

# Competition Law and Economic Inequality



University of Oxford  
Faculty of Law

**Amit Zac**

Lady Margaret Hall

Thesis submitted for the degree of

Doctor of Philosophy in Law

2022

## **Abstract**

Scholars and policymakers have recognized inequality as a major social problem affecting political stability, deteriorating public health, and destabilising crime levels. It is increasingly acknowledged in public discourse that competition law could have important effects on inequality levels. However, the specific ways and mechanisms through which a competition law regime might interact with economic inequality remain largely unexplored from an empirical perspective. The thesis aims to address this literature gap.

The thesis empirical findings support a link between competition law and enforcement and economic inequality via its relationship with the levels of competition. The US case study backs the hypothesis that major changes in antitrust laws may have been correlated with macroeconomic trends of rising markups, declining labour share and rising economic inequality. The thesis also found evidence that countries which adopt the text of antitrust laws (as opposed to EU text) are more likely to show higher levels of economic inequality.

The relationship between the scope of competition law and income inequality was somewhat inconclusive at the macro level using a large cross-country dataset, observing a statistically significant relationship in some specifications, but not all. Nevertheless, I found a positive link, statistically significant, between an effective competition policy and the labour share trend, exploring a data set of highly developed countries. The main mechanism through which competition policy affects the labour share is its ability to constrain markups: competition policy is negatively correlated to markups, while markups are negatively correlated to labour share.

The thesis then explores the implications for further research and policy. I argue that competition law is suited to influence pre-distribution of wealth and income and can be further tuned to accommodate concerns for equality. I offer practical ways to implement my approach via prioritising schemes and a greater focus on low- and middle-classes.

## Acknowledgements

‘Life is a game, boy. Life is a game that one plays according to the rules.

Yes, sir. I know it is. I know it. Game, my ass. Some game. If you get on the side where all the hot-shots are, then it’s a game, all right—I’ll admit that. But if you get on the other side, where there aren’t any hot-shots, then what’s a game about it? Nothing. No game’.

The Catcher in the Rye, J.D. Salinger.

The thesis follows the spirit of *The Catcher in the Rye*, looking for a ‘game’ we can all participate in and have a chance to win. A society we are all proud to live in.

I could not have pursued this DPhil without the enormous support of my two supervisors: Professor Ariel Ezrachi and Professor Christopher Decker. Ariel opened for me the door to academic life at Oxford and continued to believe in me throughout my PhD. The high bar he presented to me has helped me develop as a young scholar. Chris’s attention to the smallest details of my work, alongside his dedication in hours of discussions, kept me alert and pushed my analytical skills to the maximum. Their kind words of support encouraged me to keep on going, learn new tools and improve my ability to communicate my thoughts in the academic sphere. This thesis would not have been written without the two of you.

The thesis benefited from the Leverhulme Trust’s generous support and is part of a research project for two years, studying the effects of competition law on economic inequality. I am grateful for the support of the Trust. I would like to thank my talented colleague, Dr Carola Casti, with whom I worked as part of the research project group. The fruitful cooperation between us grew over the last two years and became a friendship. To Amédée, who guided me while I was taking my first steps at the Law Faculty and as a tutor in Ariel’s course. To Geraldine and Paul from the Law Faculty, who were always supportive and helpful. I appreciate the contribution all of you have made to the success of my research project.

To my family, and especially to my mom and dad Tali and Yaacov, who always took great interest in my work, supported me financially at harsher times and came to visit at every opportunity they had to cheer me up. To my parents-in-law, Neil and Miri, who made me feel proud of my achievements and think positively of my challenges. To my grandparents Moshe and Lea, who passed away and my two forever-young grandparents Nahum and Paulina, for their love and support in all the steps of my journey.

A big thank you to all my close friends from home and especially to Tali, Maor, Moti and Lior, who came to visit me in the cold and wet winters of western Europe and the UK. Who never stopped calling and texting to see how I was doing. I am grateful for your friendship. And to all the new friends I made at Oxford and Edinburgh who made me feel happy away from home. I am so lucky to have met you, Julian and Juliana, Isla and Jake. I could not have survived the trips to Oxford without the generous hospitality of Isla and my later to be flatmates Julian, Nina and Olivia. Finally, to my incredible super-wife, Tamar Johnson, whose compass always shows the direction of happiness. Thank you for leading my way to Oxford and for all your help over these years. You challenge me to do better all the time, and you are always there for me when I need you. I could not have asked for a better partner.

# Table of Contents

Cases and Statutes.....	8
Tables and figures.....	10
Chapter one: Introduction to the thesis.....	13
1.1. Background.....	13
1.2. Motivation.....	14
1.3. Methods.....	17
1.4. Key empirical findings.....	18
1.5. Outline of the thesis.....	19
Part I: Foundations.....	23
Chapter two: Definitions.....	24
2.1. Competition law.....	24
2.2. Competition law indicators.....	27
2.3. Competition and market power.....	31
2.4. Economic inequality and poverty.....	34
Chapter three: A critical view of the current literature.....	39
3.1. The legal and philosophical debate.....	39
(a) Fairness.....	42
(b) Social contract.....	44
3.2. The Law and Economics debate.....	48
(a) Relying on taxation in the long run.....	49
(b) The homogeneous legal response.....	53
3.3. The empirical literature on the effects of competition law.....	59
(a) Competition law, the intensity of competition and economic growth.....	60
(b) Competition law and economic inequality.....	63
3.4. Summary.....	66
Chapter four: Competition effects on economic inequality and poverty.....	68
4.1. Dynamic effects of competition on economic inequality.....	70
(a) Competition effects on inequality via growth and productivity.....	70
(b) Competition effects on poverty via growth and productivity.....	73
(c) Competition effects on inequality via innovation.....	74
(d) Summary.....	76
4.2. Static effects of competition on economic inequality.....	76
(a) Product markets.....	77
(b) Labour markets.....	79
(c) Summary.....	82
4.3. Macroeconomic effects of competition on economic inequality.....	83
(a) The Comanor and Smiley approach.....	85
(b) Concentration levels studies.....	88
(c) Markups studies.....	89
(d) A framework for the effects of competition law on economic inequality.....	90
4.4. Between economic inequality and poverty.....	93

4.5. Summary .....	99
Part II: Empirical analysis .....	101
Chapter five: The US case study .....	105
5.1. Economic inequality in the United States .....	106
(a) Changes in economic inequality .....	106
(b) Market power and the labour share in the US .....	109
5.2. The evolution of the antitrust model .....	114
(a) The goals of antitrust and the Supreme Court .....	115
(b) Enforcement agencies .....	123
(c) Substantive rules .....	130
5.3. Hypothesis I: The <i>paradigmatic shift in American Antitrust and the rise of economic inequality in the US</i> .....	133
5.4. Descriptive analysis of the evolution of antitrust laws .....	134
5.5. Markups and economic inequality in the US .....	137
5.6. Summary .....	140
Chapter six: The United States and the European Union laws as models of competition laws .....	141
6.1. The model of law .....	142
(a) The US and the EU model of law are distinct forms of competition laws, with different observable features .....	143
(b) Countries that adopt/copy the text of one of these laws share some of the elements of the prototype model (US or EU) .....	145
6.2. The EU competition model .....	146
(a) Goals of Competition law .....	147
(b) Enforcement efforts and judicial review .....	156
(c) Monopolisation and the abuse of dominance .....	165
6.2. Hypothesis II: The US and EU models of law and economic inequality ..	169
6.3. Empirical analysis: the choice of a model law US and EU .....	171
(a) Exploring the ‘model of law’ descriptively in the OECD database .....	171
(b) Estimation strategy and methods .....	179
(c) Data sources .....	185
6.4 Difference-in-difference specifications and results .....	192
6.5 General synthetic control specifications and results .....	200
6.6 Summary and discussion .....	206
Chapter seven: A cross-country Study .....	210
7.1. Estimation Strategy and Methods .....	212
7.2. Data sources .....	216
(a) Competition law indices .....	216
(b) Economic inequality indicators and controls .....	218
7.3. Descriptive statistics .....	220
(a) Changes in competition laws across the world .....	220
(b) Changes in the competition laws as compared to the economic inequality ..	223
7.4. Hypothesis III: The scope of the law and economic inequality .....	225
7.5. Competition law and competition dynamics .....	226
(a) Difference-in-difference results .....	226

(b) Generalized method of moments results .....	229
7.6. Competition law and income inequality .....	232
(a) Difference in difference results .....	232
(b) Generalized method of moments results .....	234
7.7. Summary and discussion .....	237
Chapter eight: A cross-industry study .....	241
8.1. Competition policy, markups and the labour share .....	242
8.2. Estimation strategy and methods .....	245
8.3. Data sources .....	247
(a) Dependent variables .....	247
(b) Explanatory variables .....	248
8.4. Descriptive statistics .....	253
8.5. Hypothesis IV: Competition policy and the labour share .....	255
8.6. Competition policy and markups .....	256
8.7. Competition policy and labour share .....	260
(a) Benchmark estimations .....	260
(b) IV- 2SLS Model .....	264
(c) Interaction analysis, industry, the scope of law and model of law .....	267
8.8. Summary and discussion .....	271
Part III: Policy implications .....	275
Chapter nine: empirical conclusions .....	276
Chapter ten: Pre-distribution vs re-distribution .....	281
10.1. Pre-distribution – via competition – effects on inequality .....	282
10.2. Redistribution – direct provisions targeting inequality .....	286
Chapter eleven: Competition law as a distribution mechanism .....	292
11.1. Setting priorities straight .....	293
11.2. Model of law insights .....	296
11.3. The new role of competition law in labour markets .....	299
11.4. Compensations and damages as a direct tool for redistribution .....	304
(a) Targeted compensations .....	304
(b) Damages .....	308
11.5. On the choice of the welfare criterion .....	312
Chapter twelve: thesis conclusions .....	317
Appendix .....	322
Bibliography .....	328

## CASES AND STATUTES

---

### The United States of America

Sherman Antitrust Act of 1890

The Clayton Act of 1914

The Federal Trade Commission Act of 1914

The Robinson-Patman Act of 1936

---

Case Name	Index
<i>Allied Corp</i> FTC File No. 811 0191 (1982)	119
<i>Brooke Group Ltd. V. Brown Williamson Tobacco Corp.</i> , 509 U.S 209 (1993)	119, 131
<i>Brown Shoe Co. v. United States</i> , 370 US 294 (1962)	118
<i>Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.</i> 429 U.S. 477, at 488 (1977)	118
<i>Chicago Board of Trade v United States</i> , 246 US 231 (1918)	118
<i>Continental TV Inc. v. GTE Sylvania</i> , 433 U.S 36 (1977)	118
<i>Federal Trade Commission v. Procter &amp; Gamble Co.</i> , 382 US 568 (1967)	118
<i>Leegin Creative Leather Products, Inc. v. PSKS, Inc.</i> , 551 U.S 877 (2007)	119
<i>Matsushita Elec. Indus. Co. v. Zenith Radio Co.</i> , 475 U.S 574, 598 (1986)	119, 130
<i>Reiter v. Sonotone Corp.</i> , 442 U.S. 330, 343 (1979)	119, 128
<i>Standard Oil co. v. United States</i> , 221 U.S 18-19 (1911)	117
<i>United States v. Aluminium Co.</i> , 148 F2d 416, 427 (2d Cir. 1945)	117
<i>United States v. AMR Corp.</i> , 335 F.3d 1109 (10th Cir. 2003)	131
<i>United States v. Associated Press</i> 52 F Supp 362 (SDNY 1943)	118
<i>United States v. Topco Assocs., Inc.</i> , 405 U.S 596, at 610 (1972)	118
<i>United States v. U.S Gypsum Co.</i> 438 U.S 422 (1978)	127
<i>United States v. Von's Grocery Co.</i> , 384 U.S 270 at 275 (1966)	118
<i>Version Communications Inc. v. Trinko, LLP</i> , 540 U.S 398 (2004)	119, 152

---

---

## The European Union

Treaty on the Functioning of the European Union (TFEU)

Protocol 27 on the internal market and competition, annexed to the Treaty of Lisbon, OJ 2010 C83/309

Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings

Directive 2014/104/EU of the European Parliament and of the Council of 26 November 2014 on certain rules governing actions for damages under national law for infringements of the competition law provisions of the Member States and of the European Union

Guidelines on the method of setting fines imposed pursuant to Article 23(2)(a) of Regulation No 1/2003 (2006/C 210/02)

---

Case Name	Index
Case C-177/16 <i>AKKA/LAA v. KP</i> EU:C:2017:689	152
Case 62/86 <i>AKZO Chemie BV v Commission</i> [1991] ECR I-3359	165, 166
C-32/11 <i>Allianz Hungária Biztosító Zrt v Gazdasági Versenyhivatal</i> , EU:C:2013:160	161
Cases T-191/98, <i>Atlantic Container Line v Commission</i> ('TACA') [2003] ECR II-3275, EU:T:2003:245	157
Case C-126/97 <i>Eco Swiss v Benetton International</i> [1999] ECR I-3055, EU:C:1999:269	149
Case C202/07 <i>France Télécom SA v. Commission</i> ECR 2009 I-02369, ECLI:EU:C:2009:214	166, 167
Case 85/76 <i>Hoffmann-La Roche v Commission</i> [1979] ECR 461, [1979] 3 CMLR 211	158
Case 22/78 <i>Hugin v Commission</i> [1979] ECR 1869, [1979] 3 CMLR 345	150
Case C-413/14 P <i>Intel Corporation v Commission</i> [2017] 5 CMLR 18	158, 167
Case 322/81 <i>Michelin v. Commission</i> [1983] ECR 3461	152
Case T-203/01 <i>Michelin v Commission</i> [2003] 2003 II-04071, ECLI:EU:T:2003:250	157
Case C-209/10 <i>Post Danmark v Danish Competition Council</i> [2012] 4 CMLR 23	166
Case C-333/94 <i>Tetra Pak International SA v Commission</i> [1996] Tetra Pak II, ECR I-5951; [1997] 4 CMLR 662 (General	166
Court decision Case T-83/91 Tetra Pak II [1994] ECR II-755; [1997] 4 CMLR 726	
Case C-8/08 <i>T-Mobile Netherlands</i> [2009] ECR I-4529, EU:C:2009:343	117, 149
Case 27/76 <i>United Brands v Commission</i> [1978] EU:C:1978:22	152

---

## TABLES AND FIGURES

Headline	Index
Figure 1: The direct static effects of competition policy on competition and its link to economic inequality	91
Figure 2: Income and wealth inequality trends in the US	107
Figure 3: Redistribution trends in the United States	108
Figure 4: aggregated markups trends in the United States	109
Figure 5: Supreme Court ideological continuum in the United States	122
Figure 6: left side (a) Total merger cases. (b) Total U.S. mergers. (c) Ratio; right side (a) Sherman Act section 1 (restraints of trade) (b) Sherman Act section 2 (monopolization) cases	125
Figure 7: Abuse of dominance cases, US vs EU	126
Figure 8: (a) Ratio Second Request. (b) Total Criminal Fines	127
Figure 9: Abuse of dominance norm, 1960-2010	132
Figure 10: US Antitrust scale	135
Figure 11: US Antitrust scale and markups	136
Figure 12: Markups and income shares in the US	138
Figure 13: EU merger investigations by year	160
Figure 14: EU Cartel fines by period	161
Figure 15: Markups over marginal costs by country	178
Figure 16: A simple DID model	182
Figure 17A: Similarity to the US DID model, treatment periods	188
Figure 17B: Similarity to the US GSC model, treatment periods	188
Figure 18: 10% income share similarity to the US model, OECD	199
Figure 19: 10% income share similarity to the US model, EM algorithm, OECD	201
Figure 20: 10% income share similarity to the US model, EM algorithm, OECD	202
Figure 21: 10% Income Share, similarity to the US, EM algorithm, OECD	203

---

Figure 22: Treatment effects US model 10% Income Share, MC model, OECD	204
Figure 23: 10% Income share, placebo' legal origin', OECD	205
Figure 24: CLI averages by income group, and OECD membership	221
Figure 25: GCI overall averages, and by income group	222
Figure 26: CPI overall average, and by country	223
Figure 27: GCI Effectiveness of anti-monopoly policy and The Gini disposable income	224
Figure 28: CLI and The Gini disposable income	224
Figure 29: CPI and The Gini disposable income	224
Figure 30: GCI and perceived competition intensity	227
Figure 31: Percentage change of workers' productivity vs hourly compensation in the US, 1960-2020	243
Figure 32: Distribution of CPI sub-indices by country	254
Figure 33: Labour share and the CPI	255
Figure 34: Scatter Labour - Capital share and markups	259
Figure 35: Marginal effects of the CPI index on the labour share, for different levels of the CLI	270
Figure 36: Consumer surplus loss and DWL due to price increase at different base prices	314
Figure A1: ACF US top 1% Income Share	325
Table 1. Conditional Effects on 1% Income Share, Markups-FD, US	139
Table 2. Summary statistics	192
Table 3. Gini, similarity to the US antitrust	194
Table 4. Top Income Share, similarity to the US antitrust	196
Table 5. Treatment Effect on the Treated, GSC models	204
Table 6. Treatment Effect on the Treated, GSC Placebo models	205
Table 7. World, GCI perceived competition and trust in competition law	227
Table 8. OECD vs non-OECD, perceived competition and trust in competition	228
Table 9. GMM, perceived competition and trust in competition law, sub-samples	230
Table 10. log-log, CLI and income inequality, World data	232

---

---

Table 11. log-log, CLI and income inequality, OECD data	233
Table 12. log-log, CLI controls sensitivity, OECD data	234
Table 13. GMM, CLI and income inequality	235
Table 14. GMM, CLI and wage inequality	236
Table 15. Descriptive statistics	255
Table 16. CPI and Markups	258
Table 17. Univariate model with different sets of FE	260
Table 18. Regression results: Labour share and aggregate CPI	261
Table 19. IV 2SLS regressions-CPI	265
Table 20. Interactions Regressions	269
Table A1. Countries assigned GSC, US-OECD model	322
Table A2. Gini, similarity to section 2 (monopolisation), among countries which resemble the US model	322
Table A3. Top Income Shares, similarity to section 2 (monopolisation), among countries that resemble the US model	323
Table A4. Gini and Income Share, System-GMM, OECD	324
Table A5. Antitrust Scale, markups US time-series	324
Table A6. Conditional effects on 1% income share, FD, US	325
Table A7. 2SLS US Time-Series	326
Table A8. Description of the 22 ISIC industries	327

---

## CHAPTER ONE: INTRODUCTION TO THE THESIS

### 1.1. Background

After decades of prosperity in the post-World War II area, with economic growth and a decline in inequality, something in the capitalist-democracy mechanism broke loose (Hopkin 2020).<sup>1</sup> Economic inequality levels have been increasing in many parts of the world (Alvaredo et al. 2013a; Alvaredo et al. 2016; Saez 2017)<sup>2</sup> following years of decline. The rich become wealthier, the middle-class declines in income, and the poor struggle to remain afloat. Despite political discussion and efforts to promote equality in some jurisdictions, social polarisation increases (Alesina and Perotti 1994: 362),<sup>3</sup> and the current health and economic crises tear apart the fabric of our societies (van Dorn, Cooney, and Sabin 2020).<sup>4</sup>

Researchers and regulators gather up the usual suspects: regressive tax policy, trade (globalisation), and technological changes. While some commentators have recognised that the way in which competition law is structured and applied might also contribute to this trend (Stiglitz 2012; Baker and Salop 2015; Furman and Orszag 2015; Barkai 2016;

---

<sup>1</sup> The past four decades have been prosperous ones. Globally, economic growth has increased by 73% per capita (USD constant) since 1980, with growth was even higher at 85% for the world's most industrialised countries. GDP per capita between 1990 and 2018 according to the [world bank indicators](#).

<sup>2</sup> The latest UN Human Development Report (UNHDR, 2019: 111, 132) records that income inequality based on the top 10 percent's income share has risen since the 1980s. In 2017 the global top 1% owned more than 33% of the total wealth while the bottom 50% owned less than 2%.

<sup>3</sup> Most scholars support the notion that inequitable distribution of resources and wealth will provoke some form of instability. On the other hand, some scholars emphasize that the key factor affecting instability is the 'perceived' inequality. See for example Gimpelson and Treisman 2018.

<sup>4</sup> According to the [Institute for Policy Studies](#), between March 18 and Sept. 15, the total net worth of the US billionaires rose from \$2.95 trillion to \$3.8 trillion. Gains of \$141 billion a month, \$32 billion a week, or \$4.7 billion a day. From mid-March to mid-August, the collective work income of rank-and-file private-sector employees—all hours worked times the hourly wages of the entire bottom 82% of the workforce—declined by 4.4%.

Lianos 2018), to date, the debate has mostly been limited to abstract legal and policy arguments. Perhaps most critically, it has been based on limited empirical analysis of the actual interaction between competition law and inequality (Hovenkamp 2005: 3; Khan and Vaheesan 2017: 235, 245).<sup>5</sup>

In this literature, there appears to be widespread acceptance of an a priori relationship between effective competition law, intense competition, and societal benefits, including reducing economic inequality (i.e., fair prices and wages). However, notwithstanding this widely held claim, the exact nature of the relationship between competition law and inequality remains mostly unexplored. Only a small number of studies explored the empirical links between competition law and inequality. Instead, much of the discourse on this topic focuses on the normative question of whether competition law should or should not concern itself more urgently with matters of inequality, which can often get caught up in technical debates about which welfare standards competition law should pursue.

## **1.2. Motivation**

The thesis aims to address this literature gap, providing empirical evidence of the role competition law might have played in enabling economic inequality to rise in the past and debating its role in shaping the future – all with quantitative metrics in focus.

---

<sup>5</sup> Despite being considered as one of the upcoming progressive voices in legal research (referred to by their opposition as ‘Hipster Antitrust’) Khan and Vaheesan in their article about Market Power and Inequality, do not stray far from the consensus: ‘To be clear, our argument is not that antitrust should embrace redistribution as an explicit goal, or that enforcers should harness antitrust to promote progressive redistribution. Instead, we hold that the failure of antitrust to preserve competitive markets contributes to regressive wealth and income distribution and-similarly-restoring antitrust is likely to have progressive distributive effects.’

The study of inequality and its sources remains a complex interdisciplinary problem.<sup>6</sup> The nature of the problem requires the use of a variety of tools and perspectives. Specifically, the interdisciplinary approach can have advantages on the two separate disciplines of law and economics. Most of the research methods employed in the thesis are limited in the study of law,<sup>7</sup> restricted by data and measurement errors, making research attempts an academic landmine. Nonetheless, the study aims to shed light on the overarching empirical question: *what is the effect of competition law on economic inequality?*

The thesis does not aim at establishing causal relationships, and its expected contribution is not contingent on doing so. The nature of the relationship between competition law and inequality remains largely unexplored theoretically or empirically. Causality is often not a zero-one result in social sciences. It is more often a goal reached by the continuous efforts of many over time. The thesis's main contribution is laying the theoretical foundations for how and whether competition law and competition enforcement could affect economic inequality and testing sub-hypothesis related to the theory. To the best of my knowledge, Part II of the thesis offers what I believe is one of the first empirical

---

<sup>6</sup> 'Inequality is both very simple and very complex. It is simple and intuitively appealing enough to move people in very different settings and societies throughout history and across the globe, while being at the same time so complex as to engage some of the most gifted philosophers, political theorists, sociologists, and—not least—economists in teasing out its meanings and implications'. In the introduction by Salverda, Nolan, and Smeeding 2011: 7-8.

<sup>7</sup> Economic analysis of law refers to models for predicting behaviour responses (incentives) due to the laws. Trying to predict the consequences of the possible alternative laws, so that the law maker can select the rule which best serves to achieve the desired end. For a definition of positive versus normative economic analysis of law, see: Reimann and Zimmermann 2019: 826. The Thesis also integrates empirical estimations using methods of regression analysis taken from economic and other social sciences.

analyses of the links between competition laws, competition enforcement, and economic inequality.

The empirical investigation of the thesis seeks to contribute to the debate in several areas: First, the thesis aims to identify the *theoretical* microeconomic and macroeconomic links between competition and inequality exploring the current literature and the US case study. Second, the thesis seeks to *generalize* the US case study to a broader dataset of developed countries, exploring the relationships between the ‘model of law’ and economic inequality. Third, *abstracting* the potential links identified, the thesis uses panel data techniques to review the link between the scope of competition laws and economic inequality in OECD countries. Finally, using a more homogeneous panel data, the thesis utilises *advanced causal inference* techniques to review the link between the effectiveness of competition laws and the decline of the labour share.

Based on the empirical findings, Part III of the thesis addresses the following question: *What role can competition law play in distributing wealth and income?* I distinguish between two main avenues for competition law to advance equity considerations. The first, *pre-distribution*, (or ancillary), concerns the effect competition law enforcement generates through the promotion of greater competitiveness. The second, *re-distribution*, (or direct), relies on provisions that address inequality as a parameter influencing the conduct’s substantive assessment. Using this distinction, I then set out and describe various ways that competition laws can be used as a tool for the distribution of wealth and income.

### 1.3. Methods

The thesis utilises an economic analysis of competition policy and social sciences research methods. Competition law has gone hand in hand with economic analysis over its course of progress (Hovenkamp 2005: 60; Gerbrandy 2019), and this thesis is specifically interested in the economic outcomes of the policy. In that sense, economic analysis is the natural path to answer the research questions presented here.

The methods used in the thesis are well established within the social sciences. Panel-data regression analysis has been used for several decades in economics and political sciences, including advanced econometric applications such as the synthetic control method. These methods are a robust and effective way to answer the positive research question underlying the thesis.

Nevertheless, the study of competition laws and economic inequality should be handled carefully. Using highly aggregated country data, as well as simplified linear regression models, do not permit me to prove causal relations. Omitted variable bias<sup>8</sup> affects some of the estimations, and efforts to address other concerns are not bulletproof. To establish causal claims, more data and research are required. The thesis is a first but meaningful step in that direction.

As for the normative debates, it is tempting to set this issue up as a battle of light against darkness or refer to current status quo defenders as ‘Conservative Yuppies’ and new thinkers as ‘Hipsters’ (Marco Colino 2018: 5). This thesis explicitly seeks to eschew

---

<sup>8</sup> Omitted variable bias refers to effect of missing variables in the empirical analysis which can be correlated with existing variables in the statistical model. The bias results in the statistical model attributing the effect of the missing variables to those that were included in the estimation equation.

such divisions, seeking to bridge disciplinary divisions by deepening our knowledge on the positive effects of competition law and market dynamics and by reviewing normative arguments from several viewpoints jointly. While debating possible policy considerations, I try to acknowledge the limitations of the findings and possible paths for improvements that could help with the research question's empirical study.

#### **1.4. Key empirical findings**

The main conclusion which can be drawn from the thesis's theoretical overview is that concentration of product and labour *market power* may have contributed to macroeconomic trends of rising economic inequalities in some developed economies. Market power has been rising transferring income and wealth from consumers and employees in the bottom and middle distribution percentiles out to those who possess it at the top end.<sup>9</sup> Competition is about winners and losers, but no game is worth playing if your odds of winning are scarce. The biggest losers from the rise of market power are the working low and middle classes, who are directly affected by higher prices and stagnated wages.

Overall, the thesis empirical findings support a link between competition law and enforcement and economic inequality via its relationship with the levels of competition. Market power has been allowed to rise under competition laws in key developed countries, especially in countries closer to the American legal antitrust tradition. The US case study supports the hypothesis that major changes in Antitrust laws have been correlated with macroeconomic trends of rising markups, declining labour share and rising economic

---

<sup>9</sup> This basic observation is old and goes back to the middle of the last century, as the Federal Reserve Chairman at the time referring to market power as: 'A giant suction pump [...] increasing portion of currently produced wealth'. Eccles 1951: 76.

inequality. The thesis also finds evidence that countries which adopt the text of Antitrust laws (as opposed to EU text) are more likely to show higher levels of economic inequality.

The relationship between the scope of competition law and income inequality was somewhat inconclusive at the macro level using a large cross-country dataset, observing a statistically significant relationship in some specifications, but not all. Nevertheless, I find a positive link, statistically significant, between an effective competition policy and the labour share trend, exploring a data set of highly developed countries. The main mechanism through which competition policy affects the labour share is its ability to constrain markups: competition policy is negatively correlated to markups, while markups are negatively correlated to labour share.

## **1.5. Outline of the thesis**

The thesis is organised into three parts:

Part I includes three foundational chapters: definitions, literature review, and theory.

*Chapter 2* develops the building blocks required to conceptualise the empirical links between competition laws and economic inequality.

*Chapter 3* is a comprehensive literature review. First, I review the legal debate on competition law goals and its roots in the philosophical theories concerning justice and inequality. Next, I review the law and economics debate on taxation's superiority over all other legal tools for addressing inequality. I show that the assumptions in the base of this literature are unconvincing, and as such, it cannot support the conclusion reached in the scholarly debate.

The final section of the chapter reviews the current empirical findings on the effects of competition law on macroeconomic factors such as productivity and economic growth (but not on distributional outcomes). This research line provides the theoretical foundation and the metrics to explore the law's effects on economic inequality via competition.

*Chapter 4* aims to provide a solid theoretical link – the causal mechanism – to discuss the dynamic and static effects of competition (market power) on economic inequality. Competition law is all about competition. If we believe competition affects economic inequality, the effects of competition law on the former could be linked to economic inequality. This is the causal mechanism at the core of the thesis. This chapter also considers the relationship between economic inequality and poverty and explains why I believe competition law is well suited for addressing inequality and not only poverty.

Part II, the empirical pillar of the thesis, encompasses four studies on different aspects of the relationship between competition law and economic inequality. The chapters progressively grow in novelty and generalization as the thesis unfolds from chapter five to chapter eight.

In *Chapter 5*, I focus on the structural changes which occurred in the US during the 1970-1980 period. This chapter is primarily descriptive, looking at the US's macroeconomic trends and how they are linked to the antitrust model's institutional drift. In terms of institutions, the rich data, the US Supreme Court political tendency, and actual enforcement efforts tell a more precise story of deregulating market power in the US.

In *Chapter 6*, I take advantage of a new and extensive dataset on competition laws developed by Bradford and Chilton (2018) to explore whether countries with a similar, in terms of text only, competition laws to the US tend to exhibit a higher level of economic

inequality. This chapter combines doctrinal (qualitative) legal research and causal inference techniques to establish the empirical link between the US antitrust model, competition, and economic inequality.

*Chapter 7* provides a cross-country perspective, generalising previous descriptive findings in the US and across OECD members to a broader world dataset. Following different competition law measures, including Bradford & Chilton, Competition Law Index (CLI), I explore whether the scope of competition law is linked to the level of economic inequality.

*Chapter 8* provides a cross-country-industry perspective, focusing on the links between competition law effectiveness (enforcement and institutions), markups, and the labour share. Here I explore whether the effectiveness of competition law is linked to the higher levels of labour share.

In Part III, I explore the possible use of competition law as a pre-distribution mechanism vs a redistribution mechanism. Based on the thesis findings, I argue that thinking of competition law in this way highlights both its advantages and disadvantages as a policy affecting economic inequality.

*Chapter 9* sets the scene for the normative discussion by drawing out and summarising the key insights from the empirical analysis. Overall, the thesis empirical findings support a link between competition law and enforcement and economic inequality via its relationship with the levels of competition (proxied by markups) and suggest greater attention to the effects of market power on the low and middle classes.

*Chapter 10* sets a new terminology exploring the two possible avenues to employ competition law while advancing equity concerns considering the insights from the law and economics literature reviewed earlier:

(i) pre-distribution, improving the effectiveness of competition policy in specific areas of competition to affect the distributional results of competition.

(ii) redistribution, making direct use of competition law as a mechanism for distribution affecting the substantive analysis of anticompetitive acts and harm.

Following this terminology, I argue that to avoid inefficiency competition law should focus on the first avenue developing more data and robust models before expanding the use of the law into the second avenue.

In *chapter 11*, the thesis main argument is employed, suggesting practical ways to implement the study results and normative debate. This chapter tackles the implementation of the analysis, moving from the more conservative suggestions like setting new priority tools for enforcement of the law, to more experimental suggestions like offering treble damages in specific cases involving poor consumers. Overall, the chapter offers five possible paths for policy and further research on the topic. Finally, *chapter 12* concludes the thesis, summarising the debates and empirical findings.

## **PART I: FOUNDATIONS**

Part I of the thesis considers the key conceptual interactions between competition law, competition, and economic inequality. It seeks to identify the mechanism of effect – how competition law might affect inequality via competition at the theoretical level.

I review three streams of literature: legal, law and economic and empirical to assess the current debates surrounding the overarching research question and mark the gaps. Building on this literature, I suggest an analytical framework for investigating the law's link and distributional outcomes.

This analytical framework suggests that any causal link resulting from competition law passes through the mechanism of competition. For this reason, I must first explore the empirical links between competition and economic inequality before studying the effects of the law.

The relationship between competition and economic inequality is separated into dynamic and static effects of competition. I review the economic literature to establish the key effects of competition on growth, innovation, poverty, and inequality. Finally, I explain why I believe competition law is well suited for addressing inequality and not only poverty.

## CHAPTER TWO: DEFINITIONS

This chapter sets the background and building blocks required for the thesis by offering a review of four key areas: Competition law, Competition law indicators, Competition and market power, and Economic inequality.

### 2.1. Competition law

Competition laws are defined in this thesis as laws enacted by states to safeguard the process of competition by ensuring free rivalry between players in the given market in the pursuit of consumer welfare and economic efficiencies. Depending on the country, the competition enforcement toolbox may include legislation, judicial and administrative powers of enforcement, and private litigation rights. The laws seek to protect the competitive process in the marketplace and prevent it from being distorted. While this fundamental economic rationale for such laws is common across jurisdictions, the specific *goals* pursued through the laws enacted by each jurisdiction can vary (Ezrachi 2017). Some competition laws can include broader public policy goals such as protecting smaller producers or reducing jurisdictional barriers to facilitate the creation of a single market across multiple jurisdictions. The EU ‘common single market’ is an obvious example, which I will elaborate on in the following chapters. Another striking example, with immediate relevance to the thesis, is South Africa, where the Constitution requires affirmative action empowering historically disadvantaged groups (South Africa Constitution Sec. 9(2)). In line with this requirement, the country’s competition laws incorporate inclusiveness as a relevant value (Fox 2000). The Competition Act of 1998 aims to promote, alongside the more traditional provisions: ‘greater spread of ownership,

in particular, to increase the ownership stakes of historically disadvantaged persons' (The Competition Act 1998).<sup>10</sup>

Most jurisdictions include consumer welfare<sup>11</sup> and efficiency<sup>12</sup> (or total welfare) as the core goals of competition law. While fundamental competition law principles are similar across the world, it is essential to remember that competition laws are not an international construct but are enacted by each jurisdiction to safeguard the domestic market. These national variations, specifically between the United States of America (US) and European Union (EU) competition laws, will be further explored later in the thesis.<sup>13</sup>

Alongside diversity in goals, the *scope* of the competition laws enacted in most jurisdictions (i.e., what actions are prohibited) can also differ in meaningful ways. Most competition laws contain three elements: prohibitions on restrictive agreements between competitors without any countervailing benefits (cartels); provisions that prevent entities with substantial market power from abusing that position to the detriment of consumers (monopolising or abuse of dominance); and rules designed to prohibit mergers or concentrations which will result in a substantial lessening of competition (merger control). However, within these three areas, the precise scope of competition laws can differ significantly across jurisdictions, meaning that the specific types of conduct and behaviour

---

<sup>10</sup> <https://www.comptrib.co.za/legislation-and-forms/competition-act>.

<sup>11</sup> Through the safeguarding of free and fair markets, competition laws promote *consumer welfare* – that is, the benefits derived by customers from the consumption of goods and services. Competition law is there to ensure that we get more out of the market dynamic. That we get better products and services at lower prices.

<sup>12</sup> By maintaining a competitive environment, sellers will strive to reduce costs and optimise efficiencies in production (production efficiency); and will invest in research and innovation in the long run so to improve their production process, and chances of winning the competition (dynamic efficiency). By allowing more efficient firms to enter and gain market share, at the expense of less efficient firms' resources flow to the most efficient firms (allocative efficiency).

<sup>13</sup> When referring to the US competition law, I use the term Antitrust, which is the known name of the regulation.

which are prohibited under the law can vary or can be subject to arguments about countervailing efficiencies (Hylton and Deng 2007; Nicholson 2008; Voigt 2009). Many jurisdictions also provide competition law exemptions for specific activities (e.g., collective bargaining in labour markets) and sectors, including critical economic sectors such as agriculture, technology and defence, and government-owned bodies and entities' activities.

Perhaps the greatest area of variation across jurisdictions is how and by whom competition law is enforced. The scope of the laws can be misleading if some provisions are not enforced in practice. Moreover, a clear distinction between a-priori similar laws is between public and private enforcement, and which of these serves as the primary enforcement driver. Public enforcement refers to legal action initiated and funded by the state. Given public resource constraints, a major differentiating factor concerns the prioritisation and case selection decisions made by public enforcement bodies in different jurisdictions and over time: i.e., which markets and sectors they decide to devote their scarce enforcement resources. Private enforcement is initiated by bodies such as private firms, NGOs, and individual litigation. It is similar to other types of consumer action. The private actors choose to enforce the competition laws in the areas where they have been a directly affected party. Here too, resources can be determinative of which actions are pursued through the courts.

In sum, although almost every country in the world has enacted competition laws, primarily to address the risks of concentrations of economic power, the goals, scope, and enforcement of competition laws can differ significantly across jurisdictions and over time.

## 2.2. Competition law indicators

In the context of this thesis, this variation provides a valuable opportunity to examine how each of these different dimensions of competition law (goals, scope, and enforcement) might affect the intensity of competition and, in turn, might be linked to economic inequality. For the empirical scholar, these subtleties pose a challenge. How to quantify competition law and policy?

The first measures for competition law were assembled by private institutions in the international competition community. Since 1979, The World Economic Forum (WEF) has been publishing an annual survey on a set of countries as a part of its ‘Competitive Ranking’ called GCI – The Global Competitiveness Index. The rating tracks the performance of close to 137 countries on 12 pillars of competitiveness.<sup>14</sup> The WEF defines competitiveness as ‘the set of institutions, policies, and factors that determine the level of productivity of an economy, which in turn sets the level of prosperity that the country can achieve.’ One of these 12 pillars is the ‘Market Component’, which is aimed to measure competition in economic markets.

Scholars have used this index to understand better the link between competition and enforcement to growth factors, as I will later review. The main problem with such indexes<sup>15</sup> is that they are based on a survey, in this case, a survey of business leaders and

---

<sup>14</sup> <http://reports.weforum.org/global-competitiveness-report-2015-2016/competitiveness-rankings/>

<sup>15</sup> Another important source for competition law policy measures is The Global Competition Review (GCR). The GCR publishes an annual ‘Rating Enforcement’ survey on the effectiveness of antitrust institutions and authorities. Each year the GCR sends a questionnaire to different competition authorities asking about various aspects of antitrust enforcement, as well as the head of the agency’s assessment of the agency’s performance. Additional respondents to this survey include practitioners (lawyers and economists), academics and local journalists covering the field, who are also questioned about the authority’s professionalism and independence. The responses, along with public reports, add to the information which is gathered into the relevant year’s GCR database. This

practitioners worldwide. In that sense, it is a measure of the ‘perceived’ competition or policy, not an actual one, and can be biased in many ways (Voigt 2009, 1226). On the other hand, Kovacic et al argue: ‘There is currently an absence of well-defined, generally accepted scoring rules for evaluating competition agencies and their programmes [...] a frequently used proxy for measuring agency performance is to track levels of activity – especially the initiation of cases – over time. Activity levels do not answer hard questions about an agency’s effectiveness, but the reporting and tracking of activity levels supply necessary inputs into the assessment of agency performance’ (Kovacic, Hollman, and Grant 2011, 36). So, survey data is not much different from input and output data – it requires careful descriptive combinations of observations to evaluate a policy.

One of the first attempts to create a non-survey measure for competition laws regimes was introduced by Nicholson (2008). Nicholson Antitrust Law Index (ALI) reflects the ‘law of the books’ (looking only at the legislation itself) as a way to measure a country’s level of competition law scope and intensity. It does not reflect any effectiveness or actual competition. Nicholson’s index includes three broad dimensions of competition policy: Regime Structure including scope, structure, and available remedies; Merger Policy including notification, assessment criteria, and rights of private enforcement; and Anti-competitive Practices including dominance and restrictive trade practices. His research examines 52 countries to study whether a competition regime contains these formal characteristics and awards one or two points if they exist (binary questionnaire). Each

---

is probably one of the most advance datasets in the field, but it suffers from the fact that is gathered by the GCR under its complete prerogative, with little transparency in the process, and a simple ‘Five Star’ ranking system. It is not intended for empirical analysis of international competition policy. Other institution such as the International Competition Network (ICN) or the Competition Law and Policy and Consumer Protection Branch (UNCTAD) have also contributed to the creation of assessments of competition laws and institutions in the international level.

country is classified on a scale from zero (least effective) to 31 (most effective). He finds that small and prosperous economies may have a ‘weaker law’ on the books, as opposed to large and developing countries, which have stronger ones. This finding reflects the theoretical element of the ALI, which captures at best the ‘law of the books’.

Hylton and Deng (2007) followed Nicholson's methodology of a templet questionnaire and constructed a scope index running from zero to 31<sup>16</sup> to examine competition law's effect on the intensity of competition within a nation. They follow Nicholson's categories to create a quantitative measure of the competition law ‘net size’ using a dataset of 102 countries. In this sense, their study was the first to look at a large panel of states (all countries enacted competition laws at the time) (Hylton and Deng 2007, 276). The authors acknowledge key differences in interpreting the laws and distortion arising from ambiguous laws (Hylton and Deng 2007, 277–78). Nevertheless, together with Nicholson, their main advantage has been the design of an objective measure not based on practitioners’ questioners.

Voigt (2009) offered new straightforward indicators for the effectiveness of the competition policy, trying to suggest a measure that goes beyond scope. Voigt starts by reviewing the previous attempts to quantify and measure the effectiveness of competition laws but is quick to depart from this body of literature. Voigt claims that this body of literature is based on ‘subjective’ indicators from surveys of business opinion to assess a country's competition policies and, therefore, cannot be reliable for robust economic

---

<sup>16</sup> It is actually 32 points because a country gets 2 points if the criterion premerger notification is satisfied. No justification is provided for this coding.

analysis of law. Voigt also departs from the concept of ‘law of the book’, emphasising the need to examine the law in practice.

Voigt offers four ‘objective’ competition policy indicators that deal with: (1) the substantive content of competition laws, (2) the degree to which they incorporate an economic approach, (3) the formal independence of the competition agencies that are to implement the competition laws, and (4) the factual independence of the competition agencies. He uses a dataset of 58 countries with a known competition policy and 34 countries known for not having competition laws. This data is used to look at the effect of having legislation that is aimed at protecting competition (using a binary indicator), next to having a broader sense of competition policy which is reflected by the absence of barriers for international trade, barriers to entry of new firms and bureaucratic impediments to the management of firms. As mentioned in the introduction to Part I, Voigt’s focus is on the law’s effects on macroeconomic development factors, such as productivity and GDP.

Gutmann and Voigt (2014) debate the move from simple dummy variables (capturing the existence of competition law), with or without a time factor, to surveys-based measures such as the GCI and scope of law measurers reviewed above. They claim that while these approaches advanced the research in the field, they are missing elements for analysing macro-economic effects. According to the authors, the best indexes will be those which measure the objective input (budget and staff, for example) or output (number of decisions, for example) or more substantial indexes like Voigt's (2009) indicators for institution-level performance. In practice, their analysis finds that reviewing the different measures, in general, the bivariate correlations between them are pretty high, suggesting that overall, they measure up relatively the same (Gutmann and Voigt 2014, 7). In the

following chapters, I discuss the latest index of the scope of the law (Bradford and Chilton 2018) and more advanced policy assessments by Buccirosi et al. (2013), which are used in the analysis of Part II and are discussed further in the next chapters. The problem of quantifying competition law and its enforcement is at the core of this thesis and one of its main limitations.

### **2.3. Competition and market power**

Competition can be conceived of in different ways (Stigler 1957; Vickers 1995): as a discovery procedure which through trial and error leads to a tendency for goods and services to be produced that consumers most value (Snow 2002: 9); as a process of rivalry among parties over a scarce resource: ‘a rivalry between individuals (or groups or nations), and it arises whenever two or more parties strive for something that all cannot obtain’, (Stigler 2008); and as a means of promoting innovation by unlocking the creative destruction (Schumpeter 1942: 83).

Notwithstanding these different characterisations of competition, a widely accepted indicator of competition’s intensity is the market power held by a seller or a buyer of a product or service at a particular point in time. According to the standard economic textbook, a supplier has (product) market power if he can set prices above marginal cost (Carlton, Perloff, and van’t Veld 1990: 154) or has the ability to set prices above some form of cost levels.

Although related, the concept of market power used in legal discourse is generally less strict and captured in concepts such as significant market power, dominance, or monopolisation. Market power is indirectly estimated via market structure (market shares)

or products' substitutability in many cases. The standard dimension of both the legal and economic concepts is that an entity (a buyer or a seller) has some degree of autonomy or independence in determining its prices or output levels (i.e., it is not a price taker in a market). Although rarely observed in practice, the concept of perfect competition is commonly used for exposition purposes to establish the 'competitive' or 'efficient' benchmark. However, most would agree with Stiglitz that 'Markets are not, in general, competitive; Even small deviations from perfect competition and perfect information matter' (Stiglitz 2017: 7).

Similarly, a monopoly is the textbook industry structure to explain the societal cost of market power. A single seller has market power in a monopolistic setting and can determine the price and output without regard to the underlying costs. Consumers do not have any substitutes and must accept the terms offered. Such market structures are observed in the utility sectors, such as energy and water, and for this reason, subject to ongoing ex-ante economic regulation, such as price regulation. In practical terms, these concepts are valuable for their theoretical use. In most markets, the supplier has some ability to raise prices (reduce output) above underlying costs, but this ability is constrained to some degree by other imperfectly substitutable products. Imperfect competition characterises many sectors of the economy where firms compete with one another and have some degree of market power, allowing them to earn returns above applicable costs. This type of competition has produced different economic models and is the focus of industrial organisation research.

Buyer power (monopsony power) can arise where there is a single buyer, or a small group of buyers, of a specific product, and this allows them to determine the prices offered

for such products. For example, supermarkets chains or cooperatives can determine the prices paid for agricultural products such as milk in some jurisdictions. Another example is healthcare systems, where, in many cases, the buyer is the state. The ability to exercise such buyer market power arises partly because of the significant, fixed investments made by the suppliers and the perishable nature of the products supplied.

Relevant to our discussion are labour markets which are analysed in a counter-intuitive way. In a classic economic model, the employee is the supplier, and the business is the buyer. In this model, we say that an employer has buyer power when he can set the wages rate (the price of labour) below the average labour cost (markdown). Recent studies of monopsony power in labour markets have focussed on specific sectors where, for various reasons, employees are limited in their ability to switch jobs or employers. Constraints on a worker's ability to switch employers can reflect geographical conditions (e.g., a small rural town with one larger employer) or specialised trade or skills (such as professional athletes, nurses, teachers).<sup>17</sup> Another factor is the decline of labour unions as a structural change influencing the balance between workers (supply) and employers (demand) and agreements (either tacit or explicit) among employers across a range of sectors and professions about the level of wages (e.g., low-skilled wages being kept at or below a 'living wage'). These recent trends will be further explored in the following chapters.

Levels of competition are measured by different proxies and are heavily debated in the economic literature. Besides survey data, which was mentioned, market concentration

---

<sup>17</sup> In the case of specialised trades or professions even though there is an ability to switch occupation this will often involve a substantial drop in wages.

levels, measured by the HHI index, for example, were considered the standard approach to assess competition by policymakers (De Loecker and Eeckhout 2018, 2). They can be used to estimate competition via market structure in both product and labour markets and are often available to policymakers as a first tool to assess market failures. However, more recently, these measures were argued to be ill-equipped as a direct proxy for market power (Nolan, Richiardi, and Valenzuela 2018: 25).<sup>18</sup> As explained, the basic definition (in both legal and economic terms) of market power is firms' ability to raise their prices above their costs, and HHI may offer a weak proxy for this ability. A better proxy may come in the form of markups – price gap over costs. Using metrics of markups regarding product market competition or markdowns (wages below productivity levels) regarding labour markets are now standard methods to estimate competition levels, next to concentration levels and profit rates (Gutiérrez and Philippon 2020). It has been argued that rising aggregated markups are a strong indication of decreasing competition (De Loecker and Eeckhout 2017; De Loecker and Eeckhout 2018). The main constraint is the availability of such estimations, across-countries, and years. Therefore, in most cases, my empirical estimations rely on the data that has been made public. I will return to the limitations of using such estimations in later sections.

#### **2.4. Economic inequality and poverty**

Economic inequality is defined in the broad sense, including different concepts and measures of the distribution of economic resources. Three broad concepts of economic

---

<sup>18</sup> In Cournot quantity competition, the HHI is a direct indicator of market power, assuming products are considered homogenous. When products are differentiated (for example under the influence of brands), there is no longer a direct link between concentration and market power (Bresnahan 1989).

inequality are relevant to the conceptual framework: wealth inequality, income inequality, and consumption inequality.

Wealth inequality is the share of economic resources per unit in the economy (or the labour and capital shares of income combined).<sup>19</sup> Income inequality can be measured as the fraction of economic output that accrues to workers as compensation in exchange for their labour.<sup>20</sup> Such revenues can include wages from employment, returns or dividends from investments in property or shares, or social security payments or benefits. Income inequality can also be measured in pre- or post-tax. Consumption inequality is the share of resources consumed by the measuring unit. In other words, it often refers to differences in the expenditures that households make on nondurable or small semi-durable goods and services (D. Krueger and Perri 2006).

Numerous empirical studies have shown a divergence between income inequality and consumption inequality over time. Some studies concluded that consumption inequality is often lower than income inequality, reflecting that savings and borrowing are used to address temporary shocks to income (Li, Squire, and Zou 1998; Cai, Chen, and Zhou 2010).

The rise in income inequality is a common trend among developed countries, yet the factors contributing to the trend are very much idiosyncratic (Hoeller, Joumard, and

---

<sup>19</sup> Wealth inequalities include financial and non-financial assets, including real-estate and consumer durables, fixed claim assets (cash, deposits), shares in listed companies, equity interests in unincorporated business (small traders, farms) and other assets.

<sup>20</sup> The labour share is defined as the share of value added which is paid out to workers. It is therefore often also called the wage share. Generally, it is assumed that value added is produced with capital and labour as input factors so that  $Y = F(K;L)$  where  $Y$  is value added or output,  $K$  the capital input, and  $L$  labour. Subtract labour share from GDP, and you get the share of GDP going to owners (to capital).

Koske 2014). Moreover, understanding wealth inequality trends is seen as increasingly critical as wealth is substantially more concentrated than income. As such, changes in capital income could be linked to an increase in income inequality.<sup>21</sup>

Other inequality metrics are based on non-tangible measures such as opportunity inequality, social mobility, and human capital distribution. While such inequality measures are also potentially linked to competition and competition law, particularly in a dynamic context, it can be challenging to define such inequality concepts in a way that allows for the systematic collection and analysis of data.

Alongside these relative inequality metrics, various absolute economic inequality measures such as poverty indicators focus on the resources available to the lowest wealth or income percentiles (Sachs 2006). Poverty can be defined in monetary terms or absolute terms as access to sufficient food, water, health care, basic sanitation, and housing. For example, the World Bank uses the benchmark of one US dollar and between 1-2 US dollars to measure extreme and moderate poverty. A person is said to be in extreme poverty if she or he has 1 US dollar and moderate poverty if she or he has between 1-2 US dollars every day. Of course, in developed countries this absolute measure is irrelevant as the price index (goods and products) of essential goods is much higher, meaning that even absolute poverty measures require adjustment. Definitions of the poverty line vary considerably among countries especially between the developed and developing parts of the world.

The OECD offers a measure of the poverty line that is dependent on the median household income of the country studied. The poverty line is taken as half the median

---

<sup>21</sup> UNHDR (2019: 128) As the latest UN Development Report notes ‘a consistent and global perspective on economic inequality—one that views economic actors not only as consumers and workers but also as owners and investors—requires putting equal emphasis on income and wealth.’

disposable (after-tax) household income. Using this definition, they can estimate the percentage of people living under the poverty line. It is important to notice that such measures differ in terms of the relative income levels the poverty line represents even within the developed world. Country estimates are based on population-weighted subgroup estimates from household surveys. When referring to poverty or extreme poverty in this thesis, I am referring to measures that are closer to the general, intuitive form of poverty, meaning access to sufficient food, water, health care, basic sanitation, and housing. In one country this might mean over 12 dollars a day (the US for example) and in another, it might be much less. As I will explore in later parts the line between the poor and low and middle classes is blurring in some of the parts of the developed world by the phenomenon of the ‘working poor’.

Millions of full-time workers in the US rely on federal health care and food assistance programs (such as food stamps), according to a report from 2020 of the US Government Accountability Office (GAO 2020). These full-time workers are employed in different sectors such as leisure and hospitality, wholesale and retail, and even manufacturing and business services.<sup>22</sup> The bottom and middle working classes are the ones with the greatest potential to gain from more effective competition and competition law.

I will return to the normative arguments for why inequality should be the aim of competition law instead of poverty alone in the following chapters after reviewing the

---

<sup>22</sup> The report is available at <https://www.gao.gov/assets/gao-21-45.pdf>. See also Matt Day and Spencer Soper, “[Amazon Has Turned a Middle-Class Warehouse Career into a McJob.](#)” *Bloomberg*, December 17, 2020.

philosophical, legal, and economic debates, which are crucial for a full exploration of this question, in section 4.4 Between economic inequality and poverty).

The empirical analysis which follows uses economic inequality as the benchmark for comparison and mostly income inequality. The decision to focus on economic inequality and income rather than opportunity inequality or wealth inequality in this thesis is justified first from practical reasons. The thesis relies on metrics for income and wage inequality due to data availability. Wealth inequality measures could have been a better proxy for this thesis; however, such estimations are only available for a few countries and a short period. Opportunity inequality as explained is even more challenging to quantify and there is a lack of consensus on how to measure it.

In each of the empirical studies in Part II, I will refer to the relevant economic inequality measure used and the potential differences in the estimations the metrics could cause. For example, using Gini indexes compared to income shares could result in more negligible effects, as they represent the whole distribution of income, masking the very bottom and top shares. The task of putting together competition law, competition, and inequality metrics is complex, even without considering other relevant factors. The next chapter will provide the thesis's primary motivation, looking at the legal work on the topic next to the parallel debate in the law and economics literature.

## CHAPTER THREE: A CRITICAL VIEW OF THE CURRENT LITERATURE

### 3.1. The legal and philosophical debate

From a moral standpoint, John Rawls argued that the abilities or circumstances that determine our social standing are arbitrary (Rawls 1971). Talents, IQ, or even birth rights such as being born to the royal family are nothing more than a random allocation in the lottery of life. Consequently, economic inequalities cannot be deserved – no one deserves to be born to a low-income family. From this point of view, equality is the *fairest* way to share scarcity. It does not imply total equality but a minimum basket of goods that the worst-off groups in society should receive. Rawls's theory challenged utilitarianism (utility), the predominant view of justice among philosophers (and economists) at that time, offering his 'difference principle' considering incentives for work and success, which might be Pareto-efficient<sup>23</sup> over equal distribution as such. Rawls included food, housing, and education in his primary goods basket (Roemer 2011, 24–26). Such a viewpoint could justify eliminating poverty as a central policy goal.

Other philosophers challenged this viewpoint. The most prominent example, Nozick (1974), argued that luck might be part of our position in life, but individual choices given our starting points justifies a moral property right in our achievements in life. If people enjoy equality of opportunity (including strong non-discrimination rights), unequal outcomes are ethically accepted. Redistribution, under this view, should be kept to the minimum required to prevent behaviour distortion that is socially unwanted (see in the next

---

<sup>23</sup> Pareto efficiency refers to a situation in which no person in society could be better off without causing at least one individual to be worse off.

chapter for the law and economics debate on distortions). Nozick approach is based on the concept of voluntary exchange of goods (initially just endowments) – or in other words, *markets*. Nozick's theory is closely related to the concept of competition and, therefore, competition law. It is an appealing theory to support anything from poverty reduction to free access to markets. However, these ideas could be challenged: legally speaking, unowned resources could be viewed as jointly owned by the community from the moral viewpoint. So, the solution via competition of the scarcity problem requires an inegalitarian rule for privatization.

Later work by Sen (1980) focused on equalizing individual abilities to *function*. For Sen, functioning is a set of abilities to live (perform) an everyday life: being healthy, literate, or even freedom of movement. Making a list for normal life conditions runs into some of Rawls' argument problems and eventually could include even happiness, making the notion practically closer to welfare ideas that economists were focused on, viewing income or wealth as instrumental for producing welfare (well-being). Such utilitarian economic theory was later replaced with Walrasian (Walras 1954) ideas or competitive equilibrium of a market economy, which is independent of any interpersonal comparisons of utility that society might wish to equalize or maximise. However, our inability to make such practical comparisons of utility and the theoretical justification for ignoring them as part of Walrasian theory does not make them meaningless. It only means that a market economy cannot by itself deliver justice (Roemer 2011, 25).

Finally, Dworkin (1981a) challenged egalitarian theories by arguing that utility comparisons are both unachievable and unjust. Dworkin used the case of expensive tastes to make his point: an individual that can only achieve the same level of utility as others by

consuming expensive resources. Dworkin's theory goes back to ideas of equality of basic consumption needs (Rawls baskets), suggesting the egalitarian theory should focus on resources. Even if the natural distribution of resources is unjust (like Rawls suggested) because it is unequal and based on luck, inequalities in outcomes that emerge from the exercise of choices emanating from preferences are morally acceptable – getting closer to the Nozick approach. Dworkin, a legal scholar, focused on responsibility. Individuals are responsible for their choices and entitle to benefit from them (Dworkin 1981b). Dworkin developed a theory for distinguishing between inequality based on luck and choice using insurance theory; if you cannot buy insurance for something – it is based on luck. However, such a theory can lead to unwanted or expected outcomes (Moreno-Terner and Roemer 2008).

The philosophical-intellectual debate continues and is not expected to end anytime soon. The questions and concepts are helpful in moving forward, debating how competition law and policy should accommodate such notions and goals. In the next section, I will review ideas from the legal literature on competition law and inequality. In one way or another, each of the legal concepts in the next chapter can be tied back to the philosophical debate. This chapter will elaborate on the main arguments put forward by legal scholars in connection to competition law and economic inequality.

As briefly noted in the chapter's introduction, competition law is tasked with a broader mandate, and therein lies its strength. Our economy is dependent on the efficient operation of markets. The state, through its public enforcers, invests in maintaining undistorted competition. Private litigants supplement such efforts as they seek compensation for antitrust violations. The powers invested in competition law have

generated an extensive debate over competition law as a tool for societal change. Competition law and privacy or sustainability are just two examples of movements that challenge our view as to the adequate scope of competition law in the recent decade. In the context of the EU, as I will explore in further detail in section 6.2, equality concerns might be considered a natural development following the broader political goals of the law and the text of the treaties that make explicit references to ‘fair price’.

It is hard to do justice to the legal debate on related topics. I will focus on two closely related but distinctive sources of normative justifications for using competition law as a tool for providing equity: Fairness and the social contract. Of course, this literature review is just a glimpse of the vast legal literature. It nonetheless offers a useful normative background for the discussion which follows and a critical point of view on the limitations of the current legal debate.

#### **(a) Fairness**

Fairness as a goal for competition law has been debated in the legal discourse at an exponential rate. ‘It makes little sense to defend a competition policy that develops with its back, purposefully turned to the attainment of moral and social justice’ (Marco Colino 2018, 18). The approach to values of fairness in specific competition laws, such as the US and EU model, which I will explore in-depth in later chapters, moves in a continuous pendulum concerning other values in the core of law and the so-called economic approach to competition law (Dunne 2020, 3–4).

However, a key challenge associated with the concept of fairness has been its definition (scope) in the context of competition. The role competition law can play in the

distribution of resources follows due to such a definition. Fairness means different things in a different context for different people. At the minimum, fairness in competition can be defined as playing by the game's rules (Klosko 1987, 353). It means, first, that there is a game. Companies are competing instead of cooperating. It could follow that the game is open for new players (entry) and that in the spirit of Nozick, individual advantages that came about after that are not punished. Such an approach seems close to what most lawyers and economists will define as the core goals of securing market operate effectively (Ayal 2014).

In the broader sense, such an approach could be extended to the Ordo-liberalism concept of protecting competition - the level playing field (Motta 2004, 26). In the context of inequality, such a notion comes close to the idea of equality of opportunity. This notion has little to do with inequality of outcomes; specifically, it ignores competition law's consumer element focusing on the supply side – equality between competition producers.

Building on the notion of fairness, as perceived by the commons, fairness could refer to a sharing of gains from a transaction (Kahneman, Knetsch, and Thaler 1986). By such notions, inequality per se should not be an explicit goal of competition law but guarantee consumers' gains. Such definition could support limiting discrimination of individual consumers under competition laws (even if it could increase total welfare) or even the prohibition on excessive pricing, which is a controversial application of the law in most jurisdictions. Under the notion of fairness as defined by most people, one could also support following the pendulum of enforcement as a reflection of the market outcomes that are acceptable to society at the time being (Gerbrandy 2019, 129). In that sense, fairness is the policymaker's tool to address the dynamics of what is the fair share of the

transaction people are expecting to receive. In other words, as the quality of life in many developed countries rise, the notion of what is a fair share of gains could change as well.

Facing economic inequality head-on requires support from a more abstract principle of social order which builds on the interaction of economic inequality with broader concepts of justice. However, as I will explain in the following sections, including inequality under competition law (and fairness) does not necessarily mean that a market outcome would only be fair if it has a positive or neutral effect on the level of inequality (Dunne 2020, 8). Such a view would transform competition law into a ‘redistribution’ policy.

### **(b) Social contract**

The idea of the social contract (Thomas Hobbes, John Locke, John Rawls) is a convenient vehicle to put forward an argument favouring using competition law as a tool for advancing distributional goals. Gal (2019) summaries the social contract notion as follows:

The social contract is a metaphor, the idea at its basis has great value, as it serves to conceptualize the relationship between the state and its citizens, as well as among citizens, and it creates the basis for the legitimacy of state action. Indeed, this enormously influential metaphor has served as the basis for one of the most dominant theories of moral and political theory of modern history.

In simple words, people agree to cooperate among themselves and with the ruler based on an unwritten agreement. Gal argues that competition law is part of the modern social contract and uses this metaphor to make a case for utilising it to reduce inequality. Exploring the political and economic rise of dissatisfaction, she argues that competition law needs to adjust if it is still aiming to meet the minimal expectations of modern individuals. If market outcomes are not in agreement with the social contract, they

undermine the fragile social solidarity, threaten trust in state institutions, and confidence in the ability of the market economy to deliver prosperity to all. Deviating too much from the social contract may position modern society on an unsustainable path, which risks tearing up political and economic instability.

However, inequality, as argued by Gal, is affected by competition in two opposed directions, making it a weak tool for distribution: First, it reduces inequality by lowering entry costs to market (opportunity), lower prices (consumption), and by limiting political power (rent sharing). Second, competition creates winners and losers, and therefore, ‘Competition naturally results in an inherent inequality of wealth between suppliers [...] and consumers’ (M. Gal 2019, 9). Without winners and losers, the incentives for efforts and innovation are limited. Inequality, therefore, plays an important role in bringing about the benefits of competition. This is an inherent dilemma or trade-off, according to Gal, between the two effects of competition law via competition.

As I understand Gal’s argument, the social contract should be viewed as the long-term goal of competition law. Most of the incentives associated with the competition are linked to long-term dynamics, while the immediate winners-losers distributional effects mentioned above are short-lived. So, the trade-off is not there.

Suppose we understand the link between competition law and competition intuitively (more enforcement leads to more competition). In that case, more competition law is expected to reduce prices and increase all types of efficiency, creating welfare gains for society in the long run. Yes, some business will leave the markets. Some employees will lose their jobs.

Such a view closely aligns with the view taken by Eleanor Fox in the case of developing countries (Fox 2006, 217): ‘the greatest economic problem in the world - deep systemic poverty and its link to inequality - could no longer be pushed to the margins.’ According to their scholarship, the goal of ‘maximizing welfare should be understood as inclusive welfare’. From Fox’s perspective, the assumptions on which competition laws are based, i.e., an equal opportunity for individuals (and firms) to compete and enter the market, are questionable; and that is the problem. In the current situation, state institutions, public services, including educatory systems, are not functioning in satisfactory levels to justify the assumptions competition law is based on. High entry costs in many markets prevent new competitors from entering concentrated markets. Overall, Fox and Gal argue that key assumptions in the current competition law paradigm are unrealistic and that inclusive growth should be the new goal of competitions laws in developed and developing countries (Gal and Fox 2015).

According to this school of thought, the difference (in wealth and income) between consumers group should be acknowledged and considered in the prioritisation of resources by competition authorities, making explicit the distributional goals under competition law. Gal also argues that the guiding principle of competition law, i.e., consumer welfare, should be analysed, in relevant cases, based on Kaldor Hicks rather than Pareto optimality,<sup>24</sup> allowing for some consumers to be worse-off if another group’s benefits are greater. According to this line of argument, such amendments to the operation of

---

<sup>24</sup> Kaldor-Hicks requires that the overall benefits to those that are made better off could in theory compensate those that are made worse off.

competition laws could restore balance to society, preventing the collapse of social contact.<sup>25</sup>

Although this debate might provide an interesting normative justification for incorporating societal values into market regulation, the legal literature is primarily anchored in abstract thinking. The careful debate on policy implications of how we might consider such goals while keeping the regulation's core function intact is limited. Moreover, in most cases, the legal literature is a separate domain, which fails to connect with other disciplines such as economics and political science.

Moreover, Gal, Fox and others, offer a solid normative argument for why competition law could be used to advance equality; however, their argument runs short of making a case for why competition laws, and no other tools, should be chosen.

I will argue that not all amendments that have distributional outcomes should be analysed on the same normative basis. As further away we go from the core function of competition law, the challenges in the normative arena intensify. We cannot fully endorse solutions if we do not entirely (or closely) understand how competition (or lack of) affects inequality and how competition law stands alongside the main policy tools for advancing equity concerns. Key questions remain: What legal tools (both in scope and type) such broad justification supports? How exactly can competition law change to current underlying circumstances?

Having briefly explored the concepts of fairness and the social contract, let us now expand our viewpoint and consider the literature in the law and economic sphere, which

---

<sup>25</sup> Other offers include advocacy efforts, strengthening of merger regulation and using market inquires as a more efficient tool for achieve societal values.

has established the main consensus surrounding the topic of optimal legal tools for redistribution. In what follows I will critically review two key points in the current debate: Why relying on taxation as the only tool for distribution is problematic; and why the main assumption of the law and economics debate is questionable.

### **3.2. The Law and Economics debate**

A strong argument favouring the use of competition law for distributional goals has been developed in the legal and philosophical debates. The underlying assumption of this argument is that inequality is detrimental for society and, therefore, a reasonable policy goal in itself. However, the burden of proof, as I see it, is more nuanced than that. Can competition law affect economic inequality? Furthermore, if it can, is it an efficient tool (under cost-benefit analysis) for influencing distributional outcomes as a whole? Framing the question in such a way brings me to the law and economics debate. I will put on hold the answer to the first question until I reach Part II of the thesis.

With the untargeted nature of competition law as a tool for advancing equal distribution in society, one might wonder why we should not rely on taxation alone (Shavell 1981; Kaplow and Shavell 1994; Kaplow 2011). This is the starting point for the debate over the *optimal legal tools* for addressing distributional concerns. The law and economic debate have concluded a far-reaching consensus rejecting the use of competition law (or any other legal device) as distribution tools. The next section will review the argument favouring using taxation as the only tool for distribution, exploring the two basic assumptions of the theoretical model: the availability of the tax system and the homogeneous legal response.

### **(a) Relying on taxation in the long run**

Even if we agree the economic inequality (or poverty) is a problem, and we believe that, from a normative viewpoint, competition law is up for the task, many scholars – if not most – would agree that the optimal solutions to address the inequality gap lie in traditional instruments and policies (Shavell 1981; Kaplow and Shavell 1994). Such instruments include, above all, taxation, corporate governance, employment, and public expenditure policies (Shapiro 2018, 717). ‘Tax and spend’ policies can affect the necessary transfer of wealth and income between different members of society in the least distortionary fashion over time. Education can support social mobility. Employment rights can offer a safety net, crucial for many workers. Nevertheless, despite the many levers which may be used, we witness a growing inequality gap.

The tax superiority argument is based on a fragile political assumption: The tax system is used, in the long run, with the intention to meet the distribution deficit in society, which means that the tax system is dynamic and responsive to the redistribution needs of society (Kaplow 2011). In the words of Shavell: ‘[I]f one assumes that the income tax and transfer system will be used to effect desirable changes in the distribution of income, the distributional impact of the choice of legal rules should not matter. Of course, one might not make the assumption that the income tax and transfer system would always be used to redistribute wealth beneficially, in which case the choice of legal rules might be decided in part on the basis of their redistributive effects.’ (Shavell 2003, 3).

For this thesis’ purposes, I do not need to take on the heavy burden of arguing a total failure of the tax system, nor do I think that this is the case. I am not contemplating on abolishing the current tax system. Instead, I argue that the typical tax system struggles to

create a stable pattern of ‘optimal redistribution’, creating over time deficiencies that could only be corrected under extreme circumstances, such as war and economic or health crisis.

Early work on political influence over tax policy reflected the view that tax systems deviate from optimal taxation literature in the recipients of the tax transfers (Stigler 1970). The basic notion is that the groups toward which we, optimally, wish to transfer taxes to (‘the target groups’) are not necessarily the strongest groups in society as far as political power is concerned (regarding influence over the level of redistribution).

When the median voter has less income than the mean, the typical income distribution observed, the decisive median voter will apply income taxation and other progressive policy measures for redistribution (Meltzer and Richard 1981). Under the median voter hypothesis, greater inequality would lead to greater redistribution efforts (Slemrod and Bakija 2000; Borge & Rattsø, 2004). In theory, the progressive policy will be directed to the middle classes and funded by the poorest and the richest groups in society.

However, the lack of empirical support for the hypothesis has motivated the development of new theoretical models with the opposite predictions – greater inequality leads to less redistribution (Campante 2011; Matakos and Xefteris 2017). Such models give importance to the political process (campaign contribution, for example) or the homogeneity of pressure groups. Others emphasise the role of lobbying (Richter, Samphantharak, and Timmons 2009) or voting malapportionment (Ardanaz and Scartascini 2013). Empirical results remain mixed, but it seems that the redistribution process could underperform at either end of the task: recipients or benefactors. Saez (2020) puts the focus on the latter:

The reason it doesn't happen [tax progressive reform] is that the rich are very organized to leverage their economic power into political power. They do it at two levels. One is through the public discourse: they are going to influence the media through think tanks, through thinkers that say that taxing the rich is actually very bad for the economy. Or, they would push the argument that it's impossible to tax the rich—if you try to tax them then the income, the wealth, is going to move abroad.<sup>26</sup>

Empirical studies offer some support to the argument suggesting that variations in economic structure (firm size, concentration levels, profit rates etc.) affect various industries' success in securing public benefits via tax policies and encourage tax avoidance (Salamon and Siegfried 1977, 1038). Such findings are yet another source of distortions to tax policy coming from economic power (Quinn and Shapiro 1991; Stiglitz 2012).

Lastly, pressure from outside, such as regulatory competition, can prevent the tax system from reaching higher redistribution levels (Wilson 1999). In their seminal work, Zodrow and Mieszkowski (1986) anticipating that capital taxation rates will suffer from what is known in the literature as the 'race to the bottom'. When capital becomes mobile, governments will increasingly lower their source-based capital tax rates to compete for and attract capital to their country. Highly quoted examples include Ireland and Portugal in the EU context (Dharmapala and Hines 2009). Empirical evidence is mixed (e.g., Hines Jr and Rice 1994; Nicodème 2007) when some scholars emphasise the power struggle within countries as more dominant. Adding to that the globalisation tax avoidance issues (profit

---

<sup>26</sup> Emmanuel Saez (2020): 'Saying inequality has not increased in the US is the equivalent of being a climate change denier' at: <https://promarket.org/emmanuel-saez-saying-inequality-has-not-increased-in-the-us-the-equivalent-of-being-a-climate-change-denier/>

shifting by corporations),<sup>27</sup> even if countries are just ‘stuck’ at the bottom, the disappointment from the tax system is almost inevitable.

Overall, even if assumed superior to any other legal instrument, the tax system cannot be expected to achieve the optimal level of redistribution in the long run. Historically income tax was only introduced in the United Kingdom in 1870 and the United States 20 years after. Ironically, it was argued that this tool would create high costs and danger to individual privacy. Today, it is hard to imagine a democratic state without income taxes. Given the importance of the questions at hand, it does not make sense that the baseline economic model dictates the full agenda of research and policy on the topic.

If we are to accept that our optimal policy for redistribution will not be fully integrated into the actual tax schedule (Heckman 1997; Fennell and McAdams 2015), a careful accounting of the gap between ideal policies and those that governments actually use as they emerge from political compromises is required (Winer 2016). New tools may be appropriate for covering this deficit, even if intrinsic merits are attributed to the tax system. There is nothing deterministic in the current state of affairs.

Kaplow and Shavell (1994, 675), who are considered by many the earliest champions of the tax superiority argument, were aware of such criticisms. The tax superiority arguments should be accorded with a degree of scepticism. The burden of putting forth and defending such an argument should be shifted back to those who assume the tax system’s optimal distribution abilities.

---

<sup>27</sup> In a famous example from the UK Starbucks was criticised for paying £18.3m in taxes while sending back the US dividends of £348m in 2019. Available at: <https://www.theguardian.com/business/2019/jun/27/starbucks-emea-pays-183m-tax-but-348m-in-royalty-payments>.

## (b) The homogeneous legal response

Using competition law as a distribution tool is very unorthodox. From the start, research within the law and economics school of thought had focused almost entirely on the goal of efficiency – thus ending the debate on redistribution instruments before it began. Any attempt to introduce a distribution purpose into private law, e.g., via contract law or tort law, is usually rejected at the economic model’s very inception. In this context, I examine the part of the literature that concerns tort law to elaborate on the second crucial assumption of the tax superiority model.<sup>28</sup>

It is clear that any transfer of wealth or income carries with it costs, a trade-off which is known as the ‘leaky bucket’ problem (Okun 1975; Weisbach 2003, 441). Transfer of wealth has *direct* and *indirect* costs. Every transfer has a direct cost: resources are collected and distributed, imposing information and administration costs. The transfer also has an indirect cost, which results from inefficient incentives;<sup>29</sup> the collection of wealth reduces incentives to earn wealth in the first place. This is referred to in the literature as the ‘work-leisure distortion’ (Mirrlees and Adam 2010, 204-204).<sup>30</sup> An increasing tax rate

---

<sup>28</sup> Competition law utilises a tort, and in some jurisdictions crime, rather than a regulatory model. Meaning both legal models mostly define categories of behaviour, rather than dictating *ex ante* the activities of market actors, with the exception of merger control.

<sup>29</sup> Public economic literature defines ‘First Best’ and ‘Second Best’ as two different set of constrains relevant for the policy maker trying to achieve Pareto Efficiency. The importance of this definitions is that a first best outcome is unachievable due to constrains of information.

<sup>30</sup> In a basic microeconomic model, every individual chooses a unique combination of work effort versus free time (leisure). The total amount of work effort will shrink as we increase the tax burden on the individual. One of the major questions regarding this process is in what rate people will alter their choices (elasticity); this is one of the empirical questions optimal taxation research is trying to answer (Slemrod 2000).

will continue to reduce the work effort to the point at which the total amount collected will decrease.<sup>31</sup> The exact amount of both costs is debatable.

The assertion in the law and economics literature is often associated with the idea that tax law is a better, less costly tool for social purposes than other legal tools. Although several arguments support the exclusive use of tax law as an instrument for redistribution, it appears that one specific argument in the law and economics literature has trumped them all: the tax substitution argument developed by Kaplow and Shavell (Shavell 1981; Kaplow and Shavell 1994; Kaplow and Shavell 2000). Their line of reasoning is the focus of this section, together with their harshest critic, Sanchirico (Sanchirico 2000; Sanchirico 2000a; Sanchirico 2017).

Intuitively, redistribution comes at a price, so there is no predominant reason to favour taxation: if you transfer wealth via the tax system, you encounter the *work-leisure* distortion, thus reducing the incentive to earn money. Nevertheless, if you transfer money via the tort system, you distort the incentives for optimal care measurements (*care-level distortion*) to prevent an accident. The same is true for any other behaviour regulated by private law. This incentive cost is the most basic lesson from the economic analysis of tort law (Ott and Schäfer 2004). This trade-off, therefore, begs the question: which tool is more efficient? The reply here consisted of a mixture of more intuitive and less structural

---

<sup>31</sup> This is described in the work of Arthur Laffer (and is known as the ‘Laffer Curve’). Once a tax is raised, two distinguishable effects arise: more money is being collected per person, but more people stop the taxed activity. In one point the second effect offsets the first, making any increase in tax reduce the total of money collected (Trabandt and Uhlig 2009).

answers – until the analytical tax substitution argument was put forth by Kaplow and Shavell.<sup>32</sup>

According to Kaplow and Shavell, many law scholars fail to recognize that the work-leisure distortion resulting from a change in income tax would be identical in size to the effect caused by an income-dependent tort transfer. Both transfers would create the same incentive cost to the work-leisure balance. However, and this is the key, the income-dependent tort transfer not only creates the work-leisure distortion but *additionally* creates a care-level distortion, reducing the overall efficiency of the tort system. The care-level distortion is a second distortion relevant only to the regulated activity – in this case, the levels of care in society. Therefore, any transfer via the tort system would be costlier. According to Kaplow and Shavell (1994), this conclusion holds regardless of the transfer's size. In other words, they claim, a tort transfer would create a 'double distortion' of incentives while a tax transfer would create only one distortion.

It is not just a technical matter of counting distortions. As explained and demonstrated in Kaplow and Shavell's formal mathematical model, the two distortions in the income-dependent tort transfer are constructed from the same size distortion to work-leisure incentives,<sup>33</sup> in addition to suboptimal incentives (care level distortion) in the tort system; thus, the two distortions are always larger. The conclusion is that whatever transfer society wishes to perform in the name of social goals, the best instrument for the task is the taxation of income or the tax system in general. This is the absolute advantage of the tax system, which has earned its exclusive law and economics status.

---

<sup>32</sup> The tax substitution argument is based on the previous debate in the optimal taxation literature (Hylland and Zeckhauser 1981, 123-143).

<sup>33</sup> Another line of criticism is the behavioral approach to the economic. See Jolls 1998.

Again, Shavell and Kaplow understood the policymaker must make a few more assumptions to disregard redistribution through private law completely. Nevertheless, as happens at times, the tax substitution argument has taken on a life of its own and had become the mainstream consensus.

Only when a strong analytical theory, like that of Kaplow and Shavell's, was introduced into the literature could a genuine and substantive criticism emerge as well. It took nearly twenty years for the tax substitution line of argument to be strongly challenged by Sanchirico (Sanchirico 2000b, 799). In an inspiring article of revolt, Sanchirico placed a new emphasis on one of the key assumptions made in the Kaplow and Shavell model: that of the *homogeneous response to the legal rules*. In the context of tort law, the similar ability to 'take care' (avoid accidents).

Sanchirico claimed that a model which is constructed on the tax substitution argument could not create a possibility for the tort income-dependent transfers to offset the cost of the transfer. He explained that the model *assumes* that all individuals respond identically to a change in incentives in the tort system; thus, no gains are possible. Under this assumption, the tort system's redistribution attempt either has no effect or results in the care-level distortion (Sanchirico 2000b, 800).

In other words, under the assumption of homogeneity in the tort system, all individuals are bound to react in the same manner to a change in rules governing damages. For example, under the classic 'efficient rule', when damages are equal to the harm caused, everyone chooses the same actions which minimise the total cost of accidents and care together (this is the basic lesson of law and economics when applied to tort law analysis).

Therefore, a change to the damages rule in this context is futile for creating a distribution effect that can offset the efficiency cost (Sanchirico 2000b, 813–16).

The homogeneity assumption can be relaxed by introducing the *heterogeneity* of care ability. Like the ability to earn income, Sanchirico introduces an ability to take care, which is distributed across the population and affects individuals' care choices. This new set of abilities alters the results of Kaplow and Shavell.

Heterogeneity turns the choice of legal instruments into an optimisation problem with two (Sanchirico) degrees of freedom instead of one (Shavell). Any change in the choice of instruments, tax or tort, for example, will alter people's decisions. Each individual will now decide based on these two distinct sets of abilities for two different systems. Overall efficiency results from the combination of choices; changing damages rule to customize distribution results can now create efficiency gains. According to Sanchirico, this is the likely outcome (Sanchirico 2000b, 804–5).

The optimisation problem is like the dilemma of a factory trying to produce a product while only being able to choose among different combinations of two instruments (labour and capital, for example). According to Sanchirico, since different instruments also have relative effectiveness, the question is not which one is more efficient, but what combination of factors is best for production? The assumption of homogeneity in the tort system makes it impossible to create any difference in the levels of effectiveness. The tort system creates only costs, so it is clear why the tax system easily prevails.

The main conflict between assumptions of homogeneity versus heterogeneity assumptions is inherent in Kaplow and Shavell's model. Kaplow and Shavell regard the criticism as 'theoretical curiosities' (Kaplow and Shavell 2000, 822). Bankman, part of the

same debate in the optimal taxation literature, regards it as ‘exotic’ (Bankman and Weisbach 2007, 793). However, they present no argument strong enough to further the discussion about the model’s assumptions. Kaplow and Shavell defend their conclusions more directly, focusing on the lack of certainty resulting from any tort redistribution policy. They further argue that the data needed for estimations to reduce uncertainty is not available for empirical analysis. As a result, policy changes could backfire (Kaplow and Shavell 2000, 832; Weisbach and Bankman 2011, 550), creating even greater inequality.

It seems that the power of the tax substitution argument has not faded over time, as theoretical arguments in favour of the *status quo* were never in shortage. However, it is clear from this writer’s point of view that the central tenet in law and economics literature cannot stand as the only policy tool. The Kaplow and Shavell model should only be a starting point for research. When considering possible indirect costs, is a change in private law to introduce social goals more likely to reach efficient results? Strong evidence to support a different ‘set of abilities’ for each tool or reduce uncertainty in using private mechanisms for redistribution should be gathered. Without new empirical results or strong theoretical arguments, the policymaker is left with little guidance; uncertainty blocks any attempt to move forward.

Furthermore, giving that the tax superiority argument is based on two assumptions that are not fully convincing, the baseline model should not dictate the full agenda of the discipline. As this section has shown, the literature on optimal instruments for redistribution is not as decisive as one would expect from one of the oldest consensus in law and economics. Kaplow and Shavell’s model offers clear-cut results but is based on

unsteady (and arguably unrealistic) assumptions. On the other hand, Sanchirico's model challenges the current system without providing a clear and practical way to move forward.

From my perspective, both the legal and the theoretical law and economics literature fail to put forward a convincing theory and practice for the role competition law can play in distributing wealth and income. Many questions remain unanswered in the current debates. Can competition law affect economic inequality as a by-product of its main goals? What is the theoretical mechanism which supports such assertion? Did competition law contribute to the current trends of inequality in developed countries? Or any specific countries? Should we direct the attention of the law to poverty or inequality? Can we develop competition laws in ways that improve distributional market outcomes as an efficient tool compared to the tax system? After reviewing the empirical literature on competition law, the thesis will try to provide partial answers to some of these questions.

### **3.3. The empirical literature on the effects of competition law**

Market competition is a process in which a group divides its resources through a process of rivalry. Modern markets are the realisation of this process, operating within 'the rules' and grounded in existing market conditions. As Hayek (2007) describes it: 'Competition depends, above all, on the existence of an appropriate legal system, a legal system designed both to preserve competition and to make sure it operates as beneficially as possible.' These conditions are the result of thousands of policy choices by countries, regulators. As such, the notion of competition as a natural mechanism for allocating resources (an invisible hand) only exists in theory.

In most markets, competition law is the main form of economic regulation that controls or limits economic agents' behaviour. This attribute gives competition laws a unique position governing all economic markets, including product, labour and capital markets (Broder 2013).

The overarching argument explored in this thesis is that the design, scope and enforcement of competition law might be associated with economic inequality via competition. This hypothesis is no different from the notion that competition law should affect other macroeconomic factors. Theoretically, competition laws are affecting market power, together with other policies and economic conditions. Any causal link between competition law and macroeconomic trends results from *competition* in the markets, and it is interacting with other macro-economic trends and mostly economic growth.

If we believe that competition policy may affect the GDP (via competition), there is no reason a-priori to reject the effect of the competition policy on inequality; both are a possible result of market power. Yet, as we will see in this review, the literature on the potential effects of competition law on distributional outcomes is scarce.

### **(a) Competition law, the intensity of competition and economic growth**

The empirical literature concerning competition law and policy is relatively slim in comparison to the extensive work on competition's effects on economic growth.<sup>34</sup> First

---

<sup>34</sup> Previous studies have estimated the effects of competition on macroeconomic factors such as Gross-Domestic-Product or Total-Factor-Productivity empirically (Dutz and Hayri 1999). A large-scale survey by Ahn (2002) concludes: 'A large number of empirical studies confirm that the link between product market competition and productivity growth is positive and robust [...] competition brings about productivity gains, consumers' welfare gains and long-run economic growth.' In perhaps the best known empirical study in the field, Nickell (1996: 724) finds that higher competition is significantly correlated with faster productivity growth in the United Kingdom. Dutz and Vagliasindi (2000), as another example, implemented a cross-country study focusing on the

commentators focused on the link between competition law and competition intensity. Kee and Hoekman (2007) investigate the effect of competition law adoption on the numbers of firms and the industry markups in a panel of 42 countries over 18 years. While they find evidence of an indirect effect of competition laws on the domestic competition by promoting entry, they do not find a direct effect of competition laws on competition (proxied by industry markups). Dutz and Vagliasindi (2000) use economic-wide enterprise mobility as a proxy for competition and find a significant positive relationship between competition law implementation and competition intensity in 18 transitional economies between 1990 and 1996.

Later, regarding the effects of competition law on growth and productivity, the empirical evidence began to pile up in parallel to the development of new metrics for quantifying competition law, which were mentioned in chapter 1 (Voigt 2009; Ma 2011; Gutmann and Voigt 2014). Buccirossi et al. (2013), which provided one of the most reliable measures for competition policy, estimate the impact of competition policy on total factor productivity (TFP) growth for 22 industries in 12 Organisation for Economic Co-operation and Development (OECD) countries. The study finds a positive relationship between competition policy indexes combining input (i.e., budget size) and output (i.e., number of decisions) variables and TFP growth. The measures for the competition policy are a set of its institutional and enforcement features: the degree of independence of the competition authority concerning political or economic interests; the scope of the investigative powers the competition authority holds; the level of the overall loss that can be imposed on firms

---

‘intensity of competition’ using methods of survey of perceived competition. They find that their measures for the intensity of economy-wide competition are positively associated with growth factors.

and their employees if these are convicted; and the toughness of a competition authority. The variables are then aggregate to form a set of summary indicators, the competition policy indicators (CPIs). Altogether, they generate an aggregate ‘CPI’ that summarizes all key features of a country’s competition policy, next to more disaggregated ones that refer only to the features of a competition policy relative to specific anticompetitive behaviours (for example, cartels, mergers) or only to its institutional or its enforcement features (1327:1329). This study is maybe the most advanced study about indicators and econometric methods. However, it relies on a small dataset, comparing to others (I will return to the CPI in chapters 7-8).

Using a large dataset of relevant markets defined for EU competition policy, Affeldt et al. (2021) find evidence that stricter merger enforcement (proxied by percentage of merger blocked or remedied) is predominantly negatively related to concentration levels; implying that more active merger regulation enforcement is linked to higher levels of competition.<sup>35</sup> Gutiérrez and Philippon (2018, 2020) find that independence of competition enforcement institutions can explain why EU markets have become more competitive than the US markets.<sup>36</sup>

In both substance and procedure, how competition law is applied can have significant effects – via competition – on economic development. Therefore, any link between competition laws and economic inequality goes through the possible impact of the former on market competition, interacting with economic development.

---

<sup>35</sup> However, in their latter sub sample decade (2005-2014) the relation between past merger activity and concentration is more ambiguous.

<sup>36</sup> Although their empirical analysis only focuses on product market regulations (*pmr*) as their main proxy for policy changes.

## **(b) Competition law and economic inequality**

While there is widespread acceptance of an a priori relationship between effective competition law and inequality via competition, the exact nature of the relationship between competition law and inequality remains largely unexplored empirically. It seems that most scholars assume that such a link exists based on the effects of competition intensity on economic inequality but do not go into the mechanisms of such effects.

For example, Stiglitz (2012) argues that ‘While market power has long been front and centre in competition policy, recent advances have, as we have noted, provided new arguments for the importance of attacking it. It leads to inequality, and inequality leads to poorer economic performance, including lower growth and more instability’. Similarly, Shapiro (2018) mentions that: ‘antitrust enforcement does tend to reduce income inequality’. Other scholars have supported such assertions as well (Lianos 2018). For example, Khan and Vaheesan (2017) argue that the failure of competition law (antitrust law) in the United States to preserve competitive markets contributes to regressive wealth and income distribution and that competition law is likely to have progressive distributive effects. However, their work is mostly descriptive and is not aimed at establishing causal links.

To the best of my knowledge, Dierx et al. (2017) is the *only study* trying to understand the connection between competition policy and distributional macroeconomic effects.<sup>37</sup> The paper designs a new mix ‘bottom-up’ approach to estimate distributional macro-economic effects of competition policy. The study offers to assess distributional

---

<sup>37</sup> In the opening sentence the authors claim that work on the field is “relatively scares”, and do not cited any other studies (Dierx et al. 2017, 155).

macroeconomic effects of a specific part of the competition regime enforcement: merger and cartel decisions. The study dataset is based on a sample of European Commission microeconomic estimates of customer savings associated with merger and cartel decisions in 2014. Meaning the macro-economic effects are simulated from a microeconomic dataset.

Using a dynamic stochastic general equilibrium (DSGE) model with additional specification (QUEST model, Ratto, Roeger, and in't Veld 2009), the authors investigate the effects of European Union (EU) competition policy interventions on distributional outcomes across households with different skill levels and across different types of income earners (capital owners, wage earners, and benefit recipients) (Dierx et al. 2017, 167-171). The policy simulations presented include both product market effects via price and an estimation of deterrent effects via a multiplier assessment (Dierx et al. 2017, 165–67) taken from existing literature of competition policy interventions. The author's approach requires a two-step analysis: the impact of policy on competition and the impact of competition on the macro-economic factor.

The unique methodology and dataset allow the researchers to circumvent the problem of competition law measures debated so far.<sup>38</sup> Instead of using indicators for the competition regime, the micro-economic estimations of the customer savings associated with the important cartel and merger decisions are used as a proxy. Competition is measured by the mark-up of prices over marginal costs.

---

<sup>38</sup> Consumer's savings estimates are calculated by multiplying the foreseen reduction in prices (in comparison with the counterfactual of no competition policy intervention) and duration of such price reduction and the turnover in the market affected by the decision. Clearly the quality of estimations of consumer's savings is a key in this type of solution to the problem and has disadvantages of its own. A review and debate on the issue is presented in the paper (Dierx et al. 2017, 160–63).

The authors claim that this methodology also has advantages in establishing a causal relationship between competition policy and competition, which is necessary to track the chain of events from policy to distribution via market competition. The study finds that liquidity-constrained households increase their consumption proportionally more than non-liquidity-constrained households (four times more after five years), supporting the notion that competition law enforcement could have a distributional effect.

While the study provides a useful and unique contribution to work on competition law and inequality, nonetheless a few key limitations should be acknowledged in addition to the ones mentioned by the authors. First, the authors do not offer an explanation besides limitations of data to resolve the fact that their estimations on consumer savings do not include information on the prohibition of abuse of dominant position (Dierx et al. 2017, 159); Second the study assumes, for each skill group (High-skilled non-liquidity-constrained and Low-skilled, liquidity-constrained), that households supply differentiated labour services to their ‘trade unions’ – wage setters in monopolistically competitive labour markets. The unions pool wage income and distribute it in equal proportions among their members within each skill group. Thus, trade unions can charge a wage markup over the reservation wage. Nominal rigidity in wage setting is included by assuming that the households face adjustment costs for changing wages. This is a questionable assumption taken from the literature review on the labour market presented in part II.

Moreover, the study offers a snapshot of a very narrow point in time (‘decisions by the European Commission in 2014 as well as decisions from earlier years still having an

impact in 2014'), so any trends in competition law effects cannot be studied.<sup>39</sup> Nevertheless, this study strengthens the motivation behind the current enquiry, using a different methodology than the one employed here.

### **3.4. Summary**

In this chapter I reviewed the legal debate on competition law goals and its roots in the philosophical theories concerning justice and inequality. The legal provided the normative justification for incorporating societal values into market regulation, yet the legal literature is primarily anchored in abstract thinking. The careful debate on policy implications of how we might consider such goals while keeping the regulation's core function intact is limited. Moreover, in most cases, the legal literature is a separate domain, which fails to connect with other disciplines such as economics and political science and is therefore unable to reach recommendations on its own.

Next, I reviewed the law and economics debate on taxation's superiority over all other legal tools for addressing inequality. I showed that the assumptions in the base of this literature are unconvincing, and as such, it cannot support the conclusion reached in the scholarly debate. Yet the Kaplow and Shavell model will be a useful guide to inquire into policy options in sections ten and eleven in the last part of the thesis.

---

<sup>39</sup> For instance, The European Commission, has estimated the observable customer benefits from cartel decisions adopted in 2014 to be between US \$2.0 billion and US \$2.9 billion, available at: <http://ec.europa.eu/competition/publications/kd0216250enn.pdf>; In the United Kingdom, the competition agency estimated that, it benefits consumers 3 billion pounds in 2017-2018, see [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/728268/CMA\\_Annual\\_Report\\_and\\_Accounts\\_2017\\_18.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728268/CMA_Annual_Report_and_Accounts_2017_18.pdf); In United States, the Federal Trade Commission (FTC) estimated it has generated US \$1.8 billion of consumer savings through its non-merger actions from 2010 to 2013 (Martinez Licetti et al. 2017, 33).

The final section of the chapter reviewed the current empirical findings on the effects of competition law on macroeconomic factors such as productivity and economic growth (but not on distributional outcomes). This research line provides the theoretical foundation and the metrics to explore the law's effects on economic inequality via competition.

The next chapter will focus on the *economic* literature, providing the theoretical background for the main empirical part of the thesis exploring the links between competition, poverty and economic inequality. The next chapter will help fill up the theoretical gap in the current legal literature, which is the basis of the overarching hypothesis of the thesis. Only after a closer look at the effects of *competition* on *inequality*, I will start to investigate the effects of competition law and policy on inequality.

## CHAPTER FOUR: COMPETITION EFFECTS ON ECONOMIC INEQUALITY AND POVERTY

This chapter reviews the economic literature on the effects of competition on economic inequality and poverty. The chapter takes a step back from the discussion of the role of competition law to examine more closely the empirical mechanism, which connects the law to inequality.

In a nutshell, Industrial Organization literature examines how competition emerges and operates in different economic settings and the impact that competitive distortions can have on total or aggregate welfare. The fundamental insight at the core of any competition policy is that market power (i.e., lack of significant competition) can have two results.

The *first* result of market power is an aggregate loss in economic welfare known as the Dead-Weight-Loss (DWL), (Harberger 1995). Many studies have analysed the size of aggregate welfare losses in complex market situations under different assumptions and models (Hines 1999). By maintaining a competitive environment, sellers will strive to reduce costs and optimise efficiencies in production (production efficiency); and will invest in research and innovation in the long run so to improve their production process, and chances of winning the competition (dynamic efficiency). By allowing more efficient firms to enter and gain market share, at the expense of less efficient firms resources flow to the most efficient firms (allocative efficiency).<sup>40</sup>

---

<sup>40</sup> Other types of efficiencies such as economic of scale, are a specific manifestation of production or allocative efficiencies. When a firm reduces production costs by increasing short-run production, this is an example for production efficiency.

The *second* result of market power is distributional and involves the transfer of ‘surplus’ from consumers to producers. When market power is present, a monopoly or oligopoly sets a price and quantity to maximise profit. The higher price guarantees a higher profit for the producers but at the same time involves a shifting of surplus from consumers to producers. Under certain standard assumptions (Schmalensee 1981), the surplus transfer can be shown to be twice as large as the DWL allocative inefficiency (Fisher and Lande 1983). While market power’s distributional effect is recognised, most economists have generally eschewed making any further judgments about its distributional consequences. They argue that there is no objective way or conceptual apparatus to assess how the ‘gains’ should be distributed (Williamson 1968: 27).

Moreover, there is a view that assigning weights to different members of society involves ‘political’ or ‘social welfare’ judgments on which economists have no expertise (Baumol and Fischer 1986). However, while abstracting from distributional issues can aid analytical tractability, it does not make distributional issues ‘go away’. Arguably, they should still be the focus of systematic economic and legal empirical inquiry.

Before taking the first steps in such an inquiry, the analytical framework requires conceptualising the effects of competition on economic inequality. Understanding competition effects on wealth and income distribution from the economic perspective requires a closer look at the theoretical effects of market dynamics and explicitly exploring the distinction between *Dynamic* and *Static Effects*.

## **4.1. Dynamic effects of competition on economic inequality**

The ‘dynamic effects’ refer to the effects of competition on economic growth and innovation. More competition can increase firm-level productivity (within-firm efficiency or dynamic efficiency) and the overall economy’s growth through greater incentives for a new entry into the markets (‘across firms’ or allocative efficiency). The dynamic effects arise from the long-run incentives of firms in the market. These effects are not captured by the static microeconomic model of supply and demand.

The theory behind growth incentives, in the long run, has been studied in macroeconomic research, as early as Solow’s model of the production function (Solow 1957; Hulten, Dean, and Harper 2007). Aghion et al. (1998) and Aghion and Griffith (2008) extend the growth paradigm by distinguishing between pre-innovation rents and post-innovation rents and by introducing the notion that innovation is a way to escape competition. Based on these models, more intense competition may lead to more innovation because it reduces pre-innovation rents by more than it reduces post innovation rents. Therefore, for this chapter, I will separate the effects of competition to long-term effects on inequality via (i) growth and productivity, and (ii) via innovation.

### **(a) Competition effects on inequality via growth and productivity**

Evidence from firm-by-firm studies demonstrates that suppliers facing more competition have higher productivity and faster productivity growth. Disney, Haskel, and Heden (2003: 691) use a panel of 140,000 separate manufacturing firms in the United Kingdom between 1980 and 1992. The authors conclude, ‘Market competition significantly raises both the level and growth of productivity’. Similar results have been found in other countries and

industries (Januszewski, Köke, and Winter 2002).<sup>41</sup> Greater competition also leads to an improvement in allocative efficiency by allowing more efficient firms to enter and gain market share at the expense of less efficient firms (Arnold, Nicoletti, and Scarpetta 2011).

What happens in the long run? A key factor in conceptualising the effects of competition on economic inequality lies in the interactions between economic growth and economic inequality. Does higher growth lead to higher or lower economic inequality? In other words, do the gains from growth trickle-down?

Simon Kuznets (1955) posed a hypothesis that is still debated in the literature. Kuznets proposed that modern economic growth would generate two phases of changes in income and wealth distribution in the long run. First, the industrialization phase of rising economic inequality. Inequality peaks due to substitution effects between unskilled labour and capital. Then, as the industry matures, the second phase of declining inequality starts due to human capital substitution with capital. The idea was that economic inequality within a country should trace out an inverted U shape; this hypothesis was subsequently referred to as the ‘Kuznets Curve’.

Empirical work ever since tended to erode the hypothesis for a Kuznets Curve, on both sides of the inverted U, and the evidence of a sharp rise in wage inequality in most OECD countries since the early 1970s seems to vanish any remaining doubts (Philippe, Aghion, and Williamson 1998).

---

<sup>41</sup> In a survey of 500 German firms, the authors find a positive link between productivity growth and competition; Syverson 2004A finds similar results in the United States, using data across 443 US manufacturing industries; and in a second study (Syverson 2004B), the author finds similar effects within a particular industry (ready-mixed cement).

Palma (2011) suggested the instead of an inverted U shape, we see an upward trend that is constructed from an increase in the top end of the income and wealth distribution. Palma argued that variations between countries are originated from the share of the top 10% of the population and the lowest 40% of the population. The share of the middle to upper-middle percentiles of the population, according to Palma, remains the same across countries. He referred to this as a centrifugal effect.

Piketty (2015) points out that in some developed countries, the level of income inequality has currently exceeded that of the previous decades of the 20th century, again making the Kuznets Curve unlikely hypothesis. He proposed that when the return rate on capital is greater than the rate of economic growth (over the long term), the result is a concentration of wealth by the top percentiles.

Still, the substitution effects in labour demand from unskilled to skilled labour and capital (which are at the core of the Kuznets Curve hypothesis) could play a role in the interaction between growth and economic inequality. More importantly, the debate calls for introducing additional factors such as global trade, technological changes (Aghion and Durlauf 2005, 1278), market imperfections and labour-market institutions. Growth does not predict the direction of inequality alone.

Finally, the link for the reverse causal relations (where inequality affects growth) is also possible. For example, Torsten and Tabellini (1994) present time-series evidence for nine developed economies over the period 1830–1985: their results show that inequality harms growth at all stages of development. However, the literature on the topic is mixed (Benabou 1996). Rising income inequality may have a dampening effect on demand and consequently on productivity if the average propensity to consume declines (Summers

2015); or if lower-income households desire to accumulate precautionary savings in response to the higher income risk associated with persistent inequality (Auclert and Rognlie 2018). More importantly, the notion that economic inequality is a necessary evil in the name of growth is challenged. Even if a negative reverse causality is not proven, this common misperception should be abandoned (Philippe, Aghion, and Williamson 1998, 13, 18, 33).

**(b) Competition effects on poverty via growth and productivity**

However, one aspect of the interaction between growth and economic inequality seems more robust. Growth is associated with a reduction in *poverty* rates. Ravallion (2001) suggests that the poor in developing countries typically do share in the gains from rising aggregate affluence and the losses from aggregate contraction. However, there are large differences between countries in how much poor people share in growth, and there are diverse impacts among the poor in a given country. Chen and Ravallion (2012) follow these findings with a survey of 125 countries and found a decline in poverty rates and the number of poor in all regions of the developing world, suggesting a strong correlation between economic development and poverty reduction. A similar effect of growth on poverty was found in other studies (Ferreira 2010; Inchauste et al. 2014). Chen and Ravallion (2012) show that economic growth accounts for most of the reduction in moderate poverty in 17 of the 21 countries that have presented substantial poverty declines over the 1996–2010 period. So, growth lifts all the boats (some above the absolute poverty line), just not equality.

A recent paper by Fosu (2017) presented comparative global evidence on the transformation of economic growth to poverty reduction in developing countries. In most

countries, growth was the primary factor behind falling poverty; yet, in those countries where growth has been the main driver of poverty reduction, further progress could have occurred under relatively favourable income distribution, according to Fosu. In other words, high initial levels of inequality limit the effectiveness of growth in reducing poverty, while growing inequality increases poverty directly for a given level of growth. The study also points to the limited effects of growth and inequality-reducing policies in low-income countries.

### **(c) Competition effects on inequality via innovation**

The third major factor for conceptualising competition's dynamic effects is its likely effect on innovation (competition – innovation – inequality). Empirical work on the effects of competition on innovation is rooted in the earlier ideas of Schumpeter and Arrow (Arrow 1972; Aghion and Howitt 1990; Baker 2007). While some argue that competitive markets induce more innovation (see e.g. the review of Aghion and Durlauf 2005), others stress monopolistic markups' ability to incentivise further innovation (Martinez Licetti et al. 2017: 188-191). Some empirical studies support an inverted U-shaped effect of competition on innovation when perfect competition and full monopoly result in less innovation (Cohen 2010). More advanced models, including heterogeneity between laggard firms and leading firms, have been developed, explaining better the empirical results connecting competition and innovation (Aghion and Griffith 2008).<sup>42</sup>

---

<sup>42</sup> Based on such models the 'laggard' firms, which are already far from the frontier, are discouraged from investing in innovation with more competition as it is harder to catch up. In contrast, leaders or best performers firms would increase their investment in innovation to keep their position close to the frontier. For a border review on the topic see for example Aghion et al. (2005) and Aghion et al. (2018).

Concerning the effects of innovation on inequality, in a novel empirical study, Aghion et al. (2019) estimate the effect of innovation proxied by, among others, the number of patent requests on economic inequality directly. The study uses cross-state panel microdata in the United States and finds a positive correlation between innovation and top income inequality (e.g., more innovation is associated with more inequality). The study shows that the correlations between innovation and broad inequality measures (such as the Gini coefficient) are not significant. According to the authors, these correlations are at least partly reflecting a causality from innovation to top income shares (winner takes all competition). While innovation may be positively related to top income inequality, their conclusion regarding inequality (being insignificant), in my view, maybe premature. Many reasons, as I explore in Part II of the thesis, may lead to insignificant results.

In a follow-up study of Aghion, Cherif, and Hasanov (2021) with the IMF, the authors elaborate on the interaction between competition, innovation and what they refer to as broad-based growth – acknowledging that ‘Competition and innovation-led growth are critical to drive productivity gains and support broad-based growth. However, new technologies and trends in market concentration are stifling future innovation while contributing to the marked increase in inequality’. In other words, the rise in inequality observed over the last decades reflects, according to this study, the rapidly rising returns on innovation, which could be a result of higher market concentration. Their review of the literature and evidence seems to reconcile the previous findings on the effects of innovation on inequality. Market power (including market power resulting from artificial barriers to entry and market failures), tends to reduce innovation in the long run and broad-based growth while increase inequality.

#### **(d) Summary**

It is hard to illustrate the dynamic effects of competition on income distribution and wealth, especially because they are an ongoing process determining market conditions. The dynamic effects of competition via growth and innovation are probably among the strongest drivers for poverty reduction in the last decades. Growth and innovation are most likely linked positively to economic inequality (when growth is followed by economic inequality), albeit with a high level of idiosyncrasy, which depends on other economic and institutional factors. Two basic propositions can be summarised from the current debate:

##### Dynamic effects of competition on economic inequality

- 1. Weak competition can have adverse effects on growth and innovation.*
- 2. Growth and innovation could positively affect poverty reduction, while their effects on economic inequality are mixed and depend on other economic and institutional factors.*

#### **4.2. Static effects of competition on economic inequality**

Standard economic models assume that the benefits of any productivity gains or innovations will, over time, trickle down from companies or other legal entities to society via a process of product, labour, and capital markets competition. As such, competition affects consumer's surplus (via the change in prices and quality), producer's surplus (return on capital), and employees and employers (by the setting of wages, benefits and costs). Even though these effects are immediate in the basic framework described above, they are difficult to analyse empirically because of lags in the timing of the effects and the mix of influences that can affect the overall outcomes of different groups and individuals. For example, an employee is also a consumer of various products, and in most developed

countries, we are all owners of capital via pension funds or small bank investments. Most studies examined the effects of competition on a specific sub-group of these three types of markets: e.g., consumers of essential products.

**(a) Product markets**

The distributional effects of the intensity of competition on low-income households (poverty reduction) are theoretically simpler. Lack of competition, and higher prices, in essential product markets (like food and clothes), affect households in a regressive way, as poorer consumers tend to spend more of their income on consuming these products. In Australia, Creedy and Dixon estimated the relative burden of monopoly for different household income levels for 14 commodity groups (including food, beverages, and housing costs). They found that the welfare loss is 46 per cent higher for the lowest decile compared to the highest (low-income households compared with high-income households). The results provide an indication, according to the authors, that whatever the size of the absolute welfare loss arising from monopoly, there may be a substantial effect on the distribution of welfare (Creedy and Dixon 2000; Urzúa 2013; Argent and Begazo 2015; Martinez Licetti et al. 2017: 21-23).

The same picture emerges when looking at the potential benefits of increased competition. In the United States, for example, low-income households experienced greater consumer welfare gains from increased competition than their higher-income counterparts. Hausman and Leibtag (2007) estimate consumer benefits from competition (in the form of new entry of non-traditional supermarkets ‘Super-Centers’, such as

Walmart) and find direct welfare gain, on average, 4.8% due to the reduction in prices.<sup>43</sup> More importantly, the authors also find that households with income below 10,000 US\$ benefit by approximately 50% more than the average household, because low-income households tend to shop more at the new low-priced outlets. The authors add that since less well-off households have a higher marginal utility of income, the benefit to these households would be even more significant than the estimated result. Also, interestingly they find that minorities also gain significantly more than non-minorities. These findings highlight the winners and losers of market power and could have implications on the policy choices for intervention.

Product market power was also linked to the declining labour share (De Loecker and Eeckhout 2017b). Under the assumption of perfect competition in product markets, the labour share ( $L^*$ ) equals the marginal productivity of labour multiplied by the inverse of the average labour productivity. In the absence of perfect competition, the direct connection between marginal labour productivity and real wages is no longer valid. This wedge is accounted for by the markups, affecting the labour share. In this context of imperfect competition and market distortions, the labour share level is, therefore, sub-optimal,  $L < L^*$  (Arpaia, Pérez, and Pichelmann 2009, 18).

Product market power has also been identified in specific sectors, which could affect the distribution of gains systematically. Researchers have observed market power associated with financial institutions such as credit and debit cards and predatory and discriminatory lending. Financial services cost has gone up when it should have been going

---

<sup>43</sup> The total effect on consumers is calculated as the difference in the consumers' expenditure function before and after the introduction, holding utility constant at the post-introduction level. The results have a significant variation across markets and across time with the range of estimates 1.3%–7.3%.

down due to industry improvements (Philippon 2015; Bazot 2017). Pockets of market power have been found in other specific industries such as big-pharmaceuticals and telecommunication companies (Faccio and Zingales 2017).

Poor and middle-class consumers usually enjoy a very small piece of the income gains (e.g., think of the employers of a fast-food multinational firm) and even a smaller slice of capital gains. In this case, examining the effects of competition (and competition policy) on less well-off consumers is expected to have a clearer, more observable path. To further understand the possible effects of market power, I must first consider labour markets as the second driver of impact from competition to economic inequality.

### **(b) Labour markets**

The basic DWL model applies to product markets as well as to labour markets and capital markets. When only a small group of employers are looking to hire employees in a geographic area, there is potential for a monopsony market power or buyer market power. This monopsony effect from an economic perspective is identical to the analysis of monopoly power in product markets (Naidu, Posner, and Weyl 2018). At least in principle, there is also no difference in the application of competition policy.<sup>44</sup> No correlation between product market power and Rent-Sharing (transfer rate of markups to employees via wages) should be observed in a competitive labour market because firms take market wages as given (regardless of productivity or markups). However, over the past decades, the link between productivity growth (how much the individual worker produces) and real

---

<sup>44</sup> Merger Guidelines of the DOJ in the United States, for example, state that there is no distinction between seller and buyer power; U.S. Dep't of Justice & Federal Trade Comm'n, Horizontal Merger Guidelines § 1 (2010) 'To evaluate whether a merger is likely to enhance market power on the buying side of the market, the Agencies employ essentially the framework described above for evaluating whether a merger is likely to enhance market power on the selling side of the market.'

increases in wages appears to have declined (Mishel and Eisenbrey 2015; Bivens et al. 2014; Ugucconi, Sharpe, and Murray 2016).<sup>45</sup> This decline could be potentially attributed to weakening competition in labour markets, taking the form of de-unionising the supply of labour, and or anticompetitive behaviour and concentration on the demand side (i.e. employers).

The empirical literature consistently shows a positive effect of firm rents (rents being a result of both product and labour market competition) on average worker compensation (Card et al. 2018; Bell, Bukowski, and Machin 2018). Nevertheless, this does not mean that labour markets are competitive or that the labour share is stable in relative terms. Workers may still get some rents, but the size of that rent being shared has gotten smaller over time (e.g., labour share).

