, for the first time, by the means of laboratory experiment designed to answer whether the polarization prediction is empirically relevant, or its appeal is mostly theoretical. Despite the fact that the setup of Palfrey (1984) was modified in a number of ways, we prefer to stick with the original approach in which all candidates –both the main two ones and the entrant– are vote-share maximizers and entry occurs independently of the platform choices of the two main candidates. Indeed, many of the extensions of the original model are relevant and interesting, but if one puts to test a theory one should arguably put it to test in its most basic and influential form: in the entry literature (Palfrey, 1984) is the unchallenged reference point.<sup>2</sup> Our experimental design involves: a) a discrete policy space with seven equidistant locations and a uniform distribution of voters, and b) two main candidates –each impersonated by a subject– that simultaneously choose policies in order to maximize vote-share, given minimal order constraints.<sup>3</sup> When making their choices the two main candidates know the probability with which entry will occur, but not whether entry will actually take place or not.

In order to provide clean results with respect to the strategic polarization of the two main candidates when third party entry is expected, we consider that all non-sophisticated choices–i.e. the location choice of the third candidate and the voting decisions of voters–are made by the computer.<sup>4</sup> This is in line with the original approach of Palfrey (1984), where the game is formally defined as a two player one, taking the subsequent behavior of the entrant for granted and it also helps in making the decision problem of the two players clearer.

We test four variations of this game that differ with respect to the likelihood of third candidate entry: a) third candidate entry never occurs (Downs, 1957), b) third candidate entry always takes place (Palfrey, 1984), c) third candidate entry most probably does not occur (i.e. an entrant appears with a positive probability smaller than 1/2), and d) third candidate entry most probably takes place (i.e. an entrant appears with a positive probability larger than 1/2).

To be able to predict the players’ behavior in each of these cases, we solve a model in which the two main candidates believe that an entrant will appear with some probability  $p$ . This can be considered as a generalization of the original model such that Downs (1957) and Palfrey (1984) are special cases corresponding to  $p = 0$  and  $p = 1$ , respectively. We characterize the equilibrium of this generalized entry game for the discrete policy space we employ in our experiment, that is a policy space with seven equidistant locations and a uniform distribution of voters. Our discrete framework allows us to straightforwardly define the entrant’s best response correspondence, unlike Palfrey (1984) who faces technical issues in properly defining it due to the continuity of the policy space that he considers and resorts to limits of epsilon best responses.

We find that *the equilibrium degree of polarization*–i.e. the distance between the equilibrium positions of the two main candidates–*is increasing in the likelihood of third candidate entry*: a) for  $p$  small enough the two main candidates locate at the central location and hence polarization is low, b) for  $p$  large enough the two main candidates locate at the second and sixth location respectively and hence polarization is high; and c) for intermediate values of  $p$  the two main candidates locate at the third and fifth location respectively and hence polarization is moderate. That is, polarization is increasing in the probability of entry of a third candidate and deviations from the Downsian convergence-to-the-center result is much more general: it does not happen only when entry is sure to happen. This reinforces substantially the empirical relevance of the idea that the prospect of entry fuels centrifugal dynamics, since the main candidates cannot be really sure when they choose their platforms that another individual will or will not declare candidacy at a later stage.<sup>5</sup>

By means of a laboratory experiment, we find that when entry never occurs ( $p = 0$ ) subjects –almost always– locate at the center of the policy space while when entry always occurs ( $p = 1$ ) subjects most frequently polarize to a considerable

<sup>1</sup> Osborne and Slivinski (1996) and Besley and Coate (1997) consider models of endogenous candidacy where candidates’ policies are exogenously fixed, under plurality and runoff rules. Dellis (2009) and Dellis and Oak (2016, 2006) extend these analyses to alternative electoral systems. Moreover, Brusco et al. (2012); Feddersen et al. (1990); Osborne (1993) and Xefteris (2016b) provide results for the case in which both entry and location choices of all candidates are endogenous. Loertscher and Muehlheusser (2011) also study a similar setup but in contrast to these models they consider sequential entry. For an excellent review of endogenous candidacy models one is referred to Bol et al. (2016). Examples of multi-candidate versions of the Downsian model without entry are Eaton and Lipsey (1975); Shaked (1982), and Osborne and Pitchik (1986).

<sup>2</sup> Arguably, the appeal of the original setup is more general than the latter variants, since it is closer in spirit to the models used in the literature on product differentiation in industrial organization.

<sup>3</sup> That is, one candidate is allowed to locate from the leftmost location up to the central location, while the other is allowed to locate from the central location up to the rightmost location. This allows subjects to focus solely on forming expectations regarding polarization, and does not let expectations about who will locate to the left or to the right blur their reasoning.

<sup>4</sup> The behavior of voters in Palfrey (1984) is sincere –they vote for the candidate they like best– and it is hence non-sophisticated. The selection of the policy location by the entrant is also non-sophisticated in the sense that she/he has to make this choice on the basis of available information (locations of the two main candidates and the expected voting behavior of sincere voters).

<sup>5</sup> To our knowledge, this paper is the first to make this observation and, arguably, this is of interest on its own.

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