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Editorial
Public Policy Modeling and Applications 2021

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As editors, we are glad to publish "Public Policy Modeling and Applications 2021" as an extended effort that builds upon the original Special Issue [1]. Indeed, policymakers continue to face the difficulties and intricacies of tackling complex societal issues [2]. The magnitude, heterogeneity, and idiosyncrasies of societal problems make modelling purposeful questions a hard, wicked task [3,4]. Moreover, translating quantitative and computational methodologies, along with their uncertainties and embedded assumptions, into simple—at times one-page—narratives for policymakers' consumption may prove to be challenging [5]. Besides, only trying might already be informative [6].

We look forward to contributing innovative ideas in this interdisciplinary field, which we believe is fertile for productive interaction.

This Special Issue brings together research and reviews on modelling and applications of public policy. As it might be expected, the subject matter has been diverse. This shows us that despite the highly interdisciplinary nature of the field, there is fertile ground for furthering the application of the sciences of complexity, of social systems interacting with their environment, to policy making.

There are seven papers that simultaneously comprise different disciplinary areas, focusing on their interactions and effects for policy and policymakers, using a variety of methods. The papers discuss the following: (a) how infrastructure investments and increased mobility affect sector trade heterogeneously, or how further investments at the urban scale, in turn, might attract foreign money inversions; (b) how new technologies in industry lead to firms' innovation; and (c) how widespread bases of users might help betterment of service provision. Further complex interactions permeate the debate on (d) how network structures might prove relevant to analyze contagion and public health and countermeasures; (e) how easing communication between scientists and industrialists might foster innovation; and (f) how conversation among food suppliers and administrative political bodies purchasing might prevent waste. In what follows, we will comment on each of the projects. We hope that this is another step in igniting an active and motivating field for complexity researchers.

Transport has long been studied as a driver and large effect component on spatial concentration [7] and trade and agglomeration economies [8]. Quasi-experiments and econometrics have been applied to analyze highways and railways influence on economic growth in both China and Brazil and in urban and regional contexts [9, 10]. Previous results have confirmed heterogeneity of impact due to proximity, economic sectors, and mode, with a possible gain of agriculture in detriment of industrial activities [11]. The paper by J. Zhou et al. [12] adds to those previous investigations looking at the influence of high-speed railway systems (HSRSs) [13], with an emphasis on agriculture exports specifically. The relevance of HSRS for product transportation in China is explicit by the total of 35,000 km accrued from 2008 to 2019. The authors focus on two

mechanisms of influence of HSRS in agricultural firms: market access and siphon effect. Siphon effect refers to the relative advantage that regions with access to HSRS may have gains when compared to neighboring unserviced regions, displacing trade, rather than increasing productivity. J. Zhou et al. use a multiperiod difference-in-difference model coupled with an event analysis method that introduces dummies before and after policy events, akin to the study in [14]. Having confirmed growth in agriculture-related export (consistently at about 7%), the authors investigate further the leading mechanisms delving into heterogeneity of firms' ownership, development state, and regional context. The effect is found to be constrained to a distance of 45 km from the HSRS.

Ex-post enhancement of policy evaluation in an industry-government-innovation tripod is the theme of the paper by X. Wang and C. Jiang [15]. The authors advocate for Chinese subsidy for new energy vehicles (NEVs) claiming relevant spillovers for both industrial innovation [16] and sustainability gains. The claim suggests that entering the government promotion catalogue—and thus accessing posterior subsidies—imposes a beneficial technical threshold that helps focus innovation development. The authors test two mechanisms that would influence innovation, via profit increase or via reduction of financial constraints. They apply a multistage difference-in-differences model in a quasi-natural experiment that compares industries that have entered the catalogue and those that have not. Results suggest that receiving subsidies—for the NEV Chinese promotion policy—stimulated "radical innovation" via both mechanisms tested. Fang et al. reinforce the results, specifically when observing China's anticorruption campaign that began in 2012 [17].

Interaction among a multitude of agents is at the core of complex systems analysis [18]. Within a market context, these interactions are mediated by information in the face of asymmetry, full disclosure, and regulation [19]. However, online markets do not have the "touch and feel" experience agents use to discriminate products and embedded service, quality, prices, and value [20], meanwhile having more dynamic, flexible, and pulverized consumers and sellers. Y. Yan et al. propose a game-theoretical model to investigate whether a seller decision to participate in an online retailer distribution alliance (DA)—a logistic integrated solution—might be used to signal quality of sellers [21]. Y. Yan et al. find that a high level of certification accuracy along with an application fee is necessary for the sellers' participation in a DA to effectively have a signal effect. Moreover, the authors claim that "DA is a new and good innovation in logistics and e-commerce whose organizational characteristics make it a lubricant in the traditional supply chain structure" ([21], p. 12).

Yu et al. apply another quasi-experiment DID method to study correlation between a policy smart-city program in China and the quality of foreign investment received. Longitudinal and incremental data for a range of 226 prefecture-level cities allowed the authors to run a robust model that included a placebo test [22] and a heterogeneity analysis. They found that western cities—comparatively lacking in infrastructure relative to their eastern counterparts—perceived more improvement in quality of foreign investment. Finally, the authors report that level of wages played a negative and significant impact on the quality of foreign investment.

Understanding the evolution of infectious diseases is of global importance today [23]. The highly interconnected nature of our society clearly suggests that this requires an understanding of the constantly evolving topology of social networks. X. Wang et al. review the literature on social network analysis precisely to prevent and control epidemiological events. Factors such as network structure, prevention and control measures, and their comparison are analyzed in detail. They also suggest ways to improve dynamic network simulation and the application of inputs from COVID-19 to optimize future models of epidemic spread in social networks.

The innovation system of a state has two relevant actors: industries and universities. It has been suggested that an important part of the dynamics of the innovation economy is based on a virtuous relationship between these two types of institutions [24]. H. Fang et al. analyze how technology transfer in universities (TTU) and high-tech industries development (HTID) are coupled. They conduct this study with nine years of data from China. Their findings shed light on issues that may be of interest in other states. for example, the diversity of results and their remarkable differences, depending on the different regions of China. Also notable is the relationship between the mechanisms that exist in the high-tech industries (such as technological absorptive capacity or innovation) and the impact on the promotion of coupling coordination of TTU-HTID.

One of the world's long-standing problems has been the issue of food production and distribution. The impact of COVID-19 has shown the great fragility of the food system, revealing critical points in the production and supply chain [25]. All this adds up to low efficiency of the system, with one-third of food going to waste. In their paper "Promotion Strategy of Policy against Food Waste (PAFW): The Perspective on Evolutionary Game between Local Government and Large Supermarkets," Luo and Zhao show us an interesting approach that uses evolutionary game theory to attack this problem. Their results indicate that public policies would benefit greatly from including this type of approach, which ultimately involves coordination between governance systems, production systems, actors in the supply chain, and civil society [26–28].

Conflicts of Interest

The editors declare that they have no conflicts of interest regarding the publication of this Special Issue.

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