Employers who enjoy market power can set wages below workers' marginal revenue product. In some respects, labour markets are more sensitive to market power. They involve a matching problem (Roth 1982) of both sides of any transaction (while product markets involve only the consumer choice). This two-sided differentiation also makes low-skilled workers more vulnerable to monopsony power than high-skill workers (Naidu, Posner, and Weyl 2018, 555).

Labour unions' density has decreased dramatically in OECD countries, meaning that bargaining power on the employees' side is declining. The benefits of unions to

---

<sup>45</sup> In the authors offer policy makers to 'support those labor standards that can restore some bargaining power to low and moderate-wage workers in coming years. That means policy actions such as passing a higher minimum wage, expanding rights to overtime pay, providing paid sick leave, protecting the labor rights of undocumented workers, and restoring the right to collective bargaining'. From the perspective explained next, another (better) way to address the issue is to strongly enforce competition laws in labour markets on the buyer power.

employees' wages are well documented in the literature, explicitly concerning low-skilled workers (Card 1996; Kristal 2010; Farber et al. 2018).

Anticompetitive behaviour was observed systematically in labour markets in multinational companies. A 2016 US Council of Economic Advisors report includes a broad survey of antitrust violations in an increasing share of the country's labour markets.<sup>46</sup> Krueger and Ashenfelter (2018) study of 156 large franchise companies in the United States finds that 58% of major franchisors' contracts, such as McDonald's, Burger King, included covenants in franchise contracts that restrict the recruitment and hiring of employees from other units within the same franchise chain. Together with the prevalence of other types of non-compete agreements identified in recent studies (Starr, Prescott, and Bishara 2019), anticompetitive effects can help explain why we observe productivity improvements and reductions in unemployment but wages are still stagnated.

These competition dynamics are manifested in higher concentration levels in labour markets. Azar et al. 2018, studied United States data from a leading employment website and calculated labour market concentration, using the same methodology as the US Department of Justice (DOJ) and Federal Trade Commission (FTC) horizontal merger guidelines for over 8,000 geographic-occupational labour markets. They find that the average labour market is highly concentrated by the acceptable measures of product market concentration (HHI). Similar results were found by others as well (Benmelech, Bergman, and Kim 2018). Moreover, advanced estimations of firm-level elasticities of supply had emerged in recent years (Félix and Portugal 2016), exploring the possible increase in

---

<sup>46</sup> CEA *Labor market monopsony: trends, consequences, and policy responses*, White House Council of Economics Advisors (2016): [obamawhitehouse.archives.gov](https://obamawhitehouse.archives.gov).

monopsony labour market power. This work provided direct evidence of the positive relationship between a firm's labour supply elasticity and its workers' earnings. Webber found that a firm's market power's negative earnings impact is strongest in the lower half of the earnings distribution. A one standard deviation increase in the labour supply elasticity to the firm reduces the variance of the earnings distribution by 9%. This is a direct test for the effect of monopsony market power on inequality (Webber 2015: 124).

At the core of this debate lies the 'rent sharing' concept. How much of the gains made by a business are passed on to its labour force? Bell et al., study the long-run evolution of rent-sharing and finds a substantial fall in the long-run elasticity (in this case, the proportional change in wages in response to a change in rents) from 0.043 in the period 1983-2000 to 0.012 in the period 2001-2016. In plain words, this means that companies are sharing less these days. Moreover, the authors find that the fall in rent sharing was more pronounced among the companies which enjoy monopolistic power (Bell, Bukowski, and Machin 2018: 25).

Labour market power can also pull up income disparities by allowing a small group of employees in industries that enjoy high markups (like the financial services sector mentioned) to seize a disproportionate share of all profits (Nolan, Richiardi, and Valenzuela 2018: 17-18).

### **(c) Summary**

The static effects of competition on economic inequality are manifested in product and labour markets and their interactions. Current findings in the literature point to two powerful mechanisms of effects on economic inequality. Increased prices in basic essential

goods and wage stagnation affect the lowest percentiles disproportionately, possibly increasing economic inequality. Two propositions can be summarised from the current debate:

Static effects of competition on economic inequality

- 1. Product market power can have a regressive effect in markets of essential goods, such as food, telecommunication, and pharmaceutical via price increases, which disproportionately affect poorer households. It also adversely affects the labour share.*
- 2. Labour market power (monopsony) can lead to stagnated wages, disproportionately affecting low- and middle-income workers due to lower bargaining power on the supply side (e.g., de-unionising labour supply). A small group of workers (e.g., higher management) can extract disproportionate wages based on high markups in their industry.*

### **4.3. Macroeconomic effects of competition on economic inequality**

The estimation of market power effects at the macro-level is problematic in theory and practice. So far, the chapter has explored separately dynamic and static studies of the effects of competition on economic inequality. We need a macro-environment model to assess competition's effects, including the interaction between dynamic and static effects and product and labour markets.

For example, basic economics implies that businesses with product-market power constrain at least some of their production to keep prices high. So, if firms produce less (due to a lack of competition), they may hire fewer workers, raise unemployment or, in the long run, reduce workforce participation affecting labour markets competition.

Furthermore, to the extent that firms have the power to set wages in labour markets, they may pay workers less. In the short term, some trade-off can arise between the benefits of lower prices (decreasing product market power) for consumers and the returns to producers, where less productive firms and their employees may lose out.

However, low-and medium-income households' groups are among the first to get hit by higher prices and unemployment or suppressed wages. Theoretical models and empirical work tend to suggest that a lack of competition in product markets stifles employment. For example, studying South Africa data (Amodio et al. 2020) found that unemployment is higher in municipalities where employment is more concentrated in high-markup sectors, and that transition from unemployment and into employment is lower. Nevertheless, evidence related to wages presents mixed results.<sup>47</sup> If wages are stagnated for most low-skilled workers who form the bottom percentiles of the middle classes and capital markets are concentrated (both very likely assumptions), product price effects become more dominant, increasing the possibility that firm-level market power can affect the macro-economic results. The overall regressive effect of market power depends on this systematic influence of the product and labour markets as well as their interaction, which will be further explored next. It is important to emphasise that such macro-models are

---

<sup>47</sup> Bell, Bukowski, and Machin 2018: 21, 43-46. Weak competition in product markets raises prices above marginal cost, reducing output demanded by consumers and, therefore, reducing labour demanded by producers. An increase in prices also reduces real wages (specifically in basic product markets), which can reduce the supply of labour again Martinez Licetti et al. 2017: 43-44. A specific interaction between labour market and global trade has been studied by David 2018 who observes that what applies to a country as a whole need not apply to all its citizens. Workers displaced by trade cannot change jobs costlessly, and by reshaping skill demands, trade integration is likely to be permanently harmful to some workers and permanently beneficial to others, creating effects on the distribution of wealth within the country.

always constrained in their ability to describe actual dynamics, but they provide for estimations of the effect of market power.

**(a) The Comanor and Smiley approach**

In one of the earliest works on competition and inequality, Comanor and Smiley (1975) researched the distributional macroeconomic effects of market power in the US. The authors found that up to one-half of wealth holdings by the richest 2.4% of American households at the time was entirely due to capitalized monopoly gains. Ennis and Kim (in Martinez Licetti et al. 2017: 133-153) calibrated Comanor's and Smiley's model. They found that about one-tenth to one-quarter of the wealth accumulated by the top 10 income percentile (richest) comes from market power. The theoretical effects of market power on distribution are described in the study:

The existence of corporate market power has a dual effect, not only generating profits for companies that are above the competitive rate of return, but also imposing higher prices on consumers. The increased margins charged to customers as a result of market power will disproportionately harm the poor, who will pay more for goods without receiving a counterbalancing share of increased profits. The wealthy, while also paying more, will at the same time receive higher profits from market power because of their generally higher ownership of the stream of corporate profits and capital gains. These market power gains are assumed to be distributed in proportion to current total business ownership claims (Ennis and Kim in Martinez Licetti et al. 2017, 134).

The theoretical effects of market power on distribution are described as disproportionately harming the poor, who pay more for goods without receiving a counterbalancing share of increased profits; in contrast to the wealthy who generally enjoy higher ownership of the stream of corporate profits and capital gains.

Ennis, Gonzaga, and Pike (2019) extended Comanor and Smiley model to seven countries outside the United States: Australia, Canada, France, Germany, Japan, South Korea, and the United Kingdom. Their model presents a formula estimating differences between the market power profits and the excess payments for consumption (arising from market power raising prices) for each wealth class. The authors compare actual markups with the lowest sector-specific markups observed across countries (the other option being no markups) to estimate the unexplained or excess markup. These figures are then subtracted from existing wealth positions to determine hypothetical distributions of household wealth in the two static conditions. The model result is a simulation for the net effect of market power in different countries.

Their study finds that for the countries explored, redistribution from eliminating market power would occur mainly from the wealthiest 10 per cent of the population to the bottom 80 per cent. This finding is consistent with Palma's (2011) claim, reviewed above, which suggested that the principal heterogeneity between countries comes from the top income groups' shares. For an average country in their sample, 12–21 per cent of the wealth of the richest 10 per cent of households (by wealth) reflects the presence of market power. As an example, the authors note that a 1 per cent reduction in markups increases the wealth of the poorest 20 per cent of the UK population by 0.19 percentage points (Ennis, Gonzaga, and Pike 2019, 539–539). Their wealth, therefore, increases from 0.87 per cent to 1.06 per cent (an increase of approximately 22 per cent). Taking the UK again, the effects of market power on income are estimated by the authors that a 1 per cent reduction in markups increases the income of the poorest 20 per cent of the UK population by 0.12 percentage

points. Therefore, their income share increases from 7.8 per cent to 7.92 per cent (an increase of approximately 1.5 per cent).

Two interesting assumptions underpin their study: market power gains are distributed in proportion to current total financial wealth distribution (i.e. with the largest shareholding will, in proportion, receive the largest share of the profits), and higher prices from market power are distributed in proportion to current consumption (Ennis, Gonzaga, and Pike 2019, 521–22). In this study, the effects of market power in labour markets are considered a matter of capital gains and higher consumer prices – assuming no change in the distribution of capital ownership – without considering the effect of competition *per se* in the labour markets. The study is enlightening, and the closest estimate we have for the effect of market power on economic inequality. Some of the assumptions can be potentially challenged, given that residential property constitutes a large share of many families’ wealth (Gans et al. 2019, 3).

Gans et al. (2019) continue the line of reasoning that advanced these studies. The study emphasises the effects of capital shareholding versus consumption in the United States, exploring under which conditions market power can transfer wealth from consumers to shareholders and what impact these mechanisms have on income inequality. The study also looks at the trends over the last three decades. The study presents a quick and elegant result: by increasing producer surplus and decreasing consumer surplus, monopoly power effectively transfers resources from low-income families to high-income families (Gans et al. 2019, 11). However, the formal model captures some aspects of the economic phenomena, concentrating on the ratio of shareholding to consumption, but at

the same time missing competition dynamics as a larger process, incorporating changing labour market dynamics especially.

### **(b) Concentration levels studies**

Empirical macro-level studies using classic measures for competition, such as concentration levels, documented a general rise in concentration across industries. Grullon, Larkin, and Michaely (2019) find that concentration levels have increased in more than three-quarters of US industries over the past two decades. Using concentration levels as a proxy for competition, Rodríguez-Castelán (2015) examines the theoretical link between product market concentration and poverty. The study identifies market conditions for which higher market concentration could potentially raise poverty using the Foster-Greer-Thorbecke index. The study's theoretical assumption is that increased market power leads to economy-wide welfare losses because it raises the prices of goods and services for all agents in an economy and thus reduces the relative incomes of households, particularly among the poor. The model tests two scenarios in the labour market<sup>48</sup> and suggests taxing rents extracted by firms with market power and redistributing them through targeted lump-sum social transfers.

Nevertheless, market concentration levels could prove ill-equipped as a direct proxy for market power (Nolan, Richiardi, and Valenzuela 2018: 25), as market power can arise due to other types of market failure e.g. information asymmetries. We can accompany

---

<sup>48</sup> A model with endogenous income and a labor market with a homogeneous level of productivity vs. endogenous income and a labor market with heterogeneous levels of productivity. Only when the share of the oligopolistic profits of low-income consumers is sufficiently large and if labor incomes of poor consumers are sufficiently small with respect to their incomes from firm ownership (capital), an increase in concentration levels in the market for a homogeneous good would lower poverty rates. Rodríguez-Castelán 2015: 10.

market shares with market dynamism (e.g., entry and exit data). Another way to address the estimation problem is by tackling down the direct ability to extract gains. In a competitive environment, if firms try to raise their prices above their costs (markups) substantially, new companies will enter the market to challenge them, driving the markups back down. Therefore, rising aggregated markups are a strong indication of decreasing competition. Consistent with the concentration levels results, researchers found rising markups worldwide (De Loecker and Eeckhout 2018).

### **(c) Markups studies**

Han (2014) analysed aggregated data using markups as a proxy for market power, trying to establish a link to several inequality measures while controlling for other covariates such as openness to trade. Using a panel of 22 countries (18 developed) from 1961-2004, he found a positive effect of market power on the top 5%, 1%, and 0.1% income share and the opposite effect on the low 10%- and 5%-income share. No effect is found on the 90% bottom income share. However, the study does not control for possible panel data concerns and endogeneity. Han and Pyun (2020) continue this line of inquiry investigating the correlation between markups and income inequality. They follow 20 countries over 1975-2011 and find that an increase in markups is positively associated with rising income inequality of top income shares. Extra profits from higher markups accrue to the top-income group, but also within the top-income group when the top 1% tend to benefit disproportionately more than the lower top-income earners (top 5% or 10%). They also highlight the role of labour market policies; the positive relationship between markups and income inequality is less pronounced in countries with better labour protections, such as the statutory protection and power of labour unions, generous unemployment benefits, and

mandatory minimum wages. The study's estimation strategy is based on country and year fixed effects, with additions of instrumental variable (IV) as a robustness check to control for endogeneity. They use market size, measured by GDP and import intensity, measured by the ratio of imports to GDP as instruments for the first stage regression of the IV. While the specification tests for the IV are validated, according to the authors, my concern is that the specific instruments chosen in the study might jeopardize the assumptions of the IV approach.<sup>49</sup>

#### **(d) A framework for the effects of competition law on economic inequality**

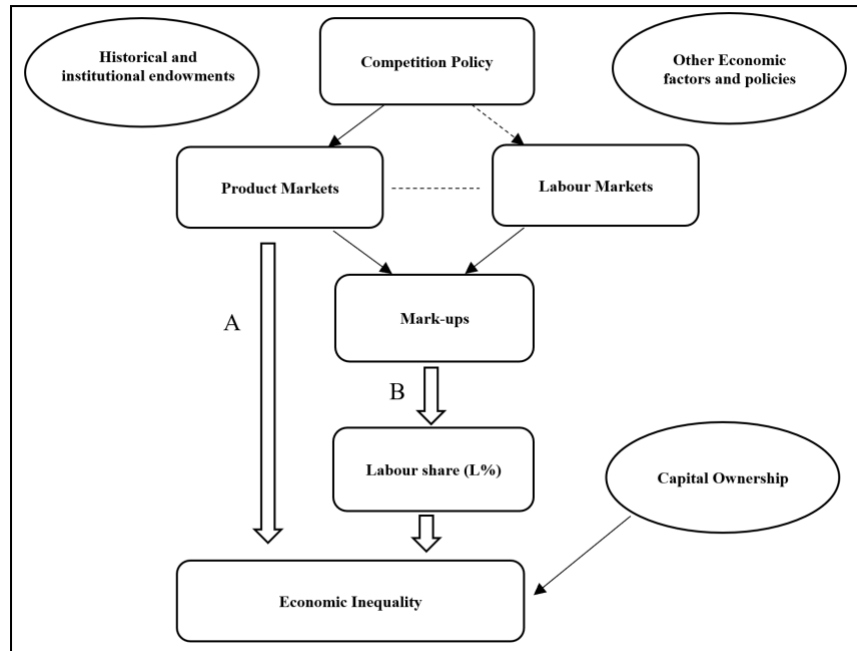
A high level of heterogeneity between the causes of economic inequality across countries is expected, although the rise of economic inequality seems to be relevant to most developed countries (Nolan, Richiardi, and Valenzuela 2018). It is also very likely that the link between competition and economic inequality has changed over time. The application of this debate could be crucial to modern competition policy.

Yet, despite this expected heterogeneity, I offer an abstract framework connecting competition laws with market power, together with other policies and economic conditions. This abstract framework is depicted in figure 1.

---

<sup>49</sup> In Part II I address the method of IV in more details. A key assumption of the approach is that the instruments cannot affect the outcome in any other way than the regressors in the estimation equation. I believe that in this case this assumption might be problematic given the possible correlation between GDP and many growth-related factors. The authors also use a GMM and LSDV estimator to mitigate this problem, like the method employed in Part II of the thesis.

Figure 1: The direct static effects of competition policy on competition and its link to economic inequality



The microeconomic studies on product (price) effects of essential goods and labour markets affect market concentration and firm markups. Note that while concentration levels may reflect the rise of *product* market power, markups, as measured in the literature, capture potential market power on both types of markets: product and labour. Stansbury and Summers (2020, 27–28) explain: ‘This is because measures of aggregate markups used in recent literature depend on firms’ costs, including firms’ labor costs – even if the labor costs partly represent rents accruing to labor as well as the true marginal cost of production. This implies that markups, as they have been measured in recent papers, cannot be used to distinguish between a story of rising product market power and a story of falling worker power: a rise in measured markups could reflect a fall in worker rent-sharing power just as much as it could reflect a rise in true markups and firms’ monopoly power.’

In addition, as explored in this chapter, competition law could have dynamic long-run effects via growth and innovation. Growth and innovation could positively affect poverty reduction, while their effects on economic inequality are mixed and depend on other economic and institutional factors. In other words, the flow of rents from globalisation, trade and technology, which are all associated with growth, depends on factors such as labour protection and unionisation and capital distribution,<sup>50</sup> taxation and historical endowments. Importantly, this dependency suggests that there is nothing deterministic in the link between poverty reduction and the rise of inequality (both can be associated with higher growth). These potential opposing effects of growth on poverty reduction and inequality require more careful attention, as we lack a clear and robust empirical conclusion.

Different underlying factors, such as other policies and economic conditions, will operate in different countries (and times) affecting economic inequality. The point of the analysis is to consider how competition may play a role in economic inequality. I do not argue that competition (or competition law) is the only or most significant factor affecting current inequality trends. In Part II of the thesis, I present methods and data to control for many other potential confounders mentioned in the literature of economic inequality.

---

<sup>50</sup> I am not ignoring the effects of capital ownership. To complete the picture, I need to consider the broader role of capital markets or creditors which is outside the scope of this thesis. Some studies suggest that high levels of horizontal shareholding in concentrated product markets can also have anticompetitive effects, and can explain, among other trends, the recent rise in economic inequality. Recent empirical evidence seems to support this claim, although the literature is still mixed. Gilo 2000; Scott Morton and Hovenkamp 2017; J. Azar, Schmalz, and Tecu 2018; Elhauge 2019. The main conclusion coming out of this work is that common ownership has significant effects on (higher) concentration and (higher) prices.

## 4.4 Between economic inequality and poverty

Under the assumption that competition law could be used as a tool for a more equal distribution of resources, some have argued that such concerns should be limited to alleviating people from extreme poverty (e.g., Cheng 2020).

While the fight against poverty is of great social and economic significance, in this thesis, I will argue against such a narrow approach. In my opinion, limiting economic inequality is an important policy goal that provides economic benefit much greater than poverty reduction. Furthermore, I believe that competition law is a tool better suited to advance economic equality and specifically income and consumption equality. It is less efficient, as I will argue, to target individuals living in extreme poverty in developed countries. Let me elaborate on these points:

First, beyond the ethical arguments reviewed earlier for reducing economic inequality lies a significant economic rationale that supports greater wealth and income equality beyond reducing poverty. Under the classic economic analysis of law (Posner 2014, 638), the first argument favouring a just or equal distribution of wealth in society is the possible effects of skewed distribution on the *total* amount of utility. Put another way, inequality costs us all in utility. A commonly cited argument related to this cost is that individuals have a declining marginal utility of income. Each dollar is worth less – in terms of utility – as an individual gets wealthier (Weisbach 2003). So, if we shift resources from those who have lots to those who have little, we are increasing total utility. This has an effect far beyond reducing poverty. According to popular media, Jeff Bezos (Amazon) has made \$152,207 per minute — and \$2,537 per second — based on the year-over-year change in his net worth (Business Insider 2021). This connection is not theoretical – people

care about economic inequality, possibly even more than in the past. Some sites offer an option to calculate in how many seconds Bezos and other CEOs make up your yearly salary.<sup>51</sup> Empirical evidence shows that happiness and satisfaction from life are negatively associated with inequality (Verme 2011). Specifically, trust in the institutions seems to play an important role in shaping the relationship between income inequality and subjective well-being (Ferrer-i-Carbonell and Ramos 2014).

It is not only a utility cost of an alternative distribution of resources. There are also many negative externalities connected to economic inequality, such as deteriorating health measures and destabilising crime levels.<sup>52</sup> Such externalities mean that the ‘pie’ of resources is shrinking, in a way which markets fail to take account for. A multinational empirical study by Pickett and Wilkinson (2010) suggests a strong correlation between economic inequality and some of modern society’s most formidable challenges. The authors maintain that economic inequality is the most serious problem modern societies face, including the level of trust between individuals and the state, infant mortality, and imprisonment rates. Moreover, economic inequality has been connected to corruption and poor governance, creating more inequality and a vicious circle that is hard to get away from (Jong-sung and Khagram 2005).

Moreover, economic inequality is an essential component related to opportunity inequality (Ramos and Van de Gaer 2016) - money buys opportunities (for example, better education and health care even in most egalitarian countries). Therefore, economic

---

<sup>51</sup> <https://simpletexting.com/tech-ceo-salary/>.

<sup>52</sup> A different economic way to support equality concerns is based on ‘interdependent utility functions’: people have utility gains from living in a more equal society even if it does not affect them directly (Bergstrom 1999).

inequality, not only poverty, might reduce overall economic growth by preventing or limiting the ability of some parts of society to contribute to the marketplace. In other words, economic inequality, in one way or another, translates into opportunity inequality.

Overall, especially for developed countries, economic inequality costs us all in happiness, health, crime, opportunities, and growth.

Second, debating the difference between using competition law to eradicate poverty or reduce inequality makes sense mostly theoretically. Competition law is not a policy that can *target* specific individuals efficiently (Kaplow 2011). Yes, in some cases, eroding markups for basic needs will lift many individuals in developing countries closer to the absolute poverty line (like in the case of pro-competitive Mexican and French telecommunications reforms). Nevertheless, such effects limit the possible use of competition law as a distributive tool dramatically. Using competition law to target poverty demonstrates the disadvantage of this type of policy and its inefficiencies in targeting low socio-economic individuals in developed countries compared with taxation; competition law is triggered using criminal, administrative and civil liability (such as tort law), making it hard or even impossible to target the benefits of intervention towards specific individuals in most current enforcement systems. We can aim benefits towards ‘groups of consumers’, based on consumption data, like food and telecommunications. But, again, we all consume, and the rich consume even more. To build an efficient tool for distribution, we need to identify who needs the transfer and from whom we can take the money. In both cases, taxation has the upper hand.<sup>53</sup>

---

<sup>53</sup> Direct *redistribution* policies, such as tax and transfers, do come with a price (see chapter 3.2. The Law and Economics debate and later in Part III.

However, even if we assume such data is attainable, and laws can be amended accordingly, using competition law in this way missed its main advantage – its general effects on large groups of low and middle-class consumers. On average across OECD countries, the share of individuals in middle-income households<sup>54</sup> fell from 64% to 61% between the mid-1980s and mid-2010s, while their aggregate income fell from four times the aggregate income of high-income households to less than three (OECD, 2019). Therefore, in many developed countries, the inequality crisis is originated from the *decline of the middle classes*, not from a rise in poverty.

In their study on the distributional effects of market power (Ennis, Gonzaga, and Pike 2019, 539), found that ‘The groups of the population who are typically harmed by market power are the 0 to 80th percentiles, and interestingly the harm appears to be particularly accentuated on a *middle class* comprised somewhere between the 20th to 60th percentiles’. A similar conclusion is reached by Philippon (2019), who argues that the biggest losers of the rise of markups in the US are the middle classes.

Middle incomes are stagnated, in both relative and absolute terms in developed countries. Over the past 30 years, median incomes grew in a third less than the average income of the wealthiest 10%. Meanwhile, the cost of essential parts of the middle-class lifestyle has increased (faster than inflation). Housing prices have increased three times faster than the median income household. More than one in five middle-income households spend more than they earn, and over-indebtedness is higher for the middle class than for low and high-income households. As a result, ‘today the middle class looks increasingly like a boat in rocky waters’ as stated in the OECD report on the topic (OECD, 2019). As

---

<sup>54</sup>

Defined as households earning between 75% and 200% of the median national income.

we reviewed in this chapter, competition law is the right tool to affect the prices of many goods, from essential to middle-class necessities. It is also suited to affect competition in labour markets and wages. Both are direct, theoretical channels that do not require ‘targeting’ and might affect the quality of life and satisfaction of squeezed middle classes as well as those living under the poverty line. In other words-, low- and middle-class households are more closely linked to markets, as they are more active than the poor as consumers and workers.

Competition law enforcement will most likely affect the middle class and not just the poor who benefit from direct cash transfers (using the welfare system and other redistribution policies). Limiting the potential use of competition laws to poverty reduction via direct use of the law as a redistribution tool is *de facto* a call to keep the current antitrust order in place. It will not yield significant results in developed countries in the long run. Using competition law as a pre-distribution tool to reduce inequality means more intensive competition law enforcement, while those who argue for limiting the goals of competition law to poverty reduction may favour a shift of enforcement resources to markets of basic goods. Such a narrow view of the role of competition laws may potentially keep enforcement levels low, creating distortions to the deterrence effects of competition law, giving a free pass to curb competition in many ‘luxury goods’ markets, ignoring the squeezed middle class. My point is that we should focus on low- and middle-class workers, aiming towards poverty reduction and limiting economic inequality, not one of the two.

Finally, given that individuals seem to care about inequality and poverty, whether one likes it or not, the high levels of social friction will push the political system to respond – at least in the short run – to the current rise of inequality. When they do, we want to

minimise the levels of distortions (costs). The current inequality crisis puts enormous pressure on governments to provide public goods: health, social insurance, economic growth, and stability. Moreover, maybe for the first in the digital age of information explosion, the COVID-19 crisis creates an identical threat to democratic governments, which in turn creates a highly competitive environment for their activities. Anyone with a laptop can easily compare benefits and vaccination rates, for example, between all OECD countries.

Early empirical studies suggest that the crisis could disproportionality affect the low socio-economic groups, causing an already uneven society to go over the sustainable equilibrium (van Dorn, Cooney, and Sabin 2020). Under such a shock, the push for redistribution is much stronger. In Israel, for example, the government (under much political pressure) has enacted legislation that provided inefficient transfers to civilians much beyond the population in need (some of the funds were transferred regardless of income), and much beyond the health crisis (some of the elements of the needed safety net were extended up to 4 months after most workers were back to work) causing distortions to the work market.<sup>55</sup>

In sum, this thesis argues that competition law should be used as a pre-distribution tool without limiting its aim or focus to poverty reduction alone. To be clear, the wider focus does not exclude the need to affect poverty. Rather it addresses it as part of a wider goal. I return to this point in chapter 9, where I address questions that come up from this

---

<sup>55</sup> See: <https://www.reuters.com/world/middle-east/israel-gradually-end-jobless-benefits-economy-recovers-2021-06-01/>. For an overview of measures in Israel see: <https://home.kpmg/xx/en/home/insights/2020/04/israel-government-and-institution-measures-in-response-to-covid.html>.

normative argument. However, at this point the overarching empirical question of the thesis remains to be addressed – can competition law affect economic inequality? In other words, to support my proposition of the possible use of competition laws, the link between the scope and enforcement of competition laws on the one side and economic inequality on the other side needs to be empirically established.

## **4.5. Summary**

This chapter offered a comprehensive and critical review of the existing literature on the links between *competition and economic inequality*. Dynamic effects of competition were associated with poverty reduction, but growth and innovation could be associated with higher economic inequality overall, depending on other economic and institutional factors. The static picture presented the main channels of effects – product market power (price effects) and labour market monopsony (wage effects). These drivers are at the core of any mechanism of the effect of competition law on economic inequality. Evidence for the link between competition and economic inequality at the macro level was found in formal modelling and regression analysis (using different competition indicators). Overall, the evidence seems robust enough to move on to the next step: investigating the role of competition policy. Competition law is one of the factors that shape the intensity of competition, together with other economic and institutional factors, as depicted in figure 1.

It is helpful to put forward my expectations from the empirical analysis. Our discussion of the dynamic effects of competition suggests that we can expect, all else equal, that more intense competition regulation should be associated with higher levels of growth and innovation. However, we cannot say how higher growth and innovation will interact with economic inequality, as they are probably linked to poverty reduction and high returns

for top income groups. We, therefore, expect to see high levels of *idiosyncrasy* between countries.

On the other hand, the discussion also highlighted the links between market power's direct effects (low levels of competition) and wealth transfers between income groups. These direct effects suggest that countries that experienced a considerable rise in market power across the board (across many industries and sectors) should be associated with higher economic inequality levels, all else equal. Countries with relaxed enforcement of competition laws are of prime risk to be included in this group. Also, countries experiencing high levels of concentration in essential product markets and unskilled labour markets (on the demand side, i.e., employers side), specifically, are expected to show intensified links between competition and inequality. This leads to another hypothesis that countries that relaxed regulation in labour markets or essential product markets, without intensifying their competition laws in those markets, will be associated with higher levels of economic inequality as well. I move on to Part II of the thesis to investigate the empirical links between competition law, competition and economic inequality.

## PART II: EMPIRICAL ANALYSIS

Part I of the thesis considered the key conceptual interactions between competition law, competition, and economic inequality. It identified the mechanism of effect – how competition law might affect inequality via competition at the theoretical level and how competition would interact with distributional outcomes. We also identified some basic expectations from any large cross-country analysis. If we accept that competition might affect economic inequality, there is no reason *a-priori* to reject the possible link between competition law and economic inequality. After all, if anything, competition law is aimed to affect competition.

Part II of the thesis builds on this conceptual analysis to shed light on the empirical links between competition laws and economic inequality. While the points made in Part I above are generally understood, estimating the empirical links between competition law and economic inequality is challenging for several reasons. First, quantifying competition law (like any law) in a meaningful way is difficult. How can we measure the intensity or appetite of regulators? And what about their interaction with the courts? To what extent should we consider the level of institutions in the country? Second, even if we can describe a specific country's law using descriptive methods, how do we replicate such endeavour in a broad cross-country setting? Third, isolating the effect or link of a policy such as competition law is challenging. Advanced causal methods are not often used in legal research, and legal scholars are mostly sceptic about their abilities to capture legal phenomena and their actual effects in the world.

The structure of Part II aims to mitigate these challenges. By taken first a case study that provides access to detailed data, we can avoid issues resulting from a large comparative legal study and have a detailed account of the law. The US is a prime case study as it offers data availability and an abounded of research concerning the US economy and antitrust laws. The case study approach comes closer to the legal concepts and operation of the law with analysis of antitrust institutions the supreme court and the historical development of the laws. Economically, the US case study allows me to examine the macroeconomic trends reviewed in Part I, and specifically the important link between the rise of markups and the decline in the labour share.

Is there evidence that the paradigmatic shift in American Antitrust is linked to the rise of economic inequality in the US? In Chapter 5, I break down the units which characterise the antitrust model as a foundation to test the first hypothesis of Part II:

*1. The paradigmatic shift in American Antitrust is linked to the rise of economic inequality in the US.*

However, a case study approach is limiting my ability to generalise any findings. Therefore, part II's empirical analysis moves to compare the US and the EU models of law (as a first level of generalising). Chapter 6 reviews the EU model and draws contrasts between the two models based on the previous findings in chapter 5. Based on this theoretical analysis, I offer a cross-country analysis within an OECD database, trying to identify any empirical links to the model of law using the Synthetic Control Method. The chapter will test the second hypothesis:

*2. The US model of competition law is associated with higher economic inequality levels compared to countries that adopt the EU model.*

Chapter 7 takes another step with a comprehensive world database using a wide cross-country study, employing panel-data models. This chapter uses a scope measure, abstracting the findings from previous chapters to a general hypothesis. This chapter sets to investigate the third hypothesis:

*3. The scope of competition law is linked to the level of economic inequality.*

Each of these studies has its limitations; the trade-off between the approaches is apparent. Moving away from the case study approach also drifts away from the proximity to how a legal scholar will review the law. On the other hand, using a broader concept and metric for the law opens the possibility to generalise the findings on the law's effects. The chapters aim to facilitate and complete each other.

Given the expected heterogeneity between countries and the mixed findings of chapter 7, in the last chapter of Part II, I explore a more homogenous group from the OECD countries, 12 highly developed countries, including the US. This dataset allows me to dive deeper into the data and identify the links between competition enforcement and the decline of the labour share (which is my starting point in the US case study). In this chapter, I explore a cross-country-industry dataset, which provides for a more detailed analysis of both the link between enforcement and markups and between markups and the labour share, taking into account factors like labour protection and unionization. The chapter investigates the fourth and last empirical hypothesis:

*4. The effectiveness of competition law is linked to the labour share.*

The chapter offers a study of the potential causal link between competition law and labour share, including within the analysis the interactions between previous factors studied like

the scope of the law and the model of law effects. Altogether, Part II offers one of the first systematic empirical tests of the effects of competition law on economic inequality.

## CHAPTER FIVE: THE US CASE STUDY

When it comes to competition law enforcement, the United States is rather unique and important. The US antitrust laws are one of the oldest competition laws globally (second only to Canada) and one of the most studied laws in the legal literature. The intensity of enforcement has varied dramatically over its history in focus and magnitude. The US economy is unique as well; the macro trends reviewed above, such as the rise of markups and decline of the labour share, are manifested in the US in the most apparent way compared to other countries.

This chapter aims to investigate the first hypothesis of Part II:

*The paradigmatic shift in American Antitrust is linked to the rise of economic inequality in the US.*

The second aim of the chapter is to provide for the theoretical base for the US ‘model of law’ and the empirical examination of the contrast between this model and the EU model, which will follow in chapter 6.

To explore the first hypothesis, the chapter first reviews the literature on the effects of *competition* on economic inequality in the US, moves on to study the changes in the law and ends with exploring the interaction between the two.

Section 5.1 reviews changes in income and wealth inequality in the US in the last century and changes in the competitive environment. As stated, some of the most advanced economic literature on the topic is focused on the US.

Section 5.2 offers a detailed legal analysis of the paradigmatic shift, which occurred in US antitrust enforcement in the early 70s.

Sections 5.3-5.4 then explore the interaction between the law and inequality in two levels of the mechanism: (i) the correlation between the paradigmatic antitrust shift and the weakening competition (using markups as a proxy); (ii) the correlation between the rise of markups and increased economic inequality (using Gini and top income shares data). These two sections are not intended to establish causality, rather they provide a descriptive analysis due to a lack of robust counterfactuals and the number of observations.

## **5.1. Economic inequality in the United States**

This section provides the background for the antitrust case study, focusing on economic inequality in the United States. I observe three important trends: the decline of competition, a rise in economic inequality and a decrease in the labour share. The takeaway message is that these trends seem to work in parallel: the higher levels of observed inequality since the 1980s are associated with weak competition (higher markups) and a lower labour share.

### **(a) Changes in economic inequality**

In the last two decades, researchers had devoted considerable attention to wealth and income inequality trends in the US and other developed countries. This includes work by leading scholars such as Piketty, Saez and Zucman.<sup>56</sup> They estimated that the share of overall wealth held by the top 1% in the US has increased from 25% in 1980 to over 40%

---

<sup>56</sup> Thomas Piketty studied the case of France (Piketty 2001). Shortly afterward, Piketty and Saez, studied the United States in 2003 (Piketty and Saez 2003; Alvaredo et al. 2013). Since then, over 25 countries have been studied through a collective effort involving many researchers. The data are posted online in the World Wealth and Income Database (Alvaredo et al. 2016), that is used in the next parts of the paper.

today. For the top 0.1%, it has grown from less than 10% to over 20% over the same period. For example, Kuhn and Rios-Rull (2016) show similar trends using the Survey of Consumer Finance (SCF) to compute the Gini coefficient for wealth and income inequality. Figure 2 presents the share of income (left) and wealth (right) accumulated by the 1%, using the World Inequality Database (WID).

