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## RESEARCH INTERESTS

Political Economy, Applied Game Theory, Microeconomic Theory

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## EDUCATION

<b>PhD. Economics</b> University of Nottingham	<b>2021</b>
<b>M.A. Economics</b> Autonomous University of Ciudad Juarez	<b>2014</b>
<b>M.Sc. Mathematics</b> University of Texas at El Paso	<b>2014</b>
<b>B.Sc. Applied Mathematics</b> University of Texas at El Paso	<b>2011</b>

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## PUBLISHED JOURNAL PAPERS

[A Spatial Model with  \$k\$ -winners](#). *Games* **2025**, 16(1), 6.

The concept of the Condorcet winner has become central to most electoral models in the political economy literature. A Condorcet winner is the alternative preferred by a plurality in every pairwise competition; the notion of a  $k$ -winner generalizes that of a Condorcet winner. The  $k$ -winner is the unique alternative top-ranked by the plurality in every competition comprising exactly  $k$  alternatives (including itself). This study uses a spatial voting setting to characterize this theoretical concept, showing that if a  $k$ -winner exists for some  $k > 2$ , then the same alternative must be the  $k'$ -winner for every  $k' > k$ . We derive additional results, including sufficient and necessary conditions for the existence of a  $k$ -winner for some  $k > 2$ .

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## TEACHING/ADMIN EXPERIENCE

<b>Full-Time Professor</b> ITESM – Economics Dept. Campus Puebla	<b>07/2022 – Present</b>
<b>Teaching Associate/Fellow</b> The University of Nottingham, School of Economics	<b>09/2019 – 08/2022</b>
<b>UG/PG Dissertation Supervisor</b> The University of Nottingham, School of Economics	<b>10/2019 – 08/2022</b>
<b>Graduate Teaching Assistant</b> The University of Nottingham, School of Economics and Business School	<b>10/2016 – 08/2019</b>
<b>Mathematics Lecturer</b> The University of Texas at El Paso, Math Department	<b>08/2015 – 12/2015</b>

## **WORKING PAPERS**

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### **The Case of American Presidential Primaries: A Model of Sequential Primary Elections**

We present a theoretical model to analyse two phenomena surrounding sequential elections: momentum and Duverger's law. Momentum can be defined when a candidate starts the election season with a streak of successful events (polling or election results) in such a way that it would guarantee a greater probability of winning the race. On the other hand, our modified version of Duverger's law asserts that primary candidates tend to quit at earlier stages of the election under plurality rule compared to proportional representation. Our theoretical results will derive conditions to challenge both assertions. Furthermore, we will exploit the dynamic nature of primary elections by using the concept of a Condorcet-winner and  $k$ -winners. The  $k$ -winner is the alternative that is *top ranked* by the majority in every electoral competition composed exactly of a subset of  $k$  candidates.

### **Analysing the economic effect of parenting decisions: Mexican families à la Goldin**

The formation of households with children has historically been the default model for the development of any society. The increase in birth rates underpins theories such as human capital and exogenous growth models. However, the configuration of the labour market continues to penalize women in salaries, particularly due to their maternity conditions. Taking care of homes represents an opportunity cost that ends up slowing down professional development (Goldin, 2022; Goldin, 1994; Goldin, 2004). In this study, we analyse how households with children disproportionately contribute to income inequality, explaining the premiums and penalties fathers and mothers face.

## **AWARDS AND SCHOLARSHIPS**

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**Teaching in Excellence Award** – ITESM Campus Puebla, 2024

**Educational Innovation Award** – ITESM Campus Puebla, 2024

**Teaching in Excellence Award** – University of Nottingham, (2017/18, 2018/19, 2020/21)

**Graduate Teaching Fellowship** – University of Nottingham, 2018

**CONACYT Doctoral/Masters Scholarship** – Mexican Government (2012-2014, 2015-2019)

## **CONFERENCE PRESENTATIONS AND WORKSHOP ATTENDANCE/DELIVERY**

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**Junior Research Seminar** **October 2023**  
Puebla, Mexico

**XI Congreso Internacional de Ciencia Política** **October 2023**  
Guadalajara, Mexico

**Coloquio Mexicano de Economía Matemática y Econometría** **September 2023**  
Guanajuato, Mexico

## **SKILLS & QUALIFICATIONS**

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- Fellow of the Higher Education Academy.
- Preparing to Teach in Higher Education Certificate.
- Programming languages: R (Intermediate), Stata (Intermediate) and LaTeX (Advanced).
- Fluent in English and Spanish.