*Figure 2: Income and wealth inequality trends in the US*



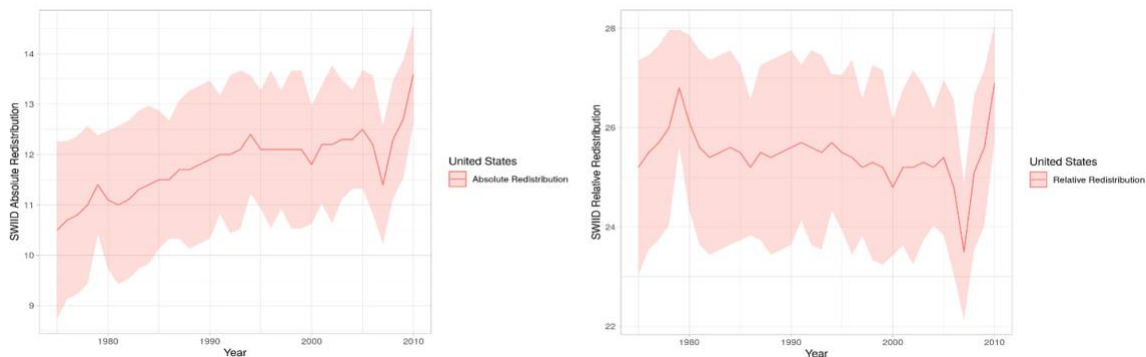
Source: WID for the US; The top 1% income share represents the total compensation for labour captured by the first percentile of the income compensation distribution. The top 1% of wealth represents the compensation arising from labour, capital and other types of ownerships captured by the first percentile of the wealth distribution

The main policy issue that arises from their analysis is that top marginal tax rates are not progressive enough to account for the change in earnings. Saez (2017) argues that tax reductions associated with the Reagan period in the United States converted one of the most progressive tax systems in the post-World War II decades to the least progressive after the 1980s. The US top tax rate dropped from around 70% to approximately 30% throughout the 1970s to 1985.<sup>57</sup> The argument presented by Saez, Zucman, and others is

<sup>57</sup> Note that higher marginal tax rates, as explored in chapter 3.2(b), will result in lower incentives for work (the ‘work-leisure’ distortion). Martin Feldstein’s series of papers on the impact of marginal income tax rates on output and earnings, shows, for example, that some of the high tax rates (70%) that were judged useful for redistribution may have a large incentive effect in reducing output (Feldstein, 1995). The tax system has an indirect cost, that might be larger than other options for redistribution. I will elaborate on the use of competition law for pre-distribution in chapter ten and eleven of the thesis.

compelling in the case of the United States (Hubmer, Krusell, and Smith Jr 2016; Hopkin 2020). However, while the growing inequality gap is often attributed to poorly designed or skewed taxation or public expenditure policies, this does not seem to provide a full explanation for current trends. Inequality is increasing in many parts of the world, including those with vastly different taxation and expenditure regimes. Even in the case of the US, in both *absolute* (the difference between the Gini score for pre-tax income and disposable post-tax income) and *relative* (percentage change) terms (this difference divided by the Gini for pre-tax income and then multiplied by 100, that is, the percentage by which the pre-tax income Gini is reduced) redistribution efforts are reasonably stable, as can be seen in figure 3. For the US data, this provides a direct measure for the level of redistribution by tax and social security transfers.

Figure 3: Redistribution trends in the United States



Source: SWIID data for the US, <https://fsolt.org/swiid/>. The absolute redistribution measure reflects the difference between the Gini score for pre-tax income and disposable post-tax income, while the relative term for redistribution measures the same difference divided by the Gini for pre-tax income and then multiplied by 100 (the percentage by which the pre-tax income Gini is reduced)

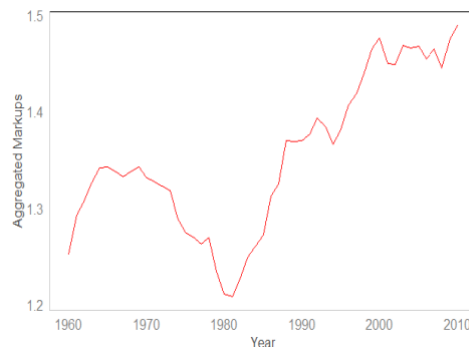
Reflecting on the above, I believe that a mix of policies and factors has contributed to the increase in wealth and income inequality in the US, even if taxation policy is one of the

leading explanations. Next to taxation policies, increased wage inequality documented in the literature could also be affected by job polarization (Jaimovich and Siu 2012) or automation (Moll, Rachel, and Restrepo 2019) as two main alternatives. Market power is another factor suggested in the literature. Specifically, in the US, a strong positive correlation between markups as a measure for market power and the declining labour share and income inequality has been observed. The following section will explore this link.

### **(b) Market power and the labour share in the US**

A strong positive correlation between markups, as a measure for competition, and economic inequality was observed in the US over the last few decades starting 1980s. In figure 4, I present the aggregated markups in the US over the same period from the post-World War II area until the early 2000s:

*Figure 4: aggregated markups trends in the United States*



Source: Aggregated markups from De Locker et al., 2020. Markups are a ratio between price and cost on a firm level. They are used to estimate market power instead of the price elasticity or market shares.

The similarity in the trends of income and wealth inequality (figure 2) and the aggregated markups (figure 4) is striking. In a competitive environment, if firms try to raise their prices above their costs (markups) substantially, new companies will enter the market to compete, driving the markups back down. If such trends are happening across the board, rising

aggregated markups could be indicating a decrease in competition. It is tempting to use aggregated markups as a measure for competition levels. Yet, they hide massive heterogeneity.

When the aggregate markup rises – for the whole economy or one of the major sectors – it could be attributed to firm-level markup growth. In periods where the aggregate markup is stable, the average could hide a strong reallocation process, i.e. between firms shifts (De Loecker, Fuss, and Van Biesebroeck 2018). Changes in computing markups can also yield different estimations of markups and perhaps even opposed trends (Traina 2018; Basu 2019).

However, other measures for assessing competition levels, such as concentration levels, support a similar increasing trend in the US (Grullon, Larkin, and Michaely 2019). Perhaps what makes the aggregate picture more compelling is that the rise of markups can explain the two other secular trends mentioned: (1) the steady rise in industrial concentration and (2) the steady fall in the labour share.

A fierce discussion has developed on the determinants of the rise of markups. De Loecker and Eeckhout connect the weakening of competition (the rise in markups) with the decline of both the labour and capital shares and the reduction in low-skilled wages and other macroeconomic trends (De Loecker and Eeckhout 2017a, 47:48; De Loecker, Eeckhout, and Unger 2020). Their claims are consistent with the previous work of Barkai (2016). Barkai argues that labour share and capital share are declining together, using profit rates as a third option to estimate market power. The only macroeconomic factor which is going up significantly, according to Barkai, is the profit share, with profits rising more than six-fold: from 2.2% of GDP in 1984 to 15.7% in 2014 (Barkai 2016, 16).

These trends alongside increased capital dispersions and labour income dispersions between earners at different levels of the overall income distribution concentrate wealth at the very top. Low-skilled workers are losing out to CEOs and marketing managers, receiving less income from the distribution pie. Similar econometric evidence suggests that the decline in labour share is linked with a firm's market power and automation (increasing use of automatic manufacturing systems) in the last 20 and more years (Bergholt, Furlanetto, and Faccioli 2019).<sup>58</sup>

Other researchers argue for a different economic narrative claiming that the decline in labour shares are the result of faster innovation of 'superstar' firms like Google or Amazon leading the way. Autor et al. (2020) suggested that monopolistic competition ('winner take most' type) causes the labour share decline, while the capital share is not declining as argued.<sup>59</sup> The authors argue that globalisation (workers are losing out to their counterparts in places like China and India) and technological changes (workers are losing out to robots) benefit the most productive firms in each industry. Product market concentration rises as industries become increasingly dominated by 'superstar' firms with high profits and a low share of labour in firm value-added and sales. They suggest that, as superstar firms' importance increases, the aggregate labour share tends to fall and that previous work, including Barkai (2016), analyses industry-level data and a smaller time-series and are, therefore, complementary to their results. In other words, the macroeconomic decline of the labour share is connected to 'between firms' differences.

---

<sup>58</sup> The authors suggest that markups (as a proxy for market power), have significant explanatory power for the decline of labour share. Changes in the bargaining power of workers have some relevance for short-run fluctuations only (18-19).

<sup>59</sup> They suggest the previous work, including Barkai (2016), analysis industry-level data and a smaller time-series and is therefore complementary to their results. A similar conclusion was reached by Kurz (2017) focusing on the IT industry.

Significant cross-sectional heterogeneity (not necessarily constant) suggests that aggregated macro-estimations could be misleading even within narrowly defined industries. For example, Song et al. (2019) use the US Social Security Administration data, which is close to the actual population data, looking at the same workers over time. This study finds that much of income inequality can be explained by firm differences (2/3). However, they note that the rising between-firm variance is not accounted for by the firms themselves (such as the ‘superstar’ explanation) but by a widening gap between firms in their workers’ composition. In other words, increases in sorting (a rise in the covariance between worker and firm effects) and segregation (a rise in the variance of average worker fixed effects at a firm) explain most of the increase in between-firm inequality. Workers at the superstar firms are sharing those super-normal returns, driving up wage inequality as ‘islands’ of monopoly gains. Lastly, the high returns to labour and capital at those firms reduce labour mobility by discouraging workers from leaving firms that earn higher rents (Furman and Orszag 2015).

Under both views, the main effect of *competition on economic inequality* is associated with the labour share decline and between-firms labour dispersion (related to the level of human capital dispersion). Markups and the labour share reflect the systematic outcome of market engagement in the economy – the winners and losers – of modern societies. When the labour share is declining and profits are rising over different industries and markets, productivity might be rising, but the ‘typical’ employee does not share the gains.

Labour income is more evenly distributed across households than capital income, while the latter tends to be more concentrated at the top income households (Jacobson and

Occhino 2012). Hence, a decrease in the labour share makes overall income less evenly distributed and more concentrated at the top of the income distribution.

However, empirical results on the state of competition in the US and the potential links between the recent macroeconomic trends and economic inequality are still mixed (Lipsius 2018; Rinz 2018; Cette, Koehl, and Philippon 2019). Specifically, issues of measurement of the labour share, like the ownership of housing (Rognlie 2016) and revenue of self-employed (Gollin 2002) might challenge the emerging consensus on the *global* decline of the labour share. Yet, a recent study by Gutiérrez and Piton (2020) suggests that even after adjusting for these measurement issues, the US economy shows similar trends of declining labour share since the middle of the 1980s. They challenge the observation of global declining shares, and by doing so, put more focus on idiosyncratic explanations for the macro-economic trends – like the paradigmatic shift of the US antitrust model explored in chapter 5 and 6:

Our results challenge the common wisdom of a global decline in the non-housing labour share and cast doubts on most common explanations for these trends. Technological changes—including declining capital prices, automation, import competition, and intangibles [...] Perhaps declining competition has led to rising profits in selected US industries, as emphasized by (Gutiérrez and Philippon 2018), or perhaps the mechanisms emphasized so far interacted with institutional differences to yield different outcomes across regions and industries (Gutiérrez and Piton 2020, 335).

In the next section, I will explore descriptive and econometrics evidence for the role of antitrust in the rise of markups and declining labour shares in the US. In later chapters, I will explore the findings more abstractly, generalising the discussion to global developed economies. These discussions will allow me to revisit this debate on the global trends.

As explored in the introduction to the thesis, the challenges for studying antitrust are several. How can we quantify a change in the legal paradigm? What kind of legal changes could have affected competition? The next section will explore these questions in the US context.

## **5.2. The evolution of the antitrust model**

In this section, I describe three aspects of the US antitrust law model. Given the extensive literature on antitrust laws goals and the ‘Chicago School’<sup>60</sup> paradigmatic shift in the 70s-80s in the US, I focus on three areas of the model that could be quantified using available metrics: a. The Goals of antitrust laws and the Supreme Court. b. Enforcement efforts c. The Substantive antitrust laws.

Stiglitz (2012) and Baker and Salop (2015) were among the first to argue that an increase in rents could be one reason behind the increase in income and wealth inequality documented in the United States over the last forty years. Khan and Vaheesan (2017) argue that today’s markets concentrations are a result of changes in enforcement efforts: ‘Highly concentrated markets in the contemporary United States are not the product of impersonal economic forces-rather they are the product of conscious legal and political decisions in the late 1970s and early 1980s’ (Khan and Vaheesan 2017, 268).

These studies made a direct link between ineffective competition enforcement and its limited scope and these macroeconomic trends. However, the argument remained mostly theoretical. On the other hand, economists like Van Reenen (2018) point to cartel

---

<sup>60</sup> Chicago School of law and economics refers to the group of academics, lawyers, economists, and judges argued for the application of economic principles in legal decision making, believed to be especially critical to antitrust enforcement.

enforcement to argue that antitrust enforcement exhibited increasing enforcement efforts and therefore is unconvincing as a possible cause for competition decline in the US. As I will explore in the next sections, looking only at cartel enforcement is potentially misleading, especially when relying on selective quantitative methods exclusively. Each of the following sections point to the same conclusion that, at least for the studied period, the US antitrust model was a weak constraint on anti-competitive behaviour and became almost irrelevant in some areas of enforcement for dominant firms in the US.

### **(a) The goals of antitrust and the Supreme Court**

The main component of the US Antitrust is the Sherman Act.<sup>61</sup> Public enforcement at the United States federal level is accomplished by two agencies, the FTC and the DOJ.<sup>62</sup> Antitrust regulation goals have evolved, in a debate that has started with the enactment of the Sherman Act and continues until today in great depth and interest. In the words of Robert Bork: ‘antitrust is a cornucopia of social values, all of them rather vague and undefined but infinitely attractive’ (Bork 1978: 50). The Sherman Act, as well as the other parts of the federal competition regulation in the United States, are ambiguous regarding their own goals. Lande (1982, 81) notes that: ‘The antitrust laws are among the least precise

---

<sup>61</sup> *Nat’l Soc of Prof ‘l Engineers v US* 435 US 679, 695 (1978). The Sherman Act, one of the first competition regulations enacted in the world, was designed to be a comprehensive charter of economic liberty, building on the notion that competition is linked to higher social gains.<sup>61</sup> It is the first out of four main legislation pieces regulating competition in economic markets: The Clayton Act, The Robinson-Patman Act, and the Federal Trade Commission Act.

<sup>62</sup> Other legislation includes the Hart-Scott-Rodino Act, the Antitrust Civil Process Act on more procedural legislation. See Broder 2016. The Sherman Act enacted in 1890 is still the main legal framework to analyse the two main forms of market power in American federal antitrust regulation: Cartels – are addressed under section 1, and Monopolization under section 2. Merger control was introduced with the Clayton Act in 1914 and expanded with the enacted of the Hart-Scott-Rodino Act (creating the notification regime for specific mergers and joint ventures). The Robinson-Patman Act also expanded the prohibitions of anticompetitive behaviour to price discrimination and its defences. This legal framework establishes a new enforcement agency – The Federal Trade Commission (FTC), joining the Department of Justice Antitrust Division (referred to as the DOJ).

statutes enacted by Congress [...] One commentator has observed that antitrust legislation has perhaps more than any other field, stimulated the courts to consider, as an interpretative aid, the history of the era that gave rise to the legislation.’ (Limbaugh 1953; Posner 1982; Hovenkamp 2005, 48–49).

Moreover, looking at the statutes’ legislative history or the economic context at the time of enactment does not take us much forward, as scholars attempted to overcome this inquiry failed to reach conclusive results (Hovenkamp 2005, 50–51). Three different legal approaches have developed over the years exploring the legislation history: The first supporting a narrow definition of one goal to antitrust legislation – economic efficiency, or preventing allocative inefficiency (Bork 1966; Brozen 1969; Posner 1979),<sup>63</sup> the second suggesting several social, moral, and political concerns (Schwartz 1978; Stigler 1985; Fox and Sullivan 1987), and third focusing on preventing wealth transfer from consumers due to market power (Lande 1982, 65). Each of these approaches has a strong holding in the legislator text, commentary, and economic context.

Most scholars and practitioners agree that the main, if not the exclusive, goal of the antitrust regime nowadays is to protect the neoclassical efficiency concept (Khan and Vaheesan 2017, 269–71). Others highlight the debate on the standard for infringement,

---

<sup>63</sup> An important note on Bork’s terminology: When Bork refers to ‘consumer welfare’ as the sole goal and criterion of antitrust law in the US and the impropriety of admitting other goals, he refers to what is known as total welfare or allocative efficiency (using Kaldor-Hicks criterion). Robert Bork’s 1978 book reformulates the proper scope and goals of antitrust jurisprudence and argued that the lone goal of antitrust law should be the protection of consumer welfare, by means of restricting antitrust enforcement to a few well defined, dangerous business practices such as price collusion. ‘Bork’s argument remains today at once the most readable and the most frequently-cited example, in the area of antitrust law, of the arguments laid out by the Chicago School theorists’ (Ramsey 2012: 6).

consumer welfare or total welfare (Carlton 2007)<sup>64</sup> and focus on the possible trade-off within the economic goals (Van den Bergh 2017, 97–98). It has been argued that the unified ‘economic goal’ (with total or consumer welfare in mind) is the most distinct difference between the United States antitrust and European competition law (Van den Bergh 2017, 87). Progressive voices in the US antitrust community are becoming more relevant through individual states’ competition regimes (Waller 2014). An excellent example of this tension and the limitations of state enforcers can be found in the merger of communication giants T-Mobile and Sprint in 2019. The federal agencies have reached an agreement with the parties while leading states such as New York and California petition to block the merger, finally losing litigation in courts.<sup>65</sup> Progressive voices were also strong in the Democratic presidential campaign.<sup>66</sup> However, The United States Supreme Court holds the key to the federal antitrust regime. Some argue that the supreme court has also embraced some of the criticism of the post-Chicago era (Lande 1993).<sup>67</sup> The detailed rules that have developed in American antitrust laws come out, mostly, of the US Supreme Court.

The case-law of the Supreme Court reveals the history of enforcement goals in the antitrust regime. In the most cited case of the early years of the regime, *Standard Oil co. v. United States* 221 U.S 18-19 (1911), the Supreme Court was willing to consider non-economic goals regarding the concentration of wealth and power by monopolies. In later decades the Supreme Court, in *United States v. Aluminium Co.*, stated that it is: ‘possible,

---

<sup>64</sup> It is important to differentiate between the goal and the standard or threshold for intervention (the legal test). It is possible to combine a general efficiency goal with a consumer protection legal test.

<sup>65</sup> See DOJ press release <https://www.justice.gov/opa/pr/justice-department-settles-t-mobile-and-sprint-their-proposed-merger-requiring-package>.

<sup>66</sup> See for example, Senator Elizabeth Warren, ‘Reigniting Competition in the American Economy’, 29 June 2016, <https://www.warren.senate.gov/newsroom/press-releases/senator-elizabeth-warren-delivers-remarks-on-reigniting-competition-in-the-american-economy>.

<sup>67</sup> See for example the case of *Eastman Kodak Co v Image Technical Services Inc* 504 US 451 (1992).

because of its indirect social or moral effect, to prefer a system of small producers [...],<sup>68</sup> and in the *Brown Shoe Co. v. United States*, the repeated the notion that inefficiencies resulting from the protection of small and medium business are accepted, endorsing non-efficiency based competition enforcement.<sup>69</sup> These cases reflect a diversified set of economic and social goals. Furthermore, in the Supreme Court's words, I could find evidence relating the rulings to the ideas of the 'Harvard school'<sup>70</sup> – of protecting the competitive structure.<sup>71</sup> Such notions are close to the German School (ordoliberal school) of economic that was, and maybe still is, influential in the European Union (Van den Bergh 2017, 31–33, 107–9). This tune has changed dramatically throughout the 1970s. Bork and others refer to this period as the 'Warren era' of the supreme court (Buttigieg 2009, 18–20).

In 1972, the Supreme Court described the antitrust regime as the 'Magna Carta of free enterprise' (*United States v. Topco Assocs., Inc.*, 405 U.S 596, at 610 (1972), and by 1977 in the *Sylvania* case,<sup>72</sup> the Supreme Court was ready for a significant change in the regime, neglecting the legalistic approach regarding vertical restraints in favour of efficiency centred Antitrust (Dibadj 2004). In *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*

---

<sup>68</sup> 148 F2d 416, 427 (2d Cir. 1945). See also *Chicago Board of Trade v United States* 246 US 231 (1918), this case is often cited for Justice Brandeis list of criteria for the rule of reason analysis that implied that a judge may consider grounds and policy goals other than Bork's consumer welfare in considering the lawfulness of a restraint.

<sup>69</sup> 370 US 294 (1962). See also *United States v Associated Press* 52 F Supp 362 (SDNY 1943). In this case Judge Hand asserted that Congress had given federal courts 'carte blanche' to choose the values they would implement through the Sherman Act.

<sup>70</sup> The Harvard School is mostly known for its Structure conduct performance (SCP) paradigm and the workable competition concept. See Mason 1939; Hay and Morris 1991.

<sup>71</sup> See *United States v. Von's Grocery Co.*, 384 U.S 270 at 275 (1966): '[T]he basic purpose [...] was to prevent economic concentration in the American economy by keeping a large number of small competitors in business'. See also *Federal Trade Commission v Procter & Gamble Co* 382 US 568 (1967).

<sup>72</sup> In this case the Supreme Court declared non-price vertical restraints to be legal analysed under the rule of reason, requiring economic evidence to be declared anti-competitive. See *Continental TV Inc. v. GTE Sylvania*, 433 U.S 36 (1977).

429 U.S. 477, at 488 (1977), the Supreme Court stated without a caveat that the antitrust laws were enacted for ‘the protection of competition, not competitors’. Soon, the Court would determine more specifically that the ‘Congress designed the Sherman Act as a ‘consumer welfare prescription’” (*Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979)). This line continued in recent times with the famous cases of *Matsushita*,<sup>73</sup> *Leegin*,<sup>74</sup> and *Trinko*.<sup>75</sup> These core elements in the antitrust policy reflected a shift in the regime’s goals (Hovenkamp 2005, 213–84).

A clear example regarding the antitrust concerns with wealth distribution can be found in the case of *Allied Corp*<sup>76</sup> from 1982, mentioned in Lande (1988). *Allied* involved a merger with increased concentration levels (measured in HHI) in various industrial acid markets by a level that would generally raise antitrust concerns. The FTC argued that even if the merger leads to a price increase of 10% in the affected markets, the demand for the acids was completely inelastic; thus, the quantity sold would not diminish (meaning that no DWL will arise). The price rise would ‘only’ lead to a transfer of wealth from the products’ consumers to the producers, a concern that can be deemed as irrelevant for antitrust. Moreover, there would be some inefficiency created if the FTC forced the divestiture of the affected assets. The economic analysis concluded that since any resulting

---

<sup>73</sup> The Court claimed that ‘there is a consensus among commentators that predatory pricing schemes are rarely tried, and even more rarely successful’. *Matsushita Elec. Indus. Co. v. Zenith Radio Co.*, 475 U.S. 574, 598 (1986). The requirement become binding in the case of *Brooke Group Ltd. V. Brown Williamson Tobacco Corp*, 509 U.S. 209 (1993), Robert Bork arguing for the Tobacco Corp in front of Judge Frank Easterbrook.

<sup>74</sup> *Leegin Creative Leather Products, Inc. v. PSKS, Inc.*, 551 U.S. 877 (2007).

<sup>75</sup> *Version Communications Inc. v. Trinko, LLP*, 540 U.S. 398 (2004).

<sup>76</sup> *Allied Corp* FTC File No. 811 0191 (1982). The theoretical base for this approach can be found in (Muris 1979) This approach is example of what can be referred to as the assumption of trickledown economics. The authors argue that in the long term the increase in producer profits will be to the advantage of consumers. Producers will shift surplus to other goods and services resulting in cheaper prices or else the prospect of profits would provide the incentive for risk-taking, innovation and investments. So, ultimately, consumers would always share the gains.

monetary transfer from the products' consumers to its producers was irrelevant and since ordering the divestiture would cause inefficiency, the merger should be approved even assuming prices would rise by 10%. This point is of high significance in the context of this empirical study. It serves to illustrate a fundamental difference in approach to distributional effects of market power.

The regulation shift of the late 70s, initiated by, or at the very least endorsed by, the Supreme Court, is not a new insight. Legal scholars have devoted much attention to the strong bond between the antitrust laws movement and the Supreme court. Ramsey (2012, 1, 6), for example, writes:

From 1911 to the present day it would be the Supreme Court which would play the most significant role in continuing to adapt, refine and develop this keystone of American economic policy [...] one might assume that courts have little or no important role to play in regulating the national economy, but the study undertaken here finds just the opposite: since passage of the Sherman Act in 1890, the courts, and most importantly the Supreme Court, have played an extremely significant role in regulating the national economy and ensuring the continuation of competition through their interpretation of the antitrust statutes.

A different challenge is to accurately identify the turning point. Ramsey and others put the turning point somewhere in the late 70s to the middle of the 80s (Ramsey 2012, 141). Pollock, for example, emphasises the five antitrust supreme court cases in 76 (Pollock 1977). The latest reference found in this review marks Bork's Supreme court nomination as the 'capture of the court' by the new antitrust movement: 'Chicago's fondest dream has

now been realized: There's at last a Reagan-Chicago Court in command of federal antitrust policy, with the power to direct it where it will [...].'<sup>77</sup>

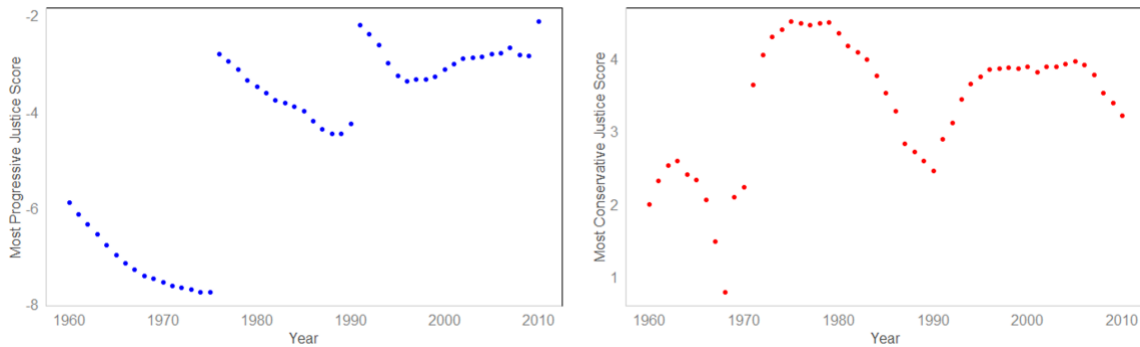
I try to follow the quantitative analysis of the US supreme court's political tendency. Using a measure for a relative location of US Supreme Court justices on an ideological continuum allows for a better understanding of the high court's politics using empirical methods. The Martin-Quinn score measures the judicial ideology over the years and gives specific values to each justice, the median justice, the most right (conservative) and left (progressive) justice serving at that year (Martin and Quinn 2002). In simple words, a progressive judge will receive a negative sign, while a more conservative judge will receive a positive sign. However, this is not a binary indicator. A higher value reflects a change from progressive to conservative ideology.

These measures of conservatism are generally defined by their legal originalism rather than by the strength of their views on antitrust. That is both a disadvantage (not reflecting the core element directly) and an advantage (not influenced by a researcher's agenda). Looking at the time-series of the median, min (most progressive justice as shown in figure 5 on the left panel) and max (most conservative justice on the right panel), shows a clear drift towards a more conservative court that starts close to the end of the 70s and remains so ever since.

---

<sup>77</sup> Foreword, *Antitrust L. & Econ. Rev.* (1) 1987. Bork's, at the time United States Court of Appeals for the District of Columbia Circuit, failed nomination was the 4<sup>th</sup> nomination to the Supreme Court by President Ronald Reagan (4 out of 5 succeeded). The 1987 confirmation vote was one of the most-controversial votes on a Supreme Court nominee in its history.

Figure 5: Supreme Court ideological continuum in the United States



Source: Martin and Quinn 2002. The most progressive justice (min score – in blue) and the most conservative justice score (max – in red) serving at the supreme court of the US at a given year. The time series shows the move from low to high values in both measures indicating a move from progressive to conservative justices.

For example, the most progressive score (represented by negative values of the Martin-Quinn score) has shifted from values of -8 in the mid-70s to almost -2 in the middle of the 90s, peaking also in 2010, in four waves of courts. This sharp increase is not surprising, giving the findings in the previous literature. The most conservative justice scores show a similar increasing trend going from just above a zero score to the highest score measured (5) in the years before 1980, keeping a high score from most of the 1980s-2000s.

While conservative judges tend towards economic liberalism, that is not always the case. In addition, a judge with a left-leaning ideology could be reluctant to support market mechanisms as such, and hence can be regarded as anti-competitive, leading them to want to see corporatist cooperation between government, big industrial employers and unions, protectionist trade legislation. We need only look at European attitudes to national champions to see this in action. Nevertheless, if and when the Supreme Court has gone through an ideological shift, it could be relevant to the willingness of the institution to engage with the distributional aspects of antitrust law. Even more likely, the Supreme Court would be more comfortable with potentially less intense competition regulation under a ‘laissez-faire’ approach.

## **(b) Enforcement agencies**

The enforcement agencies have a strong impact on the regulation and prioritise resources, implementing the legislation through the guidelines and public prosecution powers. Their guidelines often do not follow the case law consistently and advance theoretical economic reasoning that courts have not yet formally adopted (Broder 2016, 114). The federal and state enforcement agencies do not have the full authority to enforce antitrust infringements or block mergers and obtain a court ruling (instead of their European colleagues), giving the courts the final ruling on the shaping of the regime.

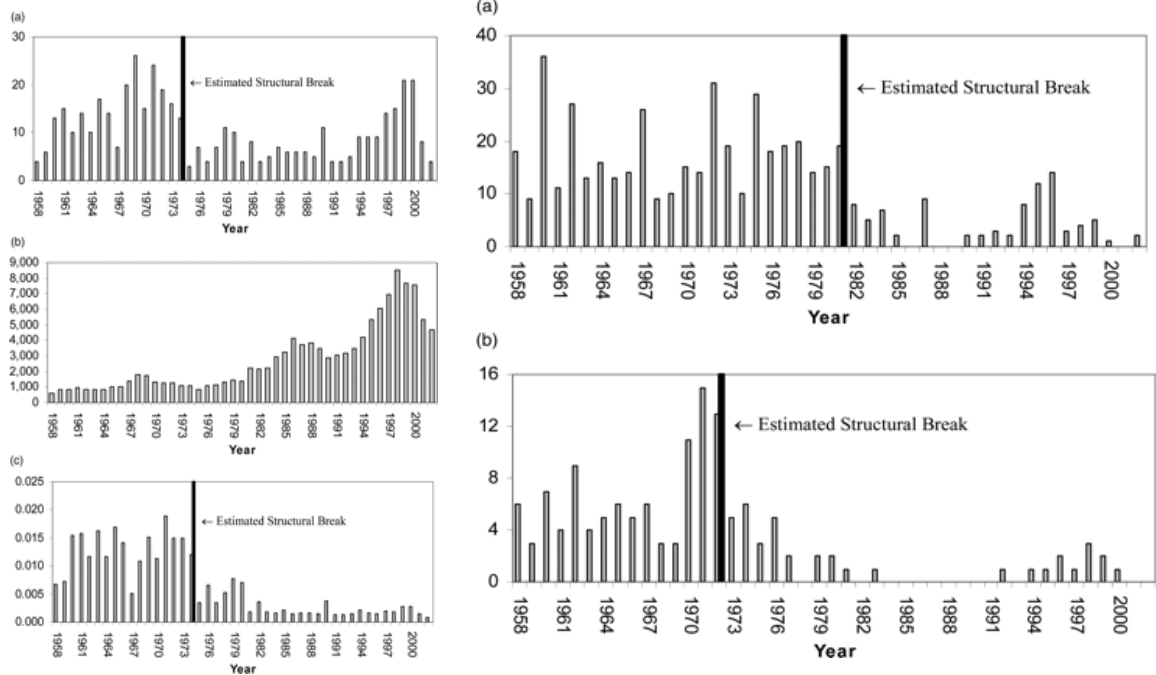
Similar to the paradigmatic shift apparent in the Supreme Court, government agencies' enforcement activity was not monotonous at all.

The DOJ and the FTC enforcement efforts seem to freeze around the end of the 70s. It has been argued that the US agencies' mere dual structure is 'inelegant, redundant, and often problematic' (Crane 2011, 28, 42–48). The mainstream consensus regarding antitrust, federal enforcement efforts in the United States has been relatively stable (low) since the end of the 70s early 80s when the winds of change with Clinton and Obama presidencies turned out to be 'more talk than action' (Broder, 2016: 10).

Public enforcement pendulum in the United States has swung from the activist antitrust enforcement of the mid-to-late 1970s (May 1987; May 1989; Kovacic 2003) with unspecified goals (Wood and Anderson 1993; Hovenkamp 2005, 69; Broder, 2016: 7), to precautionary refinement of economic analysis of the Chicago School and the following moderate enforcement efforts, in the age of efficiency concerns (Wood and Anderson 1993; Hovenkamp 2005, 64–65).

Comparisons of enforcement efforts between regimes could prove misleading as agencies tend to report different measures, reflecting both differences in substantive law and enforcement strategy (Bradford and Chilton 2019, 56–57). Ghosal (2011) tried to capture the pragmatic shift using the US federal agencies’ statistics of enforcement activities. He finds a distinct regime shift in antitrust enforcement during the 1970s relying on a compositional change with a quantitatively large increase in criminal antitrust court cases and a decrease in civil antitrust court cases initiated. Even more interesting is the clear decreasing trend apparent when disaggregating the civil cases as in figure 6. Ghosal does not assume a breakpoint. Instead, he uses econometric techniques to reveal the date of the structural change based on a sequel of autoregressive models; for each possible break-date, the author estimates an F-statistic score of the estimation equation, including economic and political control variables. The highest F-statistic score is chosen as the breakpoint (Ghosal 2011, 751-752). For both the aggregated civil cases and the Sherman Act, section 2 – 1972 is the estimated time point. The latest estimation in the study is for the civil Sherman Act section 1 – 1981, and all the rest are within the 70s period (Ghosal 2011, 753).

Figure 6: left side (a) Total merger cases. (b) Total U.S. mergers. (c) Ratio; right side (a) Sherman Act section 1 (restraints of trade) (b) Sherman Act section 2 (monopolization) cases

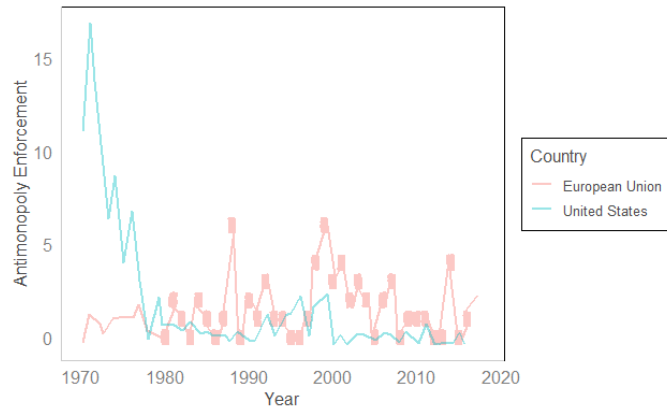


Source: Ghosal 2011. The left panel shows enforcement efforts under merger regulation over time: (a) cases, (b) merger notification and (c) a ratio per year. The estimated breaking point by Ghosal indicates 1973-1974. On the right panel (a) Sherman Act section 1 (restraints of trade) (b) Sherman Act section 2 (monopolization) cases per year. For section 1- the estimated breaking point by Ghosal indicates 1981-1982, and for section 2, 1972-1973.

The overall paradigmatic shift is particularly apparent in section 2 of the Sherman Act enforcement efforts, which requires complex economic and legal analysis. As shown in figure 7, the number of monopolisation cases comes to a complete stop in the US's early 70s. In contrast, the number of abuse of dominance cases in the EU shows significant volatility.<sup>78</sup> Again, be it a result of appetite or substantive laws, the bottom line is the same.

<sup>78</sup> This does not mean that antitrust enforcement has stopped completely. I interpret these figures as a change in focus towards more personal and criminal enforcement act, mostly against cartels (section I). See also Gutiérrez and Philippon (2020).

Figure 7: Abuse of dominance cases, US vs EU



Source: Gutiérrez and Philippon (2018, 28); which is an extended dataset of Russo et al. (2010). The red line represents the EU cases of abuse of dominance per year, while the blue line represents the US monopolisation cases (as is shown in figure 6 (right panel (b)) as well).

I expect that such a shift can reduce both ex-post and deterrent effects of the antitrust policy in the US (Landes 1983). When the number of cases drops to zero for several years, companies can perceive this as a signal: the priorities have changed. On the other hand, when enforcement goes up and down, some level of uncertainty, which is essential for enforcement efforts, remains.

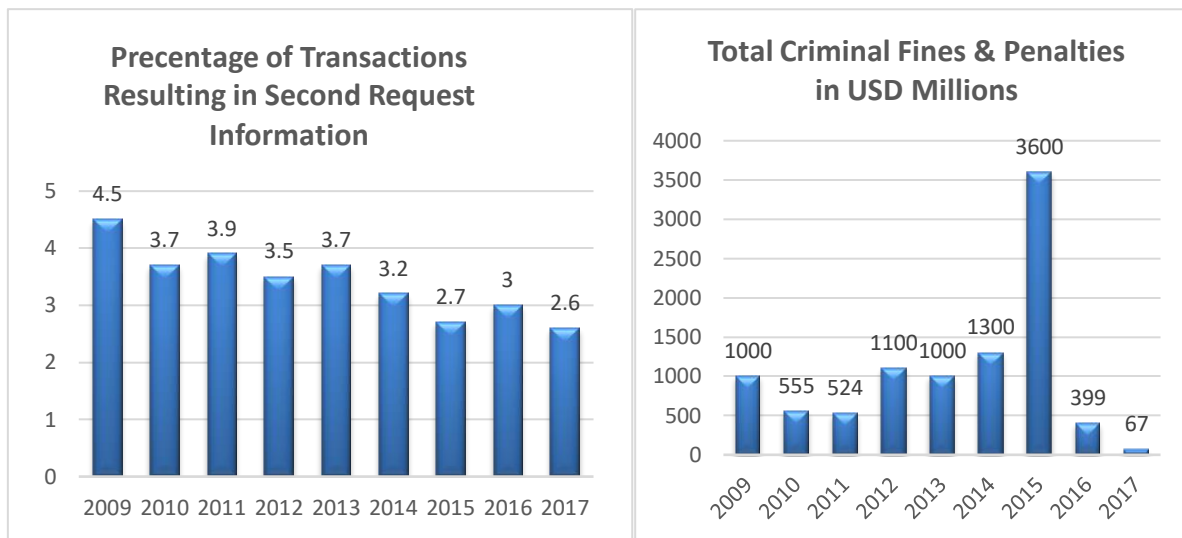
Theoretically, the US public enforcement is unique in its inclusion of criminal penalties (exclusive responsibility of the DOJ) in the regulation. In practice, however, the federal enforcement agencies do not prosecute all antitrust violations as criminal offences, except for ‘hardcore’ cartel activity, such as price-fixing (Broder, 2016: 184-185).<sup>79</sup> The limited extend of the criminal procedure is mostly due to the Supreme Court’s ruling that

<sup>79</sup> In 2017, the DOJ opened 44 criminal investigations (25 grand jury investigations and 19 preliminary inquiries). The Division filed 24 criminal cases, charging 8 corporations and 27 individuals. The Division obtained \$66 million in criminal fines and penalties from 7 corporations and 34 individuals. The courts sentenced 30 individuals to serve time in jail with an average of nearly 9 months incarceration, filed 67 criminal cases and obtained \$1.14 billion in fines. Courts imposed 45 prison terms with an average sentence of just over two years. See US report to the OECD June 2018, available at: [https://one.oecd.org/document/DAF/COMP/AR\(2018\)18/en/pdf](https://one.oecd.org/document/DAF/COMP/AR(2018)18/en/pdf) (last visited, 22 October 2020).

the DOJ must prove criminal intent for conviction (*United States v U.S Gypsum Co.* 438 U.S 422 (1978)).

Another alternative source of evidence for the enforcement trends in US antitrust (comparable to some extent with other jurisdictions) is the ratio of ‘second request information’ as a proxy for in-depth merger inquiries and total criminal (cartel) fines. As figure 8 shows, the trends in the more recent years seem to reflect a general decline of public enforcement of the US’s antitrust laws.

Figure 8: (a) Ratio Second Request. (b) Total Criminal Fines



Source: DOJ, Criminal enforcement Trends Charts Through Fiscal Year 2018.<sup>80</sup> On the left panel, the percentage of transactions which resulted in a second request data from the DOJ and FTC and on the left is the total criminal fines imposed per year by the DOJ.

As explored, the US model’s strategy of enforcement emerges from the system features and institutions rather than just a conclusive resolution of intellectual debate. The United States Supreme Court plays a crucial role in this framework (Khan and Vaheesan 2017, 236). The few studies that investigated the state-level antitrust enforcement did not find a

<sup>80</sup> <https://www.justice.gov/atr/criminal-enforcement-fine-and-jail-charts>. For the 2015, the only outlier in the negative trend, is mostly due to one cartel investigation of the financial sector that accounted for 2.5 billion dollars levied against five banks for conspiracies to manipulate global foreign exchange markets.

parallel increase of cases that could balance the federal trend (Feinberg and Reynolds 2010), even if some had argued that the paradigmatic shift was part of the reasons state enforcement was initiated at the first place (Rose 1994).

However, another way to look at this paradigmatic shift is through the lenses of privatization: moving from the public to the private enforcement system. Under this approach, the government (public enforcement) cannot be expected to do all or even most of the necessary enforcement for optimal deterrence levels (Lande and Davis 2007, 906). Therefore, strong incentives for private enforcement are required. Private enforcement of the statutes is litigated through a unique civil procedure that is deviating from the general civil procedure in two main ways: As an exception to the regular procedure, antitrust rules in the United States require the losing defendants to pay for the plaintiff's court costs and attorneys' fees. To further encourage civil litigation, the antitrust laws also award automatically treble damages (three times their actual damages to a cap of \$100 million) to plaintiffs, individuals or companies (Hylton 2003, 48–49). The treble damages rule reflects a basic perception in the strategy of enforcement of antitrust laws echoed in the US Supreme Court's rulings: 'Congress created the treble-damages remedy of § 4 precisely for the purpose of encouraging private challenges to antitrust violations. These private suits provide a significant supplement to the limited resources available to the Department of Justice for enforcing the antitrust laws and deterring violations' (*Reiter v. Sonotone Corp.*, 442 U.S. 330, 344 (1979)).<sup>81</sup>

---

<sup>81</sup> See also *Mitsubishi Motors Corp. v. Soler Chrysler-Plymouth, Inc.*, 473 U.S. 614, 635 (1985) ('The treble-damages provision wielded by the private litigant is a chief tool in the antitrust enforcement scheme, posing a crucial deterrent to potential violators'); *Agency Holding Corp. v. Malley-Duff & Assocs., Inc.*, 483 U.S. 143, 151 (1987) (Clayton Act "bring[s] to bear the pressure of 'private attorneys general' on a serious national problem for which public prosecutorial resources are deemed inadequate").

According to a longstanding – potentially timeworn – statistical data available in the literature, private lawsuits outnumber public lawsuits by a 10 to 1 ratio (Salop and White 1985, 1003; Crane 2007). Davis and Lande (2012, 1300) argue that the ‘ratio of private deterrence to DOJ deterrence [...] is roughly 3:1 in favor of private deterrence. Whether the actual ratio is 2:1 or 4:1 is beside the point; our article’s point is that the ratio for all private cases-not just the forty that we studied-is ‘probably’ greater than 1:1’. These statistics give private enforcement in the US, to say the least, a central role, even if this ratio between public and private enforcement had changed in favour of first.<sup>82</sup> Some antitrust scholars have gone so far as to declare that ‘Private litigation is the predominant means of antitrust enforcement in the United States’ (Crane 2010, 673).

A possible way to observe the balance between public enforcement and private enforcement in the US is by looking at the total cartel fines inflicted by the DOJ comparing to private damages payments in the same period. From 1990 through 2011, it has been estimated that a total of DOJ corporate antitrust fines, individual fines, and restitution payments amounted to totals (valuing a year of prison at 6 million dollars and a year of house arrest at 3 million dollars) approximately \$11.7 billion. This total is yet significantly less than the \$33 billion resulting from sixty cases of private antitrust enforcement studied in the same period by the researchers (Davis and Lande 2012, 1273, 1277–78).<sup>83</sup> The fact that all antitrust enforcement is reviewed by courts, in a combination of an open-end

---

<sup>82</sup> In more recent formal documents, it was mentioned that 75% of US antitrust cases are brought to court by private enforcement, typically as class actions. See white paper ‘EU and US competition policies Similar objectives, different approaches’ European parliamentary research service (2014).

<sup>83</sup> Note however, that the comparison is between the anti-cartel DOJ program and private recovery sums in private lawsuits in the same period but including all private cases (not only cartels). These is of course a problematic comparison. Yet, the weight giving to private enforcement is the main take here. According to the study, only 20-25% from the private cases are ‘follow-on’ litigation, using private enforcement efforts as the steppingstone for enforcement (Davis and Lande 2012, 1299).

legislative text, gives the courts, and specifically the Supreme Court, a central role in the overall regime when major changes in the enforcement are practically approved by it. It could be a case of privatization of public (enforcement) efforts, but I could not find reliable data to differentiate between this alternative explanation to the decline of public enforcement. However, even if private enforcement exhibits an increasing trend, this will make my estimations stronger, as the effect of decreasing public enforcement should be stronger without private enforcement to balance it.

### **(c) Substantive rules**

Lastly, the US's substantive rules governing monopolisation had become a rigorous and challenging hurdle for antitrust enforcers. Taking the example of predatory pricing as a key doctrine in the behaviour of monopolies, the US Supreme Court has ruled that predatory pricing (or refusals to deal) should be subject to a more relaxed standard that followed the spirit of the rule of reason test, rising the burden laid on the plaintiffs to prove an anticompetitive claim. The courts ruled that predatory pricing is 'rarely tried, and even more rarely successful' (*Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 589).

The legal impact becomes apparent when looking into the predatory pricing analysis. Predatory pricing claims in the United States fall under Section 2 of the Sherman Act. Section 2 of the law places high hurdles in the way of predation plaintiffs. The predatory pricing doctrine in the US antitrust regime requires the plaintiff to prove below-cost pricing using a reasonable proxy for the marginal cost (MC). The marginal cost test choice is one of at least three options possible: marginal cost, the average cost (AV) and average variable cost (AVC), and reflects the scepticism inherited in the regime. The US standard for predatory pricing is the efficient standard because it concludes that only

pricing that reduces total welfare can potentially breach antitrust law (Areeda and Turner 1975, 701–2).<sup>84</sup> However, the marginal cost is nearly impossible to measure precisely. Therefore, the US courts examine reasonable proxies to marginal cost (*Brooke Group Ltd. v. Brown Williamson Tobacco Corp.*, 223), when the goal of the doctrine (and the plaintiff) is to approximate marginal cost (*United States v. AMR Corp.*, 335 F.3d 1115-1116 (10th Cir. 2003)).

The standard must be proved at an early stage of the claim to avoid summary judgment in a predation lawsuit. The plaintiff is also required to prove that the market structure permits the defendant to recoup its losses after the victim has been forced out of the market (*Brooke Group Ltd. v. Brown Williamson Tobacco Corp.*, 222-224). Needless to explain, both requirements are difficult to meet in practice. The Stigler Report, analysing antitrust reform in the context of digital platforms, observed that ‘Predatory pricing law has been shaped largely to avoid over-enforcement and with the explicit acknowledgment that the law permits some forms of anticompetitive pricing conduct. Courts have adopted a narrow and rigid notion of recoupment and have made it almost impossible to prove that prices are below cost, even where it seems likely’ (Stigler Committee on Digital Platforms Final Report 2019, 97),<sup>85</sup> suggesting predatory pricing law should be modified, and the overall burden of proof on plaintiffs reduced.

Again, taking a quantitative approach, a similar picture to the two previous sections emerges. Exploring the Competition Law Index (CLI) of Bradford and Chilton (2018)

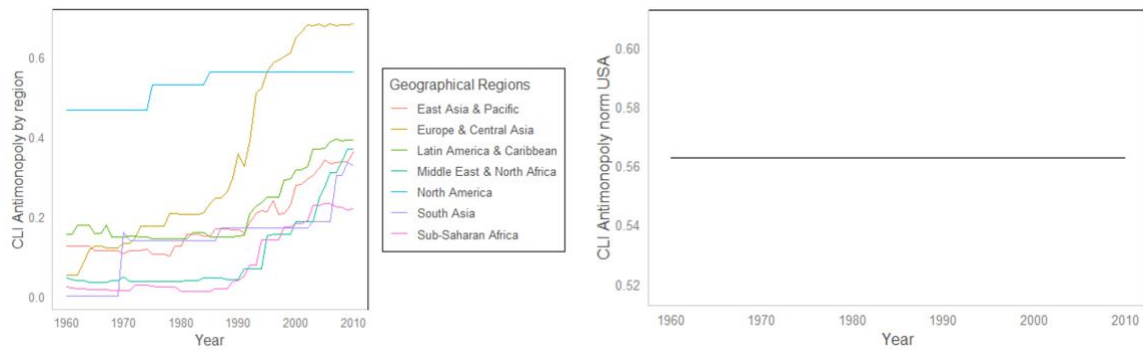
---

<sup>84</sup> The reason is that price, under ideal conditions, reflects the marginal benefit to society from producing an extra unit of a good. Marginal cost, under ideal conditions, reflects the resource cost to society of supplying an additional unit of a good to the market.

<sup>85</sup> Available at: <https://research.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms> (last visited 14. October 2020).

scope of law measure, the United States substance law of ‘monopolisation’ score is stagnated comparing to other developed nations (for a detailed overview of the CLI, see chapter 7.2 (a) Competition law indices). On the left side of figure 9, the CLI world data, averaged by geographical region. On the right side, the flat US dominance norm.

Figure 9: Abuse of dominance norm, 1960-2010



Source: author’s elaborations; Bradford and Chilton (2018). On the left panel, the CLI (‘law of the books’) antimonopoly (section 2 and abuse of dominance) score aggregated by the world bank geographical definition over 1960-2010. On the right panel, the US CLI section 2 score. A similar picture emerges from the overall CLI score; the antitrust laws have hardly changed over five decades. Now, under the Biden administration, when new waves of legislation are on the horizon, the picture concerning the US is likely to change.

The stagnation in the US could not be more obvious. An important part of the substance norms in the US does not change over four decades. The EU and Central Asia competition laws also closed the initial gap with the US around the 90s.

Note that with the new Biden administration, it looks like the wind of change is blowing in the halls of the DOJ and FTC. The appointment of Lina Khan (mentioned here for her progressive approach) as the head of the FTC is promising and can affect the scope and intensity of enforcement. However, the courts, and specifically the Supreme Court, still hold the key antitrust enforcement. Very recently (July 2021), the first ruling over the Facebook-WhatsApp merger inquiry, launched by the FTC, was dismissed by The U.S. District Court for the District of Columbia. The judge eviscerated one of the federal

government's core arguments that Facebook holds a monopoly over social networking; the court stated that the prosecutors had failed to provide enough facts to back up that claim. William E. Kovacic was quoted in the New York Times after the ruling: 'This really stings,' said, the former chairman of the Federal Trade Commission. 'This is a reminder to those who have wanted a dramatic, sweeping litigation campaign to take on Big Tech that there's nothing easy about it, because the courts have a different view of the antitrust system.'<sup>86</sup> Time will tell whether US antitrust laws are on a new path, but as my investigation is limited to the pre-Biden area, the empirical analysis does not reflect these possible changes to the antitrust model.

### **5.3. Hypothesis I: The *paradigmatic shift in American Antitrust and the rise of economic inequality in the US***

Since the 1970s-1980s, a major ideological shift in the US antitrust model has occurred across three dimensions: Supreme court, enforcement efforts, and substantive laws. This paradigmatic shift has generally been towards less activist antitrust laws. As such, it provides an opportunity to examine whether this shift is associated with any changes in economic inequality.

Only a powerful across the board change to the laws can be expected to affect the macroeconomic trends. Moreover, the legal effect is slow and long-term. One case of the US Supreme Court cannot affect the American economy as a whole. To refute Van Reenen's (2018) argument concerning increasing enforcement, I need to look beyond any

<sup>86</sup>

<https://www.nytimes.com/2021/06/28/technology/facebook-ftc-lawsuit.html>.

single indicator of law explored above. The next section will explore this empirical question: what happened to US antitrust and is it associated with inequality trends?<sup>87</sup>

#### **5.4. Descriptive analysis of the evolution of antitrust laws**

To quantify the antitrust model needed to investigate whether a paradigmatic shift has occurred in the US, I created a new scale that considers all three pillars discussed in section 5.2. The scale is similar to that created by Buccirosi et al., (2013) – the Competition Policy Index (CPI) – discussed in section 7.2. Data sources, and which is based on 12 countries and ten years (1995-2005). The advantages of the US antitrust scale as compared to the CPI are multiple. First, it is based on a time series of four decades (1970-2010). Second, it combines data on the US Supreme Court (which no other index does) and direct enforcement efforts. Third, it involves minimum manipulation or adjustments.

My approach has been to scale the three factors of the competition regulation reviewed: the Supreme Court (the negative of the min score), enforcement efforts (the number of antimonopoly cases) and the substantive law (the CLI overall scope measure). I did not use the abuse of dominance/monopolisation as it is constant over the studied period. Using the overall CLI index is more conservative. All three were scaled to have a zero average and a standard deviation of 1. I gave each score equal weights and plotted from 1970 through 2010.<sup>88</sup> A higher value of the scale could be interpreted as a more intense competition law (progressive court, aggressive enforcement effort and wider

---

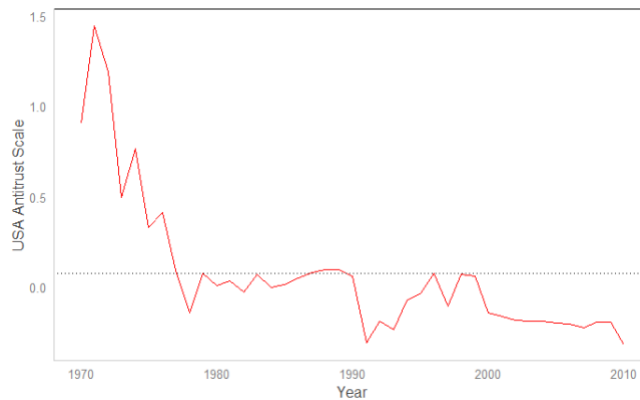
<sup>87</sup> I review work done elsewhere (Zac 2020), providing here the descriptive analysis needed for the next chapters of the thesis. Further details can be found in the paper.

<sup>88</sup> Giving that I had no theoretical foundation to assume and differences, I averaged the three indexes together  $(x*1/3+y*1/3+z*1/3)$ .

scope). The descriptive discussion presented above suggests that we should expect that the overall intensity to have decreased over time.

Figure 10 presents the new scale. The mean of the new scale is  $\sim 0.075$  (due to NA's), with a minimum value of  $-0.32$  and a max of  $1.446$ .

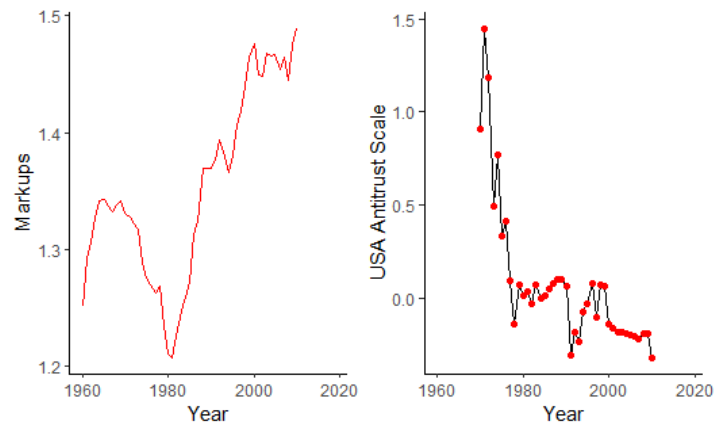
*Figure 10: US Antitrust scale*



Source: author's elaborations. The US antitrust scale over 1970 to 2010. The scale is an average of three indexes: The Supreme Court (the negative of the min score), enforcement efforts (the number of antimonopoly cases) and the substantive law (the CLI overall scope measure).

As can be seen in figure 10, the antitrust model shows a consistent downward trend for a decade between the 1970s-1980s, following a stable below-average period until the 1990s, with minor variations until 2010. In figure 11, I contrast this antitrust scale with the rise of markups as a proxy for competition levels in the US economy.

Figure 11: US Antitrust scale and markups



Source: author's elaborations. On the left aggregated markups of the US and on the right the Antitrust scale, 1960-2010.

On the left panel, the markups change between 1960-2010. On the right panel, the US antitrust scale over the same period. The drop in the 70s in the antitrust scale is preceding the rise of markups in the 1980s (in around ten years), and the scale has stagnated ever since, with high markups remaining in this period. Most of all, figure 11 reflects the two periods in the antitrust evolution: before the drop in the 1970s and after. These two periods are correlated with the two periods of markups of low values before the 1980s and high values ever since.

In other words, this simple correlation captures the opposing trends between competition intensity (as measured by markups) and the effectiveness of antitrust law (as measured by the antitrust scale). These results are in line with Ghosal (2011) and the new literature on the rise of markups (Gutiérrez and Philippon, 2020). However, the low number of observations, level of aggregation, and lack of counterfactual analysis does not allow for causal inference.

The three components of the antitrust scale make clear, on their own, the strong paradigmatic shift towards decreasing public enforcement efforts based on open-ended, fact-intensive legal standards (Khan and Vaheesan 2017, 272–74). These changes are especially powerful for the area of monopolisation. The overall paradigmatic shift is particularly apparent in the monopolisation (Section 2 cases) area of enforcement. Monopolisation enforcement requires complex economic and legal analysis and exemplifies the breakpoint in US enforcement efforts. It could also mark the potential turning point for antitrust enforcement – with the new cases brought against Google by the DOJ in 2020.<sup>89</sup> The case, a dramatic Section 2 complaint, could be marking a change in the enforcement effort by public enforcers in the US.

Having explored the association between antitrust enforcement and markups, the next step is to see how markups interact in the US with economic inequality changes.

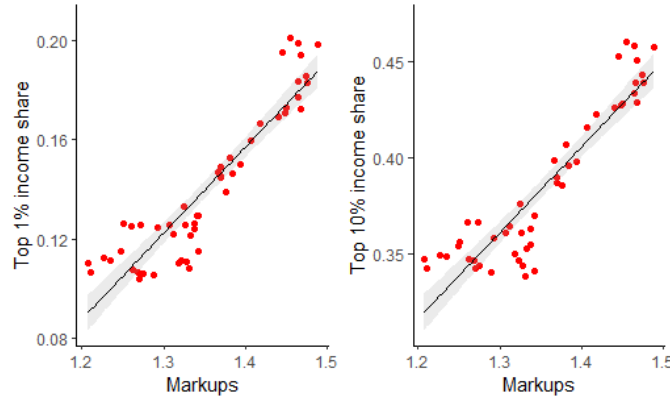
## **5.5. Markups and economic inequality in the US**

The link between markups and economic inequality is not a new finding and has been debated in the economic literature reviewed above (Nolan, Richiardi, and Valenzuela 2018; Kaplan and Zoch 2020; De Loecker, Eeckhout, and Unger 2020). These studies suggest a strong positive and statistically significant correlation between markups (in both firm and aggregated levels) and the top income shares, controlling for possible covariates, such as taxation, trade and technological investments. Figure 12 presents the scatter plot between the top income shares in the US and aggregated markups.

---

<sup>89</sup> The full complaint is available at: <https://www.justice.gov/opa/pr/justice-department-sues-monopolist-google-violating-antitrust-laws>.

Figure 12: Markups and income shares in the US



Source: author’s elaborations. The linear correlation between the top 1% income share (n the left panel) or the top 10% income share (On the right panel) and aggregated markups in the US.

Already from this descriptive analysis, the link between the rise of markups and income inequality seems solid. To test the strength of this correlation, I explore a first-difference regression model:

$$\text{top1}_t - \text{top1}_{t-1} = \Delta \text{top1} = \delta \Delta \text{markup} + \Delta X' + v$$

The dependent variable is the share of income going to the (top1<sub>i,t</sub>) or 10% (top10<sub>i,t</sub>) in the US. The  $\Delta$  notation refers to the difference between two values in the previous year (for example  $\text{markups}_t - \text{markups}_{t-1}$ ).<sup>90</sup> The vector  $X'_{i,t}$  includes time-varying covariates following similar studies (Chong and Gradstein 2007; Papaioannou and Siourounis 2008): such as General government final consumption expenditure (% of GDP),

<sup>90</sup> The reason to include FD is that the US markups times-series shows non-stationary behaviour. Auto Correlation Function (ACF) plot is presented in the appendix, figure A1. The plot a visual way to show the serial correlation in time series data. Serial correlation (also called autocorrelation) is where an error at one point in time travels to a subsequent point in time. For a stationary time series, the ACF will drop to zero relatively fast, while the ACF of non-stationary data decreases slowly. Also, for non-stationary data, the value of the first correlation is often large and positive. The Ljung-Box Q\* statistic has a p-value of 0.5213 (for h=10). The KPSS Unit Root Test supports the same conclusion with a test-statistic value of 1.2536. Studentized Breusch-Pagan shows no evidence for heteroskedasticity (P-value larger than 0.5).

Trade Openness, GDP per capita growth (annual %), Inflation and the percentage of workers unionised from the total workers. Technological changes are also included by using Gross domestic spending on research and development (R&D). Theoretically, from these covariates, the most crucial to the analysis is the general government final consumption expenditure, which is considered as the most robust proxy for the level of redistribution in the country (tendency towards progressive policy), mostly via tax and transfer policies (Zeira and Battisti 2018, 7–8). Other proxies for taxation policies are added for sensitivity control, such as Tax Revenue % of GDP.

The main results of these regressions can be found in the appendix (Tables A5-A7), and a summary is presented in Table 1:

**Table 1.** Conditional Effects on 1% Income Share, Markups-FD, US

	(1)	(2)	(3)	(4)
		1% Income Share		
Markups	0.143** (0.053)	0.123*** (0.046)	0.135*** (0.048)	0.129* (0.067)
Inflation	0.001* (0.001)	0.001 (0.0005)	-0.001 (0.001)	0.002 (0.002)
Government Exp.		-0.006*** (0.002)	-0.004** (0.002)	-0.005 (0.004)
Trade			0.003*** (0.001)	0.001 (0.001)
GDP annual growth				0.001 (0.001)
First-difference estimator	YES	YES	YES	YES
Obs.	50	50	50	27
R-squared	0.170	0.326	0.435	0.720
Full Controls	No	No	No	YES

Standard errors are in parenthesis  
 \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

These results suggest a positive and significant relationship between the rise of markups and income inequality in the US, which are consistent with the findings of Han and Pyun (2020). However, the small number of observations and the level of aggregation does not

allow me to conclude much more than a strong correlation, which might be a result of several confounders related to the political shift in the US, which occurred simultaneously with the antitrust shift.

## **5.6. Summary**

The US descriptive case study offers a valuable illustration of the institutional change in antitrust enforcement history, which is correlated with significant macroeconomic changes: the rise of markups and income inequality, operating mostly via the rise of top income shares and the decline of the labour share.

While limited by the aggregation of the data and lack of counterfactual analysis, the analysis in this chapter thus far supports the notion that weakening enforcement of antitrust laws and diminishing competition may be part of the US inequality story. At a minimum, I can reject arguments made by scholars presenting antitrust enforcement as ‘business as usual’.

To empirically estimate the link between the law and economic inequality, I move on from the descriptive and qualitative methods employed up until here to more advanced causal inference techniques. First, by testing the hypothesis that the US model of law is associated with higher economic inequality levels. Second by looking at a large cross-country panel linking the scope of the law to economic inequality. Finally, by exploring industry-level data in developed economies. The next chapters try to generalise the main findings of the US case study: is there more evidence outside the US linking competition law to competition and economic inequality?

## CHAPTER SIX: THE UNITED STATES AND THE EUROPEAN UNION LAWS AS MODELS OF COMPETITION LAWS

The findings so far are limited to the US and are mostly descriptive. However, it could be that the paradigmatic shift which occurred in the US antitrust laws, or even more abstractly, the ideas at the core of this change, have found their way to other competition laws around the world. If so, this provides a fertile ground for empirical analysis. As noted in the previous chapter, competition laws worldwide vary in their goals, enforcement tools and institutions. However, today more than ever, there is also much similarity. The chapter explores the variations between the laws to shed light on the legal mechanisms incorporated into the laws that intentionally or unintentionally could have had distributional effects.

Specifically, I test second hypothesis: *The US model of competition law is associated with higher economic inequality levels compared to countries that adopt the EU model.*

Why do I believe the US model of law should be associated with more inequality? The strategy of enforcement in the US model emerges from the system features and institutions rather than just a conclusive resolution of intellectual debate. The US model is as an adversarial, Supreme Court centered competition law (Khan and Vaheesan 2017, 2); with public enforcement efforts focus on cartels (Section 1 of the Sherman Act), and private actions are strongly incentivised (Lande and Davis 2007; Hylton 2003: 48-49). These characteristics are expected to affect the US antitrust laws' ability to constrain market power. Moreover, as was mentioned in the previous chapter, the US antitrust model can be

a proxy to test out the appetite for enforcement and ideological differences between the US and the EU model of law, which are not apparent in the ‘law of the books’.

In other words, the model of law choice integrates the institutions, priorities and strategy of enforcement of the regime. Using similarity to a model law also has advantages over leximetric data, which usually tries to quantify one aspect of the law.

The chapter is first a comparative study of the US and EU models of law. It is structured in the following order: first, I present the legal assumptions for the ‘model of law’ hypothesis. These assumptions are at the core of the estimation strategy, which will follow next. Second, the EU model is described following the same approach used in chapter 5: goals and judicial review, enforcement efforts and substantive laws focusing on abuse dominance laws. The second hypothesis concerning the US model of law, is relevant in contrast to the EU model, as I will explain in the next section. Third, I present the empirical analysis including a discussion of the data, methods and results. Finally, I summarise the findings and discuss their potential application.

## **6.1. The model of law**

The distinction between the US and the EU models of law offers us fertile ground for inquiry. One could easily argue that the rise of economic inequality is a US phenomenon. It could be that antitrust laws played a key role in that phenomenon, but my descriptive analysis, thus far, fails to distinguish the antitrust effect from other institutional and political changes of the 1970-1980s. If other developed countries that have adopted the principles of American antitrust, to some extent, have also exhibited a similar economic inequality trend, then this suggests that the US findings could be generalised, making a

case that – competition law might affect economic inequality. Two legal assumptions underline this analysis:

*a. The US and the EU model of law are distinct forms of competition laws, with different observable features that might affect economic inequality.*

*b. Countries that adopt/copy the text of one of these laws share some of the elements of the prototype model (US or EU).*

Next, I will elaborate on the two assumptions. The justification for (a) is based on chapter 6.2, and the justification for (b) is in 6.3.

**(a) The US and the EU model of law are distinct forms of competition laws, with different observable features**

The first assumption (‘distinction between models’) requires further elaboration. That the US and EU offer us two distinct types of enforcement regimes for competitive markets is widely understood:

In spite of the large number of antitrust enforcement regimes, there are three that are recognized as extremely important in global commerce: the United States, the EU, and China. Moreover, China has modelled its antitrust law regime on that of the EU. Essentially there are two antitrust regimes that dominate the global legal landscape: the United States and the EU (Blair and Sokol (2015, 17–18)).

In other words, a country that wishes to legislate a competition law will most likely look for an off-the-shelf product (law). The US and EU laws stimulated the adaptations of dozens of new competition laws all over the world in the last two decades (Guidi 2016) and competed over influence across the globe.

The theoretical literature of comparative competition law – based on the optimal enforcement models of Becker (theory of punishment effects, Becker 1968) and later Landes with the antitrust model (Landes 1983), implies that the optimal antitrust enforcement policy internalises, to the monopolising firm, the harm suffered by consumers. One way to reach optimal deterrence, according to Landes’ model, is to internalise consumer harm, but another is to eliminate the expected profits from the anticompetitive conduct in the hope to deter the behaviour altogether. According to Blair and Sokol (2015, 19–20), the two options to reach deterrence are manifested in the two models of law: Antitrust (consumer harm) and the EU (complete deterrence).

Moreover, some aspects of the deterrence model could also reflect a ‘public welfare’ mechanism (Blair and Sokol 2015, 27), suggesting an important difference that directly links to the second hypothesis. In other words, the competition law model choices (e.g., legal standard of abuse of dominance) could incorporate social goals even if formally, they are not specified directly in the Sherman Act or the EU regulation. Section 6.2. will further elaborate on all these differences.

Overall, these two models also seem to reflect a slightly different context of decision making in competition regulation (Fox 1997, 340). How laws are shaped over time, and who are the main players. It is even safe to say that these two models reflect competing philosophies for economic regulations (Hall and Soskice 2001; Ezzachi 2017; Melamed and Petit 2019).

Note that it is possible to create a scale depicting two theoretical prototypes models based on the framework developed so far instead of the actual laws. For example, one could imagine a law that focuses on labour markets or essential product markets, as opposed to a

law that ignores any consumer aspects of the harm putting above all the efficiency and total welfare. However, following the actual legal regimes keeps this study grounded and more accessible to criticisms of scholars or practitioners to challenge the positive legal analysis of the models and the legal assumptions. Moreover, these prototypes will most probably resemble in many aspects to our legal understanding of the US and EU regimes because creating completely hypothetical regimes can be harder than expected. In that sense, it seems artificial to consider these prototypes instead of the real thing.

In section 6.2, I follow descriptive legal methods to support the first assumption regarding possible effects on economic inequality. I contrast the EU model with the findings of the descriptive analysis of the US case study to explain further why the two models are distinct and why the choice of the model could affect economic inequality.

**(b) Countries that adopt/copy the text of one of these laws share some of the elements of the prototype model (US or EU)**

The second assumption, i.e., substantive similarity between the copier of the law's text and the actual model, is related to the estimation strategy and should also be subject to further consideration as well. I use Bradford and Chilton's (2018) textual laws analysis, which examines the extent to which various national laws replicate the language used in the EU and US competition laws using human coding. The similarity of legal text language is a standard method to document the spread of laws (Law & Versteeg, 2012; Law, 2016). If there is a similar language in the two jurisdictions' laws, the later adopter may have borrowed from the earlier adopter (Walker, 1969).

However, I still need to clarify that the proxy adapted here ‘similarity in competition law text’ is a good enough proxy for actual institutional or ideological differences (i.e., ‘model of law’). I will do that in section 6.3 (6.3. Empirical analysis: the choice of a model law US and EU).

It is important to note that, most likely, similarity in the legal text between countries is not a random phenomenon. In other words, even if the similarity to legal text is a good enough proxy for the model of law, as I suggested, it could still capture many other confounding factors, such as geographical proximity (EU continent), legal origin or other economic factors such as growth. So, the similarity to text proxy could be sensitive to omitted variable bias. I explore this limitation as part of the discussion on the estimation strategy.

## **6.2. The EU competition model**

In Chapter five: The US case study, I reviewed the US model in terms of goals, Supreme Court and enforcement agencies and finally, monopolization. This chapter uses a similar approach to describe the key attributes of the EU model.

It is important to note that the chapter does not aim to contribute to the historical legal research on the goals of the European Union, nor does it aim to provide a full legal interpretation of the legislation. Rather the analysis aims to present a positive overview of the key attributes of EU competition law, avoiding a normative argument in terms of a ‘good or bad’ policy. I aim to provide the theoretical foundation for the second hypothesis which states that the United States model of antitrust law should be more closely associated

with a skewed distribution of wealth and income, as compared to the European model of law.

A lot has changed in the EU since the early 2000s, especially in the period after 2005. In particular, the intensity of judicial review in the EU has increased, and today courts take a much more active role in reviewing the EU commission actions (da Cruz Vilaça 2018). Moreover, the system change initiated with Regulation 1/2003 has transformed dramatically the way EU law is enforced. With this regulation, the EU moved from a rather prescriptive administrative model under Art 101 (3) (a pre-approval system) to one that is closer to the US model of *ex-ante* enforcement. This system change has also prompted the decentralisation of enforcement efforts and increased enforcement actions by the Member States that have matured over the years.

One effect of this change was that the Commission had additional resources that it could now employ in Article 102, changing the balance between abuse of dominance and cartel cases (which were prioritised until then). Regulation 1/2003 also strengthened the role of private enforcement for 101 and 102. Keeping these points in mind, the chapter reflects on the EU law as it was enforced in the studied period while trying to acknowledge points of possible change and progress.

#### **(a) Goals of Competition law**

The EU competition laws as detailed in the treaties of the European Union had developed more than a few decades after their American colleagues, gathering influence and power alongside the European integration project itself. The Competition regulation in the EU is primarily contained in the Treaty on the Functioning of the European Union (TFEU) and

in legislation adopted pursuant to articles of the TFEU.<sup>91</sup> The TFEU is one of the cornerstones in the unique super-national entity, which is the EU (McGowan and Wilks 1995; Gilbert 2017). Article 3 of The Treaty on European Union (TEU) contains a list of socio-economic objectives which it is said to be the task of the Union to achieve:

The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance.

Protocol 27, the interpretation text of the treaties<sup>92</sup> on the internal market and competition, provides that the internal market referred to in Article 3(3) TEU is to include ‘a system ensuring that competition is not distorted’. This framework reflects the dual role that competition regulation plays within the general EU structure: on top of the merits of competition advancing possible social goals, EU competition policy has a clear instrumental role in establishing the ‘single market’ which is at the core of the European project (Buttigieg 2009, 47; Van den Bergh 2017, 105).

The Court of Justice, the EU highest judicial body, has held that the EU rules on competition are ‘fundamental provisions’ that are essential for the accomplishment of the

---

<sup>91</sup> In 1957 France, Germany, Italy, Belgium, the Netherlands and Luxembourg, signed a Treaty at Rome to establish what was then called the ‘European Economic Community’ (‘EEC’), or the Treaty of Rome. The Treaty of Rome sought to create a ‘common market’ based on an economic union between the Member States and have since been readapted and strengthened by new EU treaties. It was substantially amended, by the Treaty on European Union signed at Maastricht which replaced the term ‘European Economic Community’ with ‘European Community’; and again, by the Treaty of Amsterdam, which (amongst other changes) renumbered the articles of the EC Treaty; and by the Treaty of Nice, which enacted institutional reforms in anticipation of further accessions to the EU. The ‘European Community’ was finally incorporated into the ‘European Union’ by the Treaty of Lisbon with effect from 1 December 2009. For a review over the EU treaties, from the competition policy perspective (McGowan and Wilks 1995).

<sup>92</sup> Art. 51 TEU provides that Protocols and Annexes to the TEU and TFEU form an integral part of the Treaties.

tasks entrusted to the EU and, in particular, for the functioning of the internal market (Case C-126/97 *Eco Swiss v Benetton International* [1999] ECR I-3055, EU:C:1999:269, para 36; Case C-8/08 *T-Mobile Netherlands* [2009] ECR I-4529, EU:C:2009:343, para 49). The internal market includes ‘a system ensuring that competition is not distorted’ (Protocol 27 on the internal market and competition, annexed to the Treaty of Lisbon, OJ 2010 C83/309).

Similar to the US model, the TFEU includes three main parts: Article 101 TFEU prohibits anti-competitive agreements between competitors, and Article 102 prohibits the abuse of a dominant market position. It also includes an a priori control over mergers, with a pre-notification notice requirement added since 2004 for mergers that have the potential to affect trade between member states.

The EU introduced a specific regime for merger control in 1989 with the adoption of Council Regulation 4064/89, which was later replaced by Council Regulation 139/2004, which was adopted in 2004. Regulation 139/2004 (referred to in this thesis as ‘the EU Merger Regulation’) is the main instrument for the control of mergers, acquisitions and other concentrations under EU competition law (Bailey and John 2018, chap. 8).

The European Commission is the executive body of the EU, responsible for promoting the goals of the EU, and among them the enforcement of the EU competition regulation.<sup>93</sup> The Directorate General of Competition (DG Competition) is the executive branch in charge of protecting competition on the market and fostering a competitive culture in the EU. DG Competition’s work includes enforcement of Articles 101 and 102

---

<sup>93</sup> Article 13(1) TEU states that the Union’s institutions shall be: (a) the European Parliament; (b) the European Council; (c) the Council; (d) the European Commission; (e) the Court of Justice of the European Union; (f) the European Central Bank and (g) the Court of Auditors.

TFEU, applying the Merger Regulation, the formulation of EU competition policy, and control of State Aids. From the main textbooks of EU legal scholars, the tension between the different economic, social and political goals is apparent (Bailey and John 2018, para. 1.016-1.021). Thus, in the EU, it is not the ambiguity of the legal text, but the pluralist view of competition policy as an instrument for several social goals:

Historically there has not been one single, unifying, policy underpinning the competition laws of the EU [...] In particular, competition policy does not exist in a vacuum: it is an expression of the current values and aims of society and is as susceptible to change as political thinking generally. Because views and insights shift over a period of time, competition law is infused with tension (Whish and Bailey 2018, 19).

The key difference is, perhaps, that while this question preoccupied legal scholars for decades in the United States, the competition regime in the EU was never understood by courts, practitioners, or scholars to be focused on one economic or social goal. The goals of the competition regime could be best described as a mix of social, economic, and political goals (Buttigieg 2009, 47–48). Some argue that priority had been given to an integrated market, even at the expense of other goals, including efficiency (Doern and Wilks 1996). In *Hugin v Commission* Case 22/78 [1979] ECR 1869, the Court held that the EU competition laws are aimed towards: ‘[A]ny agreement or any practice which is capable of constituting a threat to freedom of trade between the Member States in a manner which might harm the attainment of the objectives of a single market between the Member States, in particular by partitioning the national markets’ (1979, 1869-1870). According to Van Bael and Bellis, Article 81 (today 101 TEFU) was applied not only to outright export bans but also to other practices that had the effect of insulating national markets, whether in the

form of price discrimination, denial of guarantees, after-sales services, or industrial property rights (Van Bael & Bellis (Firm) 2010, 110–16).<sup>94</sup>

Within the possible economic goals, the EU regime is also different in its approach to the protection of the competitive process as such, a difference that is originated possibly by the theoretical and historical background of the EU competition regime (Gerber 1998; Whish and Bailey 2018, 22). The theoretical foundations for the European regime might be found in the ‘German school’ or ‘Ordoliberalism’ (Amato 1997, 40–42; Felice and Vatiello 2015, 147–57). However, some argue that this historical influence was overstated (Akman 2012), while others still see it as the decisive influence on the regulation (Behrens 2018).<sup>95</sup> Ordoliberalism school of thought is organized around the concept of ‘social market economy’, as a bridge between the west capitalism and eastern socialism systems (Gerber 1998, 236). The social market is aimed at achieving ‘economic freedom’ next to political freedom,<sup>96</sup> by a system of competition among undertakings. Following this approach, an enforcement system – that was significantly different from the United States antitrust regime – was developed: ‘It centred on giving administrative agencies the authority to intervene in cases in which companies ‘abused’ their economic power’ (Gerber 2006, 1209). The ‘ordo’ refers to the systematic arrangement and not to be confused with

---

<sup>94</sup> See also *Football Association Premier League Limited and ors v QC Leisure and ors*, Judgment, Case C-403/08, ECLI:EU:C:2011:631, [2011] ECR I-9083, [2011] OJ C347/2, [2012] 1 CMLR 769, 4th October 2011, Court of Justice of the European Union [CJEU]; European Court of Justice [ECJ]; European Court of Justice (Grand Chamber); *GlaxoSmithKline Services Unlimited v Commission of the European Communities*, Judgment, Case C-501/06 P, ECLI:EU:C:2009:610, [2009] ECR I-9291, [2010] 4 CMLR 50, 6th October 2009, Court of Justice of the European Union [CJEU]; European Court of Justice [ECJ]; European Court of Justice (3rd Chamber).

<sup>95</sup> As a matter of fact, during the 1920s, the first modern European competition laws were enacted, with the German law being one of the first. The German Federal Cartel Office in 1958, was one of the first state agencies established for enforcing competition within Europe.

<sup>96</sup> On the relation between the Natize Germany and the EU approach towards monopoly power see (Whish and Bailey 2018, 22).

order (Behrens 2018). The ideas of this school of thought strongly emphasise the role of the state as a market planner.

These ideas, similar perhaps to the Harvard School of thought, can be categorised as concerns to the fairness of the competition process (Geradin, Layne-Farrar, and Petit 2012, 20–21) and are still part of the EU regime approach towards market power and competition regulation. The difference can be further explored by comparing the EU case law to the United States *Trinko* case mentioned above. What is considered a natural step in the competitive process can be regarded as exploitive abuse of market power and a violation of special responsibilities imposed on the dominant firm under EU treaties. Reflecting this unique difference is the 1983 European Court of Justice ruling in *Michelin I* decision, in which the Court states that: ‘A finding that an undertaking has a dominant position [...] simply means that, irrespective of the reasons for which it has a dominant position, the undertaking concerned has a special responsibility not to allow its conduct to impair genuine undistorted competition in the common market’ (*Michelin v. Commission* (322/81) E.C.R 3461 (1983): para. 57). Together with the EU Court of Justice interpretation of excessive pricing (Court of Justice in Case 27/76 *United Brands v Commission* EU:C:1978:22 and repeated by it in Case C-177/16 *AKKA/LAA* EU:C:2017:689, para. 36), it reflects the recognition that competition regulations should not ignore the wealth transfer from consumers to the dominant producer (Buttigieg 2009, 162–63). The recent debate on the competition law goals in the context of digital platforms reflects the EU pluralist view, including economic goals (efficiency and innovation), fairness, and market integration and structure (Ezrachi 2018).

In a novel empirical study, Stylianou and Iacovides (2020) analyse a comprehensive dataset of the Court of Justice of the European Union case law, European Commission decisions, opinions of Advocates General (AG), and statements delivered by the Commissioners for competition amounting to almost 4,000 documents. They find that the EU court and enforcers reflect, indeed, a very diversified set of goals: (1) efficiency, (2) welfare, (3) economic freedom and protection of competitors, (4) competition structure, (5) fairness, (6) single market integration, and (7) competition process. They use a set of 74 keywords to extract (manually) quantitative patterns and insights from the archive of EU documents. Their main conclusion is that EU competition law pursues a multitude of goals concurrently, and it can therefore not be said that it is monothematic. In line with the legal scholarship, Ordo-liberal objectives still linger and may recently be on the rise again. Overall, EU competition law prioritizes the process of competition rather than directly the achievement of a desirable outcome (e.g., efficiency, welfare maximization, etc.).

However, the difference in goals should not be overstressed. Abstract goals are not always translated into legal enforcement. Moreover, non-economic goals such as fairness are not considered as ‘a self-sufficient, generic legal test to be applied in actual cases’ (Ezrachi 2018).<sup>97</sup> Moreover, fairness, despite growing attention, does not fare highly in the decisional practice of any of the EU institutions. Fairness is the least represented goal across all EU institutions (Stylianou and Iacovides 2020, 30). As an example, the EU Commission has only rarely taken action against excessive pricing (Whish and Bailey

---

<sup>97</sup> Quoting Johannes Laitenberger, “Panel on ‘Fairness in Unilateral Practice Cases’” (2018) Speech delivered at the GCLC Conference Brussels, 26 January 2018, available at: [https://ec.europa.eu/competition/speeches/index\\_speeches\\_by\\_the\\_dg.html](https://ec.europa.eu/competition/speeches/index_speeches_by_the_dg.html) (accessed 25 October 2020).

2018, 741–42), while ‘fairness’ is mentioned in speeches more often (Stylianou and Iacovides 2020, 30).

The EU competition regime has never given formal priority to any goal (Stylianou and Iacovides 2020, 27–28), and ever since the early 1990s-2000s has come closer and closer in both interpretation and methods to the United States antitrust regime, as both seem to stress the importance of consumer welfare (not in the narrow Bork definition) as the mainstream standard. So, while the EU’s diverse set of political and social goals is reflected in the scope of laws and their interpretations by EU institutions, the economic goals of resource allocation and consumer well-being (in the form of consumer welfare standard) is reflected strongly in the toolbox of the regime in the modern times.

By the first half of the 1990s, economic analysis methods and thinking had influenced EU competition law. It seemed clearer that Article 101, on restrictive agreements, and Article 102, on the abuse of dominance, were enforced until then with insufficient attention to economic principles (Whish and Bailey 2018, 53; Bailey and John 2018, 10–12; Faull, Nikpay, and Taylor 2014, 4–5). A wide reform of the competition regime on vertical restraints, horizontal cooperation agreements, and technology transfer agreements took place, repositioning economic thinking at the core of the application of the laws. A similar reform took place in the Commission substantive test and procedures for mergers having an EU dimension. Another policy initiative was the adoption of the Commission’s enforcement priorities concerning the exclusionary conduct of dominant firms.

The former European Commissioner for competition policy, Neelie Kroes, explained in a lecture given in 2005 the new standard for competition law policy in the EU:

Consumer welfare is now well established as the standard the Commission applies when assessing mergers and infringements of the Treaty rules on cartels and monopolies. Our aim is simple: to protect competition in the market as a means of enhancing consumer welfare and ensuring an efficient allocation of resources (15 September 2005).<sup>98</sup>

Today, it is widely accepted that EU competition law involves the economic analysis of business practices and transactions within a legal process (Lianos and Genakos 2012, 6–12). This trend has been evident in the application of Article 102 TFEU, Article 102 TFEU and the EUMR. Intervention is only justified where there is evidence supporting a ‘theory of harm’ that a practice restricts or distorts the competitive process, thereby having an adverse effect on consumer welfare. Market definition and analysis of dominance are key features of any legal analysis in the field. An extensive body of literature established the transatlantic divergence in competition law and the reasons behind it (Gifford and Kudrle 2015). Most commentators agree today that the EU and US competition models have converged over time, in part because of the growing reception of the economic analysis in the EU. This is not to say that no differences reflecting the diversity of goals exist today (Dunne 2020) – specifically in the area of abuse of dominance. The key differences will be analysed in this chapter.

The main conclusion from this discussion is that while experiencing very different theoretical paths of development from the US antitrust framework, the different objectives mentioned in the EU context stabilised around a similar set of tools and criteria for competition law enforcement. The different values held an important place in the foundation of the European Community but are a doubtful criterion in evaluating the two

---

<sup>98</sup> ‘European Competition Policy – Delivering Better Markets and Better Choices’ available at [www.ec.europa.eu/competition/speeches/](http://www.ec.europa.eu/competition/speeches/).

regimes in terms of macroeconomic results. Therefore, the difference in goals analysed alone is not expected to have an observable effect on economic inequality but in combination with other important aspects of the system, institutions, and substantive laws.

It seems that a critical examination of the decision-making process could be more beneficial in understating enforcement results. An appetite for enforcement could also prove crucial for studying competition laws from a comparative perspective. The role of the enforcement strategy and institutions will be the focus of the next pages.

### **(b) Enforcement efforts and judicial review**

The philosophical differences between the US and EU models are apparent in the institutions' structure and enforcement strategy.<sup>99</sup> EU courts are involved at the appeal stage, and their role is limited to reviewing that the Commission acts within the powers vested by the EU treaties. Studies researching the early years of competition enforcement suggested that the DG competition enjoys a success rate of over 50% from 1964-2001 and a wide prerogative in designing EU laws (Schinkel, Carree, and Günster 2004). A recent empirical study by Geradin and Sadrak (2017, 27) found that the number of appeals filed against the Commission's decisions regarding administrative fining has significantly dropped in 2015 and 2016. Whereas 79% of the Commission's cartel and abuse of dominance decisions were appealed between 2000 and 2009 since 2010 the appeals have been filed only with respect to 57% of the decisions.

---

<sup>99</sup> Of course, the institutional differences could also reflect other factors such as legal origin. In the econometric analysis of the chapter disentangling these differences will be the core function of the estimation strategy.

In general, EU courts rely on the European Commission on complex issues (Joined cases 56 and 58/64, *E'tablisements Consten and Grundig-Verkaufs v Commission*, EU:C:1966:41, ECR, 343, 347) for the interpretation of the competition rules (Marsden 2009, 27). The EU Commission enjoyed for most of the years a special prerogative in this area of 'complex economic matters', as the EU courts were constrained compared to their increased scrutiny in other fields:

In this field indeed, no decision was ever annulled in full, and the few annulled decisions were only partially quashed. Moreover, a close examination of those cases reveals that the GC only stroke down peripheral aspects of the Commission's decisions and upheld their main substantive findings. This situation stands in stark contrast with judgments adopted under the EUMR [...]. It is also inconsistent with the case-law under Article 101 TFEU [...]. The disconcerting finding that the Commission enjoys a relative degree of judicial immunity in Article 102 TFEU cases [...]. The GC exhibits a clear willingness to reduce the fines imposed for infringements of Article 101 TFEU, with almost 45% of applications leading to a fine reduction. In contrast, under Article 102 TFEU, only 2 out of 11 cases have given rise to a reduction of the fine. (Geradin and Petit 2010, 31).

According to the authors, this difference is partly a result of the Courts relying upon, rather than questioning, old formalistic legal appraisal standards, avoiding a modern economic approach (Geradin and Petit 2010, 32).<sup>100</sup>

The authors support their harsh rhetoric by analysing the most 'popular' judgments in the EU case law on abuse of dominance. The first decision is *Michelin II* (Case T-203/01 *Michelin v Commission* [2003] 2003 II-04071, ECLI:EU:T:2003:250) with 31 quotes in 16

---

<sup>100</sup> The harsh rhetoric of Geradin & Petit seems to hold even a decade later, when Faull, Nikpay, and Taylor (2018, 345) comment: '[...] many judgments of the General Court are very detailed, and the Commission's inadequate treatment of the facts has led to the annulment of a significant number of Commission decisions both in the field of anti-competitive agreements and mergers, though, somewhat surprisingly, not in the field of Article 102.' Relying on the main legal textbooks, only one reference, besides the *Intel* case, to annulment of commission decision in abuse of dominance (Cases T-191/98, etc. *Atlantic Container Line v Commission* ('TACA') [2003] ECR II-3275, EU:T:2003:245) but, even this case was not a full annulment of the commission decision.

different judgments. Nevertheless, this is also one of the most controversial judgments in the history of EU competition law scholarship. The second most cited case is *Hoffmann La Roche v. Commission* (23 quotes out of 14 judgments). Again, one of the oldest judgments rendered under Article 102 TFEU, using a definition of dominance and abusive behaviour that makes little economic sense, under the evidence-based approach.

That is not to say the economic analysis did not change the interpretation of articles 101 and 102 TFEU under EU law or that the EU courts did not play a significant role in shaping the substantive laws. However, the substantive laws developed under different institutional pressures from a judicial review, comparing to the US path.

A more recent review of this question was offered by Jose da Cruz Vilaça (2018). The author argues that, traditionally, the Court of Justice has taken a cautious approach as to the scope and intensity of its review of the Commission's decisions in competition law. However, in the last decade, EU courts have progressed their understanding of the economic impact of competition policy, strengthening their scrutiny in competition cases. He further argues that the *Intel* case (Case C-413/14 [2017] P, *Intel v Commission*, EU:C:2017:632) is an important step, while limited, in this regard - it is not the extent or the scope of the review that is limited, but its depth. The Court of Justice is still reluctant to replace its evaluation of facts for the complex assessments of an economic topic made by the Commission.

EU courts do not follow a binding precedent system. The Court is a judicial body whose mission consists in interpreting EU law and dispensing justice when required by a national court or by an applicant entitled to bring an action, be it a Member State, an EU institution or a private person. The result is that courts are less able (comparing to the US

Supreme Court) to set an agenda (each case is taken on its own merits) and, in fact, it does not have a political or ideological agenda to promote (da Cruz Vilaça 2018, 179).

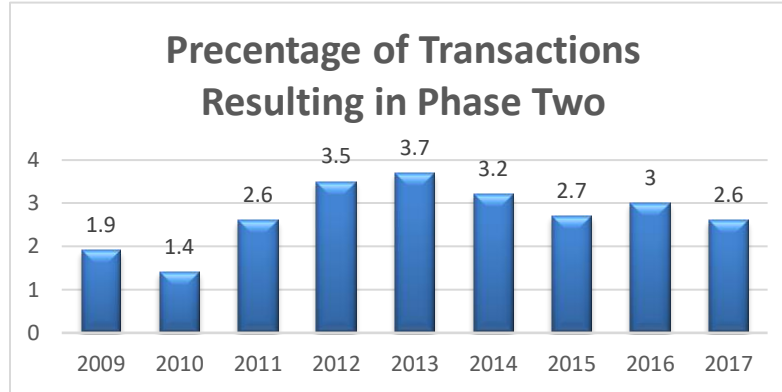
The EU Commission has been dominant in clarifying the basic cornerstones in competition analysis, such as market definition, which has ramifications for both Article 101 and 102 enforcement.<sup>101</sup> Using the *Intel* case again, the Court of Justice was strongly invited, both by the applicant (Intel) and by the AG, to reject the interpretation of the EU treaty (Article 102) that rebates schemes, such as the one in question, must be deemed inherently anticompetitive (*per se* violation). While the Court of Justice rejected the invitation from the AG, in practice, it ruled out the analysis which was carried out by the Commission (for the as efficient competitor ‘AEC test’), should be reviewed by the first instance (General Court), as part of the arguments made by the applicants (and the General Court’s decision was later annulled for this ground). In other words, in practice, the Commission led the way, even in this case, by its decision to include an analysis of the AEC test. As a result of such institutional differences, the EU Court of Justice is not as influential as the US Supreme Court. Again, it is not to say that they have no significant influence.

In terms of trends of public enforcement by the Commission, using a similar proxy for the in-depth merger investigations, the EU Commission activity does not show a similar decreasing rate as compared to the US enforcement bodies:

---

<sup>101</sup> See for example, Report Prepared for the Competition Directorate-General of the European Commission (2005). Market Definitions in the Media Sector: Comparative Legal Analysis. Available at: [http://ec.europa.eu/competition/sectors/media/documents/chapter\\_1\\_ec.pdf](http://ec.europa.eu/competition/sectors/media/documents/chapter_1_ec.pdf) (25 October 2020).

Figure 13: EU merger investigations by year



Source: Slaughter and May, The EU merger regulation, January report 2018. Percentage of merger transactions which have been called for a second phase investigation per year. The ratio is needed to consider the fluctuations in the number of transactions per year.

The EU efforts do not seem to reflect a diminishing trend in contrast to the picture presented in chapter 5 on the US enforcement efforts.

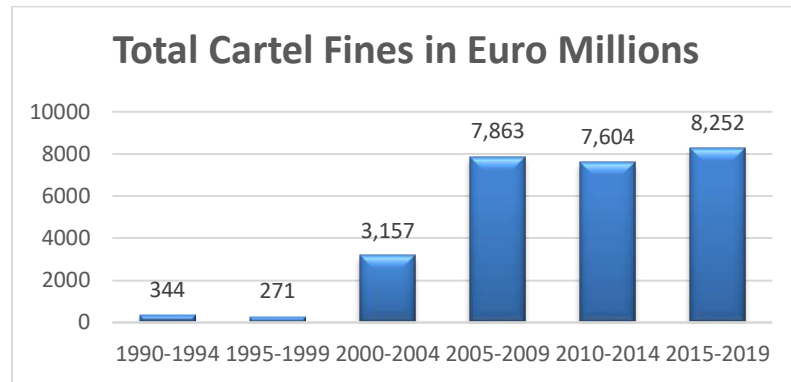
In the EU, cartel enforcement (as other enforcement activities as well) is achieved via administrative fines and other remedies, when criminalization is only possible – to a limited extend – at the country level. This leaves the EU Commission focused on fines as the main tool for deterrence: ‘Unlike our colleagues in Washington, we in the Commission can’t threaten cartelists with a spell in prison – although some of our Member States can – but our very tough attitude to administrative fines aims to achieve a similar deterrent effect.’ (Neelie Kroes 2007).<sup>102</sup>

The history of European competition law public enforcement of cartels using administrative fines seems to reflect an increasing trend. In the early years, fines were absent or very low. At the end of the 1990s, this trend has changed, and the average fines

<sup>102</sup> ‘European Commissioner for Competition Policy Key developments in European competition policy over the past two years’ (8 January 2007). Available at: [https://europa.eu/rapid/press-release\\_SPEECH-07-2\\_en.htm](https://europa.eu/rapid/press-release_SPEECH-07-2_en.htm)

rose strongly ever since. Since the modernising of EU competition laws at the beginning of the 2000s, DG Competition (not considering members state enforcement actions) had imposed an increasing volume of fines, as can be seen in figure 14 below:

*Figure 14: EU Cartel fines by period*



Source: EU cartel statistics, report 2019.<sup>103</sup> Cartel administrative fines in euros total per 4 years. The data is presented as in the report with no additional processing by the author.

The assessment in terms of cartel fines is ‘within’ the EU regime, as current data does not allow for a direct comparison between the EU and the US. However, the trends of enforcement and focus of the system can be learned by the descriptive data.<sup>104</sup>

In addition to the Commission efforts, since the adoption of Regulation 1/2003, the national competition authorities (NCA) play a more active role in the enforcement of EU competition law. With this regulation, the EU moved from a rather prescriptive administrative model under Art 101 (3) (a pre-approval system) to one that is closer to the

<sup>103</sup> The most updated version of the data is now available at: [file:///C:/Users/amitz/Downloads/cartels\\_cases\\_statistics\\_28\\_05\\_2021.pdf](file:///C:/Users/amitz/Downloads/cartels_cases_statistics_28_05_2021.pdf). The data which includes 2018-2019, after adjusting for courts judgments continue the rising trends in fines, with 2015-2019 reaches a record of over 8 trillion euros (8,233,082,543,00).

<sup>104</sup> Beyond cartel enforcement, recent case law that deals with anti-competitive agreements and concerted practices exhibits increased focus on economic analysis and requirement to consider agreements in economic context (e.g., C-32/11 *Allianz Hungária Biztosító Zrt v Gazdasági Versenyhivatal*, EU:C:2013:160).

US model of *ex-ante* enforcement. Articles 5 and 6, in combination with Article 3(1) of the Regulation, give NCAs and their courts the power and obligation to apply Articles 101 and 102 of the TEFU in cases capable of affecting trade between the Member States. It has been argued that the regulation increased public enforcement of the competition laws in the EU (Faull, Nikpay, and Taylor 2018, para. 2.01-2.08).<sup>105</sup>

Compared to the US, only recently did the EU promulgate a directive to pave the way for greater private enforcement in the member states (Directive 2014/104/EU 2014).<sup>106</sup> In an extensive legal report prepared in the context of the Directive, Waelbroeck, Slater, and Even-Shoshan (2004) described EU law on competition civil claims as a picture of ‘astonishing diversity and total underdevelopment.’<sup>107</sup> The study has revealed that only 601 judged cases for damages actions (12 based on EC law, around 32 based on national law, and six on both) were filed in the period under review. Of these judgments, 28 have so far resulted in an award being made (8 based on EC competition law, 16 on national law, and four on both). Since then, new reports were launched following the new regulation, and scholars had argued that the damage directive is unlikely to foster more compensation. They argue that the regulation failed to create strong incentives for harmed individuals to seek redress (Peyer 2016, 87–112; Jones 2016). Overall, while some limitations remain,

---

<sup>105</sup> See the Commission Staff Working Paper accompanying the Communication from the Council to the European Parliament and Council, Report on the functioning of Regulation 1/2003, COM (2009) 206 final, para. 184.

<sup>106</sup> The *Courage* decisions of the European Court of Justice (ECJ), and later the ruling in *Manfredi*, according to which individuals have the right to compensation, provided the background for the private antitrust discussion in Europe. *Courage Limited v Bernard Crehan* [2001] ECR I-06297; *Manfredi v Lloyd Adriatico Assicurazioni SpA* [2006] ECR I-6619.

<sup>107</sup> ‘Study on the conditions of claims for damages in case of infringement of EC competition rules’ Available at: [http://ec.europa.eu/competition/antitrust/actionsdamages/comparative\\_report\\_clean\\_en.pdf](http://ec.europa.eu/competition/antitrust/actionsdamages/comparative_report_clean_en.pdf).

there seems to be a growing consensus that private enforcement uptake has accelerated in the last years, mitigating the gaps between the US and the EU.

Overall, the administrative enforcement model of EU public enforcement, as opposed to the litigation-based US model, can prove to be one of the key features differentiating these two models. Some scholars had argued that public competition enforcement is inherently superior to private enforcement because, among others, of more effective investigative and sanctioning powers required for this type of inquiry (Wils 2003). Others suggest a middle-ground supporting the notion that the formation of a parallel system of public and private enforcement of competition rules aims to maximise compliance with the EU treaties (Bovis and Clarke 2015).

Another factor of difference involves the level of independence which the enforcement agencies enjoy. A recent study by Gutiérrez and Philippon (2020) places a stronger focus on the institutional independence between the EU and the US as a key factor in what they consider to be the success of the EU model in keeping markets competitive.

They observe that since the early 2000s, European markets are more competitive than their American colleagues in specific industries analysed in their study. US markets experienced a continuous rise in concentration and profit margins starting in the early 2000s, while EU markets did not experience these trends. Similarly, US profit margins used to be lower than European ones, but an opposite picture is observed since the mid-2000s. Profit margins in Europe these days are similar to profit margins in the US twenty years earlier.

Gutiérrez & Philippon's work suggests that over the past 20 years, a significant divergence in actual policies, from product market regulations to antitrust enforcement, can

be seen under both jurisdictions. They argue that though EU institutions resemble American ones in terms of goals, scope, and doctrine, they often operate with more political independence than their American counterparts. This is true of the two leading supra-national institutions in the EU: the European Central Bank (ECB) and the DG Competition. DG Competition is more independent, according to Gutiérrez & Philippon than the DOJ or the FTC.<sup>108</sup>

The analysis in this section supports the hypothesis that the enforcement strategy and institutions' structure can influence the overall performance of the model at the macroeconomic level, and specifically in terms of economic inequality.

The advantages of the public enforcer in his ability to adjust priorities to specific sectors can potentially allow focusing efforts on essential goods, for example, comparing to private litigations. The reasoning is that the harm caused in such markets is typically divided over many victims reducing the incentive to litigate (Polinsky and Rubinfeld 1988). The public enforcer is also better equipped to inquire into complex economic issues comparing to a judicial body, giving the EU Commission advantages over the US Supreme Court as the 'leader' of the model. Finally, the independence levels of the enforcer are crucial for distributional issues. If US institutions are under political pressure coming from

---

<sup>108</sup> Lobbying efforts are not at all unique to US. 'The fact that competitors are more publicly vocal in certain cases has no impact on our economic assessment of a particular transaction. In fact, it is not at all unusual for competitors to voice their concerns above those of consumers, which are more dispersed and, sometimes, lack sufficient organisation. *We are used to dealing with such pressures.* By way of example, I would refer to the AOL/Time Warner and BT/AT&T cases, where there was strong lobbying from competitors, but that were finally cleared by the Commission.' ([https://europa.eu/rapid/press-release SPEECH-01-340 en.htm](https://europa.eu/rapid/press-release_SPEECH-01-340_en.htm)). See also latest comments made by prof. Monti: <https://promarket.org/former-italian-pm-european-competition-commissioner-mario-monti-antitrust-enforcement-vigorous-europe-us/>. However it is clear that US firms spend substantially more on lobbying and campaign contributions, and are far more likely to succeed than European firms/lobbyists (Gutiérrez and Philippon 2018, 32–34).

lobbying on behalf of the largest firms, the ability of the model to achieve optimal results is seriously jeopardised.

### **(c) Monopolisation and the abuse of dominance**

After reviewing the goals and institutional differences, the last key difference analysed in this chapter concerns the rules for monitoring monopolisation or abuse of a dominant position.

This area of the law is chosen since the substantive policies concerning cartels and merger control are practically the same in all competition regimes (besides the difference in the criminalisation of cartels and the treatment for not-cartel agreements).<sup>109</sup> Thus, the thesis focuses on monopolisation law in the US or abuse of a dominant position in the EU, taking the analysis of predatory pricing as the key example. The bottom line of this analysis comes down to the overall burden of proof that has been consistently rising in both regimes but to a different extent. It is far from being the only difference, but it is a difference that, from my point of view, reflects a key distinction between the two jurisdictions.

The substantive law itself reveals an actual difference in the approach to monopoly power even when taking an economic-fact-based criterion for enforcement. A lighter burden of proof is imposed on the Commission (plaintiff) by the EU law on predatory pricing. Under EU law, unlawful predation is established if the evidence shows that the defendant sets its price below average variable cost (e.g., *AKZO Chemie BV v. Commission*:

---

<sup>109</sup> Another area for comparison of substantive laws could be the implementation of Section 1 of the Sherman Act and Article 101 of the treaty concerning non-cartel cases (vertical and conglomerates). Differences between the EU and US might be significant, in particular, in vertical situations (e.g., the different treatment of resale price maintenance). Yet, the thesis focuses on one area of difference (abuse of dominance), where more clear qualitative data was gathered by the author and as a potential proxy for a wider philosophical difference in the approach to the law.

para. 71). If the defendant set its price below-average cost (AC), but above average variable cost, then predation can be established if the evidence suggests that it was accompanied by an intention to exclude the plaintiff (*AKZO Chemie BV v. Commission*: para. 72; *Tetra Pak II*: para. 41-42). Using intention takes the legal test away from economic evidence towards a much more familiar ground. The evidence required to prove predatory intent is mostly objective: the duration of the activity period and the number of units sold at the allegedly predatory price (Faull, Nikpay, and Taylor 2014, para. 4.306-4.308).<sup>110</sup> In practice, the evidentiary requirements suggest that a significant burden falls on the defendant to disprove predatory intent when the price is below average cost and above average variable cost.

In a more recent case *Post Danmark II* (Case C-209/10 *Post Danmark v Danish Competition Council* [2012] 4 CMLR 23), the Court held that, in circumstances of above the average incremental cost of the business activity in question but below its average total cost, to establish an anti-competitive effect, ‘it is necessary to consider whether that pricing policy, without objective justification, produces an *actual or likely exclusionary effect*, to the detriment of competition and, thereby, of consumers’ interests.’ Faull, Nikpay, and Taylor (2014, para. 4.342) argued that the approach taken by the courts suggests an additional legal requirement, one that is inspired by the Commission’s Article 102 TFEU Enforcement Priorities Guidance,<sup>111</sup> ‘likely foreclosure’ of equally efficient competitors leading to consumer harm. Whether the case law will have further ramifications for the

---

<sup>110</sup> See also Case C-202/07 P *France Télécom* [2009] ECR I-2369, para 109.

<sup>111</sup> Guidance on the Commission’s enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings; [https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52009XC0224\(01\)](https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52009XC0224(01)).

law, over the *AKZO* test, on predation remains to be seen, but the directing hand of the Commission is evident in this subject matter as well.

It is clear how this difference in the analysis, compared to the US predatory pricing test, could affect the overall burden on the enforcer, even before considering the missing (in the EU) requirement of recoupment (*Case C-202/07 France Télécom SA v. Commission*: para. 110).

Interestingly, Hylton (2014, 27) suggests a possible justification for the EU average-cost standard is that it: ‘preserves employment, by reducing the frequency with which price competition leads to the exit of firms that are the victims of predatory pricing campaigns [...] Perhaps in a state with a generous welfare system, the policy of preserving less efficient firms is less expensive for taxpayers than a policy that allows them to be driven out of business by efficient price predation. In other words, the average-cost standard may be, in essence, a public welfare policy.’

The different standards under EU law do not necessarily reflect a formal public welfare policy goal, but they may very well have such an effect. As a general proposition under the EU regime, it is more likely to establish that a company has a dominant position on the market and more likely to find that that the company is abusing its dominant position (Fox 1997, 344; Gal 2004, 345-346). This could be the case because of the difference in institutions observed earlier, but it could also be since the so-called economic approach change had affected the EU regime to a lesser extent.

The Commission’s Article 102 TFEU Priorities Guidelines, mentioned above, can be regarded as a turning point reflecting the effect-based assessment of pricing forms of abuse such as the case law on rebates (*Intel Corporation v Commission*, Case C-413/14 P

Court of Justice, [2017] 5 CMLR 18) and predatory pricing. The effect-based approach is also accompanied by the growing use of internal companies' documents, balancing the potential rise in the burden of proof (Levy and Karadakova 2018).

This agent-centric enforcement strategy in the EU (Ahlborn and Evans 2009, 29) can also explain the dominance of per-se standards (by object), outside Article 102, as opposed to the prevalence of the rule of reason standards in the US. Altogether, these differences grant the Commission substantial power to impose remedies without pursuing litigation before European courts, especially in the realm of abuse of dominance. This 'legroom' for the Commission can be seen in two very recent developments in EU competition law enforcement. First, the recent fines imposed by the Commission on digital giants such as Google and Facebook had broken the historical records for the EU commission. These fines are significantly larger in comparison to cartel decisions and other regulations in the EU (Geradin and Sadrak 2017). Second, in some of these recent cases, the fines were imposed based on shaky economic analysis using new theories of harm that were never tested in the past (Vesterdorf 2015; Petit 2017).

Part of the role of the substantive laws, alongside the procedural rules, is to balance the burden of proof for the plaintiffs and the likelihood of a successful complaint concerning abuse of dominance. That equilibrium point translates to the smallest operational parts of the competition law and antitrust framework. A different way to think of the differences between the models of the EU and the US refers to the question: on what side of the 'error' regulators prefer to fall? As articulated by Bradford & Chilton:

US antitrust laws reflect greater trust in markets' ability to self-correct and skepticism about the government's ability to intervene. In contrast, the EU competition law rests on the belief that markets fail and governments can

often improve outcomes by intervening. Put differently, the US is more fearful of false positives (where the government restricts competitive behavior) whereas the EU is more fearful of false negatives (where the government fails to restrict anti-competitive behavior)(Bradford et al., 2019, 738).<sup>112</sup>

Worrying more about false positives could ensure that the mergers and transactions which create efficiencies will be dealt with quickly and approve. Nevertheless, it could also affect the overall deterrence of the model and distributional outcomes. This way of formalising the difference is appealing as it captures the trust embedded in the models for the ability of markets to self-correct and the need for government intervention. Such trust could be manifested in many aspects of the law which were not covered in this thesis (like differences in cartel enforcement). I will go back to this point in the discussion over the results of the chapter.

## **6.2. Hypothesis II: The US and EU models of law and economic inequality**

The two legal regimes explored thus far have their own path-dependent development and key features, and yet, looking from above, the US and the EU enforcement system may have more in common than other parts of law and regulation. This area of law has become supra-national in both ideas and enforcement challenges. Still, as explained above, something at the core of the two paradigms is different.

---

<sup>112</sup> See also Stigler Report, 2019 available at <https://som.yale.edu/sites/default/files/CompetitionDigitalPlatformsStigler19.pdf>, explaining in the context of digital platform that: ‘legislation might, instead, implement a recalibration of the relative tolerance of antitrust law for the risk of over-enforcement and under-enforcement by prescribing rebuttable presumptions that would ease the high proof requirements currently imposed on antitrust plaintiffs and place on defendants a more rigorous burden of proving efficiencies [...] courts must determine how much weight to put on the risk of enforcement mistakes: both the likelihood of a mistake and its cost. Much US antitrust law is driven by a judgment, embraced by the Chicago School, that avoiding false positives (good conduct judged to be bad) is more beneficial to society than avoiding false negatives (anticompetitive conduct judged to be good)’ (at p. 72-73).

As argued here, the first key difference that could potentially influence the macroeconomic effects of the model is the *institutional structure* of competition enforcement, i.e., the rule of the judicial review, the scope of agency-administrative bodies, the balance between private and public enforcement, and the independence of the public regulators.

The second key feature identified in this chapter is the substantive law of *monopolising* (abuse of dominance) and the prevalence of open-ended fact-based legal standards. Again, much more in the substantive law of the two regimes is common and agreed widely. However, the current change in the philosophy of competition law enforcement has affected two regimes to a different extent. While the US regime is mostly based on the rule of reason standard, increasing the burden laid on the plaintiff with evidence requirements, the EU regime has moved with much more caution, keeping old legal formalistic paths establishing competitive harm. This argument was elaborated in the case of predatory pricing standards.

These differences, together with the *goals* and appetite for enforcement, are expected as a whole to affect the way competition laws are associated with economic inequality.

The hypothesis does not imply a normative statement on the quality of institutions; The US model can be as professional, sophisticated, or resourced compared to the EU model and vice versa. However, in terms of economic inequality, I suggest that the difference in institutional structure and monopolisation laws form an overall different enforcement strategy that can prove significant.

The remaining part of the chapter will present the empirical investigation of whether there is evidence for a link between the competition law model adopted by a country and the observed levels of economic inequality. I will test the second hypothesis of the thesis:

*US model of competition law is associated with higher economic inequality levels compared to countries that adopt the EU model.*

Countries that resemble the US model like New Zealand and Japan, for example, are expected to be associated with higher economic inequality, all other things equal.

### **6.3. Empirical analysis: the choice of a model law US and EU**

#### **(a) Exploring the ‘model of law’ descriptively in the OECD database**

My database in this study includes only OECD countries, and within this sample, a total of 10 countries were found similar to the US. Australia, Canada, and Japan are all similar to the US for the entire time series. While Estonia, Ireland, Lithuania, New Zealand, Poland, and Slovenia all copy the US antitrust after the 1970s. In the econometric analysis, I divide the OECD countries into a control and treatment group, and that the decision as to which countries are treated is determined by:

1. The similarity to the US antitrust law text;
2. The observation is dated post-paradigmatic transformation in the US as set by Ghosal (after the year 1972) for civil cases of monopolisation.

There is little overlap between similarity to the US and similarity to the EU, so *de-facto*, a country could be similar to one of the two models. I will elaborate on the overlap in the data section.

One can challenge the use of text as a proxy for hypothesis on the model of law is that the same text can (and was) interpreted in radically different ways in different periods in the US, thereby demonstrating no simple correlation between the text and the interpretation of that text. Given the existence of the exact text during the interventionist phase of US antitrust history, it is therefore unreliable to suggest that the existence of similar text in another country suggests it is interpreting that text in the fashion of the post-1980s US rather than the 1960s-early1970s US without further evidence. The analysis of the US antitrust laws is based on enforcement efforts and years of traditional doctrinal methods. Within the US context, using the antitrust text as a proxy for a change is impossible and unreliable. However, this does not mean that text similarity in a comparative context is misleading. We are using text as a proxy for antitrust institutions and appetite. Using this type of proxy eliminates the concerns relating to qualitative doctrinal research methods of objectivity of the similarity criterion (what else will be an objective comparative criterion when enforcement efforts are not available?) Moreover, it is also beneficial for endogeneity issues. I believe there are several reasons which support the use of text similarity in the OECD dataset:

*First*, Bradford and Chilton compared similarity to text to their ‘law of the books’ scope indicator (the CLI) and found similar results when they divided the database by scope or text (Bradford et al. 2019, 752–53), which means that text grouping results closely the same as scope grouping. Based on these methods, Bradford & Chilton find that the EU

model has a growing influence worldwide, while the US Chicago-school model seems to diminish (Bradford, Chilton, and Lancieri 2020).

*Second*, I believe that adding a qualitative analysis helps minimise errors, still enjoying the approach's main benefits. I added a short descriptively legal analysis on three key countries (Ireland, New Zealand, and Japan), which are recognized by the similarity proxy. As explained, these countries included textual similarity to the US in one of the main areas of law (cartel, merger, or dominance).

Let us take Ireland as the first example, a member of the European Union with an institutional structure that shows similarity to the US. Art 16 of Regulation 1/2003 ensures that national laws are fully aligned with Article 101 of the EU treaty, while with regard to Article 102, EU Member States are allowed to have more stringent standards (yet not more lenient standards). This starting point makes it difficult to argue that some similarities between Ireland and the US exist.

However, the similarity, which I focus on, arises more from the institutional aspects and less from the scope of the law. Like in the case of the US, the Irish competition authority does not have the power to impose fines. The Irish Constitution of 1937 establishes that only courts may impose fines, as the power to do so is classified as a judicial function (Sokol, Crane, and Ezrachi 2014). Enforcement is, therefore, unlike most EU countries, primarily undertaken by the courts in cases instituted by the authority (in civil and minor criminal matters) or the Director of Public Prosecutions (DPP) in more serious criminal matters. The criminalisation of some antitrust acts is also similar to the US,

making the public enforcement priority cartel-centric.<sup>113</sup> The standard for merger control is similar to the US and the United Kingdom - Substantial Lessening of Competition (the ‘SLC’ test) in contrast to the EU standard of Significant Impediment to Effective Competition (the ‘SIEC’ test), which replaced the older standard of strengthened a dominant position. Again, Ireland is a challenging example because, as an EU Member State, it is obliged to apply the EU laws to cases where conduct affects trade between the Member States. However, the Irish constitution is what stands in the way of Ireland having the same kind of enforcement style as, for example, the Netherlands. This makes it an even more interesting case. If this ‘glitch’ within the EU context shows similar trends to other antitrust law copiers, the finding is even more convincing than other copiers.

The New Zealand Commerce Commission is a combined regulatory and quasi-judicial authority that operates independently of any Government direction. It adjudicates on clearances and authorisations for mergers and acquisitions and authorisations for restrictive trade practices; however, the Commission does not have the power to make enforcement orders (administrative sanctions), again closer to the US approach. Public enforcement priority is cartel enforcement with very few dominance cases brought by the country’s Commission. In general, the New Zealand law closely follows the Australian

---

<sup>113</sup> The Irish law (relevant until 2014) was understood by The Irish Supreme Court: ‘[the] entire aim and object of competition law is consumer welfare. Competitive markets must serve the consumer. That is their sole purpose. Competition law, as is often said, is about protecting competition, not competitors, even if it is competitors who most frequently invoke it. Its guiding principle is that open and fair competition between producers of goods and services will favour the most efficient producers, who will thereby be encouraged to satisfy consumer demand for better quality products, wider choice, and lower prices. Their reward is a greater market share. Production of better and newer products may necessitate expensive market research, involving a degree of economic resources and market power’. *Competition Authority v. O’Regan* [2007] 4 IR 737, para. 106. The similarity to the *Pueblo Bowl-O-Mat, Inc.* USA Supreme Court ruling is apparent.

Law, which is, as expected, closer to the US than to the EU (Sokol, Crane, and Ezrachi 2014, 560–61).<sup>114</sup>

Focusing on monopolisation or abuse of dominance New Zealand’s courts have confirmed that a monopoly will not misuse its market power where it acts, in the same way, as a firm without substantial market power, running counter to the EU notion that dominant firms are subject to special responsibilities to assist their competitors, or that their conduct should be viewed through a ‘special lens’ (*Union Shipping NZ Ltd. v. Port Nelson Ltd.* [1990] 2 NZLR 662 (HC) at 706, confirmed in *Telecom Corporation of New Zealand v. Commerce Commission* [2012] NZCA 278 para. 124). Its monopolisation laws include a recoupment requirement for predatory pricing claims like in the US, but not excessive pricing (again like in the US)(*Carter Holt Harvey Building Products Group Ltd v. Commerce Commission* [2004] UKPC 37, [2006] 1 NZLR 145).<sup>115</sup>

Lastly, concerning Japan, Sokol, Crane and Ezrachi state that ‘The Japanese antitrust system was largely inspired by the US model as can be seen from its main legislation, the Act on Prohibition of Private Monopolization and Maintenance of Fair Trade (JAA)’ (Sokol, Crane, and Ezrachi 2014, 440). Japan is one of the few jurisdictions where individuals involved in antitrust infringements can be criminally prosecuted (like the US). However, as in many other countries, these laws were not enforced. In practice, the Japan Fair Trade Commission (JFTC) enforces the antitrust rules by issuing cease-and-

---

<sup>114</sup> Australia primarily has a judicial enforcement model like the US antitrust. Meaning that is, except in limited circumstances relating to consumer protection, penalties may only be imposed by the courts (including where sought by the Australian competition agency (Sokol, Crane, and Ezrachi 2014, 20–21).

<sup>115</sup> Note: this case was decided in 2001, since then the main article (36) was amended. However, the view set out in this decision has subsequently been referred to by the Court of Appeal in *Telecom Corporation* [2012] NZCA 278.

desist orders and sometimes by imposing fines through surcharge orders (Sokol et al., 2014, pp. 440-441; Fry, 2000; Ramseyer, 1984). Historical research over Japan's antitrust enforcement reveals a strong connection to American antitrust and Japan-US trade relations (First 1995, 154–55). Public enforcement by the JFTC efforts was considered close in trends to the US trends until the early 2000s and focused on hard-core cartels (First 1995, 158–61, figures 3-5). One can argue that the low levels of public enforcement have nothing to do with its legal origin. However, scholars have argued that it is unlikely a result of business culture and more likely a result of a failed transplant of the antitrust legalistic approach in an otherwise bureaucratic system (First 1995, 143-145).

In addition to these three countries, the argument for Australia and Canada is more straightforward despite clear differences that have developed over the years. Historically Canadian competition law was closely related to the US antitrust, enacted a year before, under similar circumstances. Amendments, like the Robinson-Patman Act in the US, were enacted in Canada following similar concerns (discrimination and predatory pricing) were quickly followed in Canada. The law and its enforcement were based on criminal sanctions imposed by judicial bodies. Closely resembling the US pendulum of enforcement, enforcements efforts were strong until the mid-1970s, with ruling from the courts' watered-down efforts (Ross 1998, 6–7). However, competition law in Canada changed markedly in 1986, when the Competition Act was enacted. It was also very different, in its implementation, after 2009 (but that is mostly outside the scope of our analysis). After 1986 mergers and monopolisation were no longer criminal, making the element of horizontal agreements the key criminal provision of the laws, and significant changes were made to substantive laws. For the purpose of my inquiry, the main institutions of Canadian

competition law, including the Competition Tribunal (which reviews civil cases), remain similar to the US legalistic-adversarial model of enforcement. Adding the US itself, we can say that six out of the eight countries considered ‘treated’ by text similarity criterion do show actual similarity to the US in elements of institutional structure.<sup>116</sup>

In addition, I explored survey data from the CCL database of expert’s opinions of the independence and relative importance (1 not independent to 5 completely independent) of the three main players of any competition regime: courts, agencies, and the private sector. In my sample, countries that are similar to the US score higher in the relevance of courts (mean of 3.5 compared to 2.75 for similar to EU countries) and private enforcers (mean of 3.125 compared to 2.9 for similar to EU countries). To be clear, I am not arguing that these three countries are applying American antitrust. *I am arguing that their choice to use US antitrust text is a signal for their institutional capacity or appetite for enforcement.*<sup>117</sup>

*Third*, exploring the causal mechanism separately: market power proxied by the rise of markups shows that the countries included in my treatment group have also seen some of the largest rises in markups, closely following the US trends explored above. Besides Canada, which only shows a small increase in markups since 1985 and 2017, the rest of the group (Australia, Ireland, Japan, New Zealand, and the United States) shows a

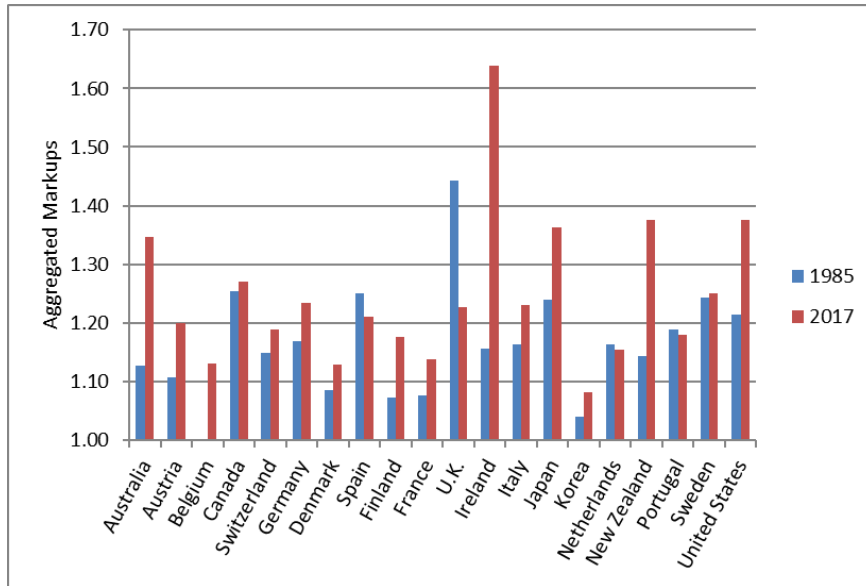
---

<sup>116</sup> I also reviewed Lithuania, which introduced competition law for 90s using US antitrust language but changed its laws over the beginning of the 2000s to an EU text following its intentions to join the EU. The move is reflected as well in the text similarity proxy. However due to barriers of language we consider our analysis to justify the similarity criterion in this country.

<sup>117</sup> Again, the text similarity could be a sign for political affiliation and pressure which led to adoption of the legal text. Like the case of Japan. This is one example of the omitted variable bias which I will try tackle down in the econometric part.

big percentage change per year in markups. These findings are also consistent with De Locker and Eeckhout's global analysis (De Loecker and Eeckhout 2018, 7).

Figure 15: Markups over marginal costs by country



Source: Schreyer and Zinni (2020). Markups measure the ratio of price and cost and are calculated on a firm or industry level. On the y-axis, the ratio for 1985 (blue) and 2017 (red) aggregated per country.

Clearly, other factors influence these ratios. For example, a solid hike in residual mark-ups is measured for Ireland, possibly reflecting supra-normal returns to IP assets. The models in the next section also control some (clearly not all) possible confounders. I also show that the treatment works along a continuum (not only binary treatment) when countries closer to the US show stronger, more significant inequality changes. Finally, to further test the assumption of similarity, I used a placebo model as part of empirical estimation strategy, checking if the definition of treatment is statistically different from a placebo similarity effect, using indicators from comparative law studies of the ‘origin of law’. If the result I observe is coming out from a shared confounder, i.e., legal origin, the placebo test should be able to capture it.

To summarise the discussion in this section and chapter 6.1, I argue that the two legal assumptions of the model of law are reliable enough. The US and EU competition laws have inspired the laws used by other nations; they are distinct in many ways. From goals and philosophy to substantive laws and institutions. The choice to copy the text of one of the laws has actual meaning in terms of the operation of the law, its scope, and possibly the philosophical foundations which impact the intensity of enforcement. Copying the law puts the country on a different course of development and naturally leads it to ‘feed’ from a different jurisdictional source. It is a form of ‘path-dependent change’; initial conditions determine both the subsequent trajectories of institutions and how they evolve and influence the institution structure and strategy (Acemoglu, Egorov, and Sonin 2020). It does not mean that a country that copied the US antitrust text enforces the US antitrust laws.

### **(b) Estimation strategy and methods**

The starting point of my estimation strategy is the textual similarity criterion discussed up until here and the contrast between the US and EU models. I test the hypothesis that countries that adopted a US antitrust law model will be associated with higher levels of economic inequality. The US antitrust model selection is proxied by the country’s choice to copy the wording of the Sherman Act and other US competition laws. How does the estimation strategy supposed to work? There are two main options to interpret the similarity of text proxy results:

- 1.** Similarity between legal texts is a random phenomenon. In other words, the decision to copy the US or EU text does not follow a logical pattern. Under such a view, we should not expect to find any correlation between *similarity to text* and *inequality* measures (at

least in most of our models and specifications). The sign of the coefficient (-/+) could also go either way.

**2. Similarity between legal texts is non-random.** In other words, the decision to copy the US or EU text does follow a logical pattern. Text similarity is related to antitrust enforcement philosophy or institutional differences, as argued in section 6.3. The expectation for the sign of the coefficient (-/+) is directly related to the second hypothesis: similarity to the text of the antitrust laws is expected to be positive (i.e., similar text to US antitrust should be positively associated with higher economic inequality) and similarity to other laws (mainly EU) is expected to be negatively correlated with economic inequality or non-significant statistically (i.e., random).

However, as explained omitted variable bias could be affecting the correlation. Similarity to text and inequality could be both correlated to confounding factors such as the level of economic development; labour institution; trade and globalization or legal factors such as legal origin and historical path-dependent factors. For example, most countries that copy the EU text are from the European continent. We should consider that countries in the European continent could be systematically more equal than other countries in our dataset and therefore the similarity to the EU text will show a statistically significant negative correlation sign, that has little to do with competition law.<sup>118</sup> The econometrics methods employed in this chapter are aimed to neutralise any spurious correlations (random) and distinguish (control) for the main confounders for inequality mentioned in the literature.

---

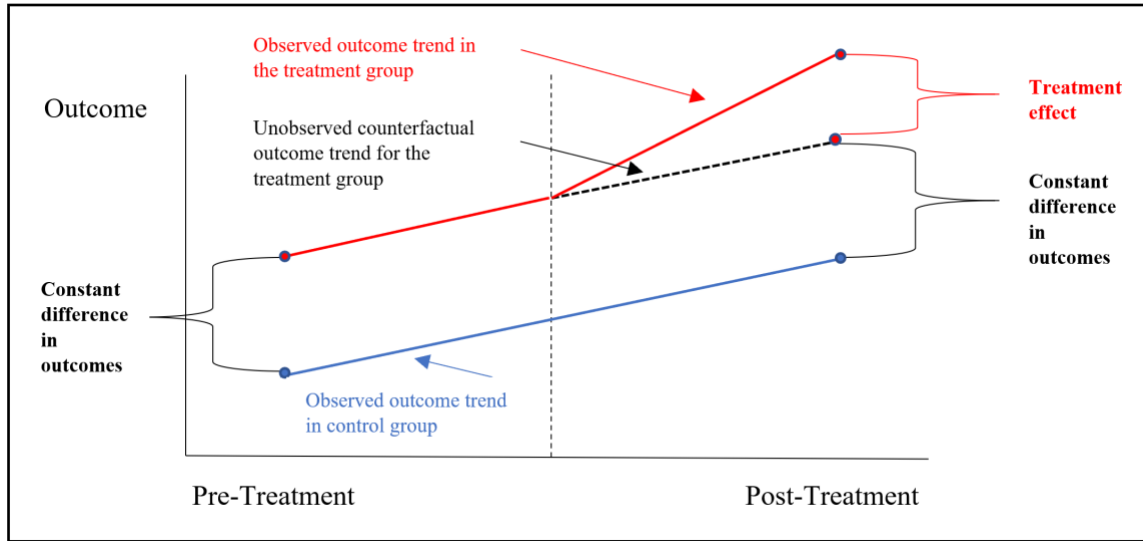
<sup>118</sup> The study does not report the similarity to EU results for this reason, as it is easier to find an effect resulting from the lower levels of inequality (despite high levels of heterogeneity) apparent in the EU countries, compared to other of OECD countries.

The econometric specification is based on two methods of estimation, the first is the classic difference-in-difference (DID) model and the second is the more advanced Synthetic Control Method (SCM). I will elaborate on the two models, trying to build the intuition behind the techniques.

(i) *The Difference-in-Difference approach*

DID models are popular in social sciences and macroeconomics as they address many – but not all – limitations of standard cross-country regressions. In its simple form, the DID model looks at the difference, or delta, in the outcome of two units: treated unit vs control unit, before and after the treatment. Thus – a difference-in-difference. Figure 16 gives a graphic overview of the DID model. The DID model estimates the treatment effect based on the two differences as can be seen in figure 16. The key assumption of the model is also apparent in the figure – without the treatment, the constant difference between the treated unit and control unit is assumed to be identical in the pre- and post-treatment periods. So, any difference to the treatment groups above the original difference in the pre-treatment group is assigned to the treatment effect. I will return to this assumption later when exploring the limitations of the DID model.

Figure 16: A simple DID model



Source: Author’s illustration, DID model.

The specification of a DID model using panel data (cross-country and multiple periods) accounts for time-invariant country characteristics, such as geography, natural resources, social norms, and colonisation, that may influence both economic and political development. Also, most standard covariates show little within-country variation and therefore do not usually affect the estimation of interest significantly in a short time. The difference-in-difference (DID) panel data I use is based on the binary treatment – similarity to the antitrust law, following a log-log regression equation:

$$\log(Y_{i,t}) = \alpha_i + \beta_t + \log(Y)_{i,t-1} + \delta \text{resemb\_us}_{i,t} + \log(X'_{i,t}) + v_{i,t}$$

Due to the inclusion of country ( $\alpha_i$ ) and year ( $\beta_t$ ) fixed effects the coefficient of the treatment ( $\delta$ ) measures the annual change in the dependent variable associated with the treatment (change in law), comparing the reforming country to the general evolution of the dependent variable in the non-reforming countries.

The cross-country panel data links the ‘model of law’, using the text of the law, with economic inequality. The availability of data on the dependent and control variable changes; in the DID models, the period of the OECD group includes 1990 until 2010, to avoid additional endogeneity issues. It includes a min of 32 countries from the OECD.

Nevertheless, all panel data DID models are based on the parallel trend assumption of the countries selected for comparison, i.e., in the absence of the treatment, the average outcomes of treated and control units would have followed parallel paths, as can be seen in figure 16 (the constant difference in outcomes). This assumption is not directly testable (Jaeger, Joyce, and Kaestner 2020), but researchers have more confidence in its validity when they limit the sample to homogenous in terms of economic development in countries like the OECD (compared to the World dataset). The DID models are also more easily manipulated by a researcher’s specification and choices (e.g., choice of controls).

(ii) *The General Synthetic approach*

For this reason, I implemented a General Synthetic Control (GSC) method that could use the dataset of OECD countries to design an optimal control group. In other words, instead of finding an actual country that satisfies the model’s criteria, the GSC manipulates the data to create a synthetic country based on a mixture of the control group.

Abadie and Gardeazabal (2003) introduced the Synthetic Control Method (SCM) approach to comparative case studies, which was further developed by Abadie, Diamond, and Hainmueller (2010). The approach constructs a so-called synthetic unit, which is a weighted unit of potential control units, to approximate the most relevant characteristics of the treated unit in the pre-treatment period. In the period after the treatment, we can

estimate the counterfactual scenario of the treated unit by looking at the trend of the synthetic control unit.

The GSC method used here relaxes the often-violated assumption of parallel trends and unifies older SCM with linear fixed-effects models (Xu 2017). It imputes counterfactuals for each treated unit using control group information based on a linear interactive fixed effects (IFE) model that incorporates unit-specific intercepts ('factor loading') interacted with time-varying coefficients ('latent factors'). It has been argued that this method has several advantages: First, it allows the treatment to be correlated with the unobserved unit and time heterogeneities under more reasonable assumptions. Second, it generalises the SCM to the case of multiple treated units (like this study) and variable treatment periods and improves efficiency and interpretability. Third, with a built-in cross-validation procedure, it avoids specification (p-hacking) searches and thus is easy to implement.

The synthetic model matches both pre-treatment covariates and outcomes between a treated unit and a set of control units; it uses pre-treatment periods as criteria for suitable matches (relaxing the parallel trend assumption). It provides exact weights for the control units (after implantation), thus making the comparison between the treated and synthetic control units transparent. The GSC method used here is different. It estimates first an IFE model using only the control group data, obtaining a fixed number of latent factors. It then estimates factor loadings for each treated unit by linearly projecting pre-treatment treated outcomes onto space spanned by these factors. Finally, it imputes treated counterfactuals based on the estimated factors and factor loadings (Xu 2017).<sup>119</sup> This method is in the spirit

---

<sup>119</sup> For more on the assumptions and development of the method, see the developer's original paper.

of the original synthetic control method in that it uses data from pre-treatment periods ‘as benchmarks to customize a reweighting scheme of control units to make the best possible predictions for treated counterfactuals. The model is estimated by iteratively conducting a factor analysis of the residuals from a linear model and estimating the linear model that takes into account the influences of a fixed number of most influential factors’ (Xu 2017, 73). The GSC analysis and results are explored graphically using R (package *gsynth*).

### **(c) Data sources**

#### **(i) Legal variables**

Bradford and Chilton (2018) Competition Law Index (CLI) is the most extensive dataset of competition laws to date, including almost all countries in the world (123 out of 126) that enacted competition laws by 2010. The CLI measures competition regulation’s stringency around the world for over a century—from 1889 to 2010. Besides a dummy variable of enacting the laws (off-on), the CLI quantifies the essential elements of the authority granted to regulate competition and the substance of competition laws that are in force in each jurisdiction in each year since the country introduced its first competition law. They aggregated the elements into an overall index that can be used to measure the scope of competition regulation (the net regulation or risk associated with it) (Bradford and Chilton 2018, 402). More details on the CLI main measures can be found in chapter 7 (where I use the CLI for my analysis).

In this chapter, I use Bradford and Chilton’s textual laws analysis (Bradford et al. 2019),<sup>120</sup> which examines the extent to which various national laws replicate the language

---

<sup>120</sup> The data is publicly available in the project website: <http://comparativecompetitionlaw.org/>

used in the EU and US competition laws using human coding. Measuring the similarity in languages is a common method to document the spread of laws (Law and Versteeg 2012).

The law is considered to resemble US law if it uses any of the following phrases:

1. ‘substantially lessen competition’;
2. ‘every contract, combination’;
3. ‘every person who shall monopolize’ (specific indicator - `resemb_us_monopolize`).

As described, the estimation strategy is based on the notion that most countries decide to initially ‘copy’ one of the either of the US or EU that are available, and from there, develop their own unique set of competition laws over time. However, it is relatively rare for countries to borrow language from both the US and the EU. In the OECD database, only 7% of the observations (country-year) indicate a positive sign for both dummy similarity variables for the US and EU. 13% of the observations are US similar only compared to 36% EU only, and 44% none. However, as explained, in many of the observations (country-year), a country could have no competition law in place in the early parts of the dataset (the 1960s), meaning that 44% is higher than the actual number of unique (no similarity) choices.

Heterogeneity in the enforcement of competition laws is expected and does not undermine this strategy. On the contrary, the variation is the key for the estimation to work. The initial path and the movement towards one of the models are the focus here. Each of the European countries that are mentioned has the EU competition law text sitting above its national law, which applies to almost any major firm operating in the country. The effects of the EU supra-national law are expected to be similar in all EU countries. The

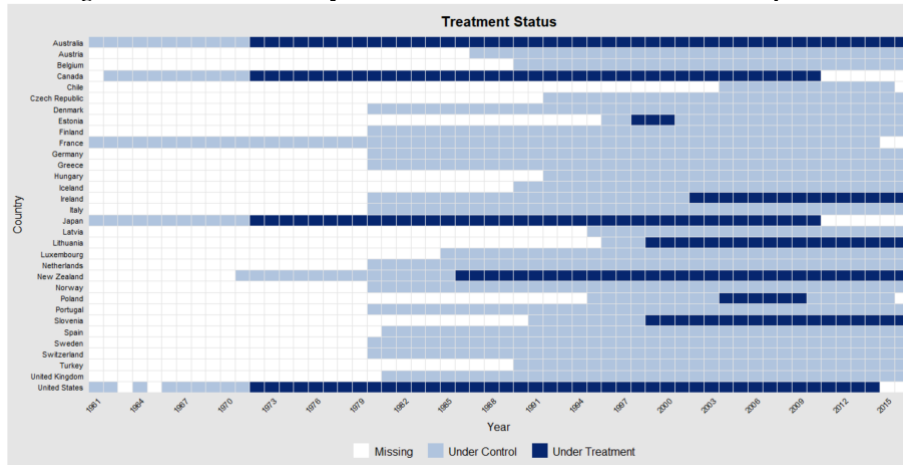
focus on national competition texts for European countries allows me to use variation between the two levels. However, I do not ignore the likelihood that inequality would be driven at least as much, if not more so, by applying supra-national (non-US) competition laws and enforcement efforts of the European Commission.

As noted above, treatment periods are defined by two conditions: 1. the similarity to the US antitrust law 2. The observation is dated post-paradigmatic transformation (after the year 1972).

The database includes only OECD countries. A total of 10 countries were found similar to the US under condition 1. The US, Australia, Canada, and Japan are all similar to the US for the entire time series. Therefore, their treatment period starts in 1972 following condition 2. Estonia, Ireland, Lithuania, New Zealand, Poland, and Slovenia all copied the US antitrust after 1972, so their treatment period is determined by the first condition alone. Note that Poland and Estonia are only similar to the US for a short period due to legal changes within the country. The treatment is not fixed, and as explained, all of the treated countries included textual similarity to the US in one of the main areas of regulation (cartel, merger, or dominance).

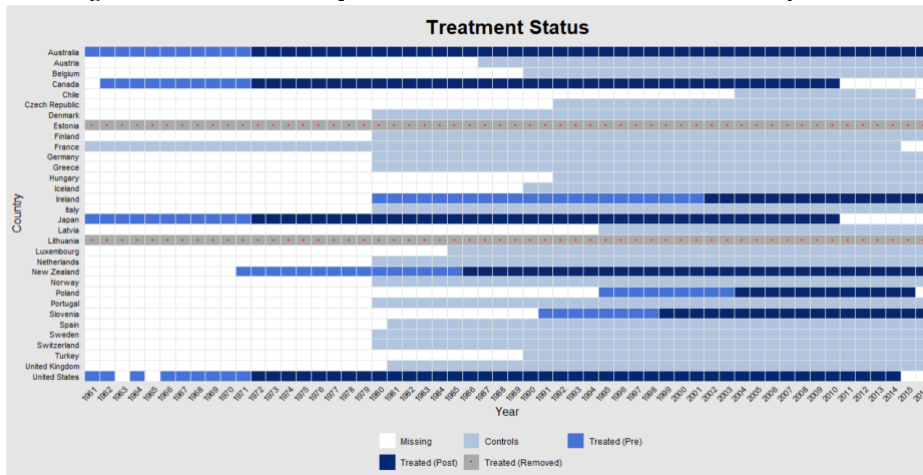
In figures 17 A and B, I plot the actual treatment status for the DID and the GSC models, respectively. Note that in 17A, all countries which satisfy the two criteria are considered treated. In figure 17B, two countries are removed from the GSC model due to too little pre-treatment data.

Figure 17A: Similarity to the US DID model, treatment periods



Source: Autor illustration. Treatment (dark blue) is defined by similarity to the antitrust text post-1972 breakpoint. All other observations are considered part of the control group (light blue), depending on data availability. Missing observations are represented in white boxes.

Figure 17B: Similarity to the US GSC model, treatment periods



Source: Autor illustration. Treatment Status by country (unit) over the sample, the countries are divided to control and treated. The treated group is divided into the pre-treatment period (light blue) and the post-treatment period (dark blue). Missing values for the dependent variable are presented in white and removed observations in the GSC model in red dots.

(ii) Control variables

The estimations equations include a set of controls represented by the vector  $X'_{i,t}$  includes time-varying covariates following similar studies (Roine, Vlachos, and Waldenström 2009; Bengtsson and Waldenström 2018):

- **Trade.** To control for the effects of trade liberalisation and globalization on inequality, I use a measure for import and export (% of GDP). Exposure to international trade and competitive pressure may influence firms in re-setting their structures and potentially reconsidering the role of labour (Caliendo, Monte, & Rossi-Hansberg, 2017) - a substitution of domestic workers with the foreign ones, resulting in a reduction in the aggregate labour share and increase of inequality. Following the Stolper–Samuelson theorem, Roser & Cuaresma (2016) suggest that separating the import and export could improve proxies for trade globalisation effects. I also use a second measure of merchandise trade as a share of GDP (the sum of merchandise exports and imports divided by the value of GDP) to test the sensitivity of this approach and extend time series.
- **Gross Capital Formation.** I use a measure for capital formation (% of GDP) as a proxy for investments. Capital is ‘formed’ when savings are utilized for investment purposes, often an investment in production; such factors have been connected to unemployment and inequality (Rowthorn 1995).
- **GDP per Capita or GDP per Capita Growth.** As proxies for the size of the economy or its growth, both could be associated with poverty reduction and inequality (Assous and Dutt 2013).
- **Inflation.** Some theories predict that the rich can hedge better against inflation (% consumer prices) because of better access to financial markets (making inflation an additional cause of inequality). Debtors will benefit from unexpectedly high inflation because this reduces the real debt burden when most contracts are written in nominal terms. The effects on inequality are thus somewhat unclear but still are

kept as part of the model. In a way, inflation is a better proxy for macroeconomic stability (Jauch and Watzka 2016).

- **Total government spending.** Government spending (% GDP) is a proxy for redistribution via services and transfers by the government. As opposed to levels of taxation, this proxy reflects on the overall level of the country's progressives in tax and government services (Zeira and Battisti 2018). Still, in the analysis, I replace the proxy with a taxation proxy to provide further confidence in the estimation.
- **Unemployment.** Higher unemployment and more severe recessions could be contributing to inequality, both because of the direct effect of lost income for those laid off and because of the indirect effect of depressing wages for those still employed. The proxy of unemployment (% workforce) is relevant as a direct way to control for local recessions (global recessions are captured by year fixed effects and regional by the region\*year time trend), yet it limits the analysis to due to year's coverage (1991-).
- **Technological investment.** I use gross domestic spending on research and development investment (% GDP) to proxy the countries' technological progress (Acemoglu 2003). Unfortunately, this measure is only available for a short period (1980-) and a small number of countries compared to other controls. Given the aggregation levels of the data, I do not expect this proxy to capture capital-augmenting technology or automation, which could reflect low-level labour substitution. However, instead, it could capture levels of Human Capital.<sup>121</sup>

<sup>121</sup>

---

I acknowledge that education would have been a better proxy for human capital and that it plays a crucial role in shaping inequality (Huggett, Ventura, and Yaron 2011). However, the limited amount of data and the presence of several missing values would have dropped considerably the samples on

- **Legal Origin.** For our placebo test, I use the legal origin data from the Journal of Legal Analysis, which was published by Klerman et al. (2011). We use the "LO" variable, which is Kerman et al. (2011) 's coding of legal origins, and the "CO" variable, which is their coding of colonial power.

My DID models include almost all of the controls mentioned above, limiting the analysis to 1990-2015. A balanced dataset is important for a DID strategy, keeping the analysis limited to two and a half decades. For the GSC, I use only 3-4 controls as the algorithm cannot work with missing values at all. The advantage here is that I can observe a more extended period from 1960 to 2015 while still controlling for possible confounders by including latent factor analysis.

(iii) Dependent variables

The dependent variables are the Gini index taken from The Standardized World Income Inequality Database (SWIID).<sup>122</sup> I use the gross Gini (gini\_mkt) and the net Gini (gini\_disp) index taken from the SWIID (Standardized World Income Inequality Database).<sup>123</sup> The Gini indices span the period between 1960 and 2019. I use both Gini indicators as another control for taxation differences between countries and across time, as the Gini disposable income represents income distribution taking into account redistribution policies (public transfers). The indicators range from 0 (perfect equality in income distribution) to 1 (perfect inequality).

---

which to perform the analysis. For the USA, for example, there only nine observations in the world bank dataset for School enrolment 1960-2010. I therefore use life expectancy as another sensitivity factor for human capital (as the two are highly correlated).

<sup>122</sup> The data is available at: <https://fsolt.org/swiid/>

<sup>123</sup> The source of the Gini indices, the SWIID dataset, 'represents a particular choice in the balance between comparability and coverage: it maximizes comparability for the broadest available set of country-year observations' (Solt 2009; Solt 2020).

Income shares accumulated by the top one percentile are taken from the World Inequality Lab. The World Inequality Data (WID) is based on the Alvarado and Piketty inequality lab project. The WID combines different data sources: national accounts, survey data, fiscal data, and wealth rankings in one of the larger inequality research projects in the world. I provide summary statistics of the main variables of the full dataset (including all countries):

**Table 2.** Summary statistics

	Observations	Mean	Std.Dev	Q1	Median	Q3	IQR	Source
<b>top1</b> (1% income share)	1116	0.09	0.04	0.07	0.08	0.10	0.03	<a href="#">WID</a>
<b>top10</b> (10% income share)	1102	0.31	0.07	0.27	0.29	0.33	0.06	<a href="#">WID</a>
<b>gini_disp</b> (disposable income)	1571	0.31	0.07	0.26	0.30	0.33	0.08	<a href="#">SWIID</a>
<b>gini_mkt</b> (net income)	1571	0.46	0.04	0.42	0.46	0.49	0.07	<a href="#">SWIID</a>
<b>EXP</b> (exports)	1738	36.31	26.10	20.11	29.51	44.73	24.60	<a href="#">World Bank</a>
<b>IMP</b> (imports)	1738	35.81	22.29	21.39	30.52	43.50	22.09	<a href="#">World Bank</a>
<b>GC_F</b> (capital formation)	1738	24.18	5.00	21.01	23.58	26.84	5.83	<a href="#">World Bank</a>
<b>GDP_PCG</b> (growth)	1851	2.55	3.23	0.94	2.43	4.24	3.29	<a href="#">World Bank</a>
<b>GOV_EXP</b> (government)	1764	17.89	4.89	14.79	18.24	20.92	6.13	<a href="#">World Bank</a>
<b>Inflation</b> (consumer price)	1994	11.72	52.92	1.96	3.60	8.28	6.32	<a href="#">World Bank</a>
<b>Life_EXP</b> (life expectancy)	2179	74.15	5.36	70.87	74.38	77.98	7.11	<a href="#">World Bank</a>
<b>Trade</b> (merchandise trade)	1827	52.41	32.29	31.27	45.46	60.62	29.29	<a href="#">World Bank</a>
<b>TPC_GDP</b> (technology investment)	1070	1.66	0.92	0.93	1.58	2.27	1.33	<a href="#">OECD</a>
<b>unemploy</b> (unemployment)	1073	7.88	4.20	4.80	7.06	9.93	5.13	<a href="#">World Bank</a>
<b>Placebo</b>	2220	0.18	0.39	0.00	0.00	0.00	0.00	<a href="#">Klerman et al. (2011)</a>
<b>resemb_eu</b>	1668	0.43	0.50	0.00	0.00	1.00	1.00	<a href="#">CCL</a>
<b>resemb_us</b>	1668	0.20	0.40	0.00	0.00	0.00	0.00	<a href="#">CCL</a>
<b>resemb_us_monopolize</b>	1668	0.06	0.25	0.00	0.00	0.00	0.00	<a href="#">CCL</a>

## 6.4 Difference-in-difference specifications and results

(i) The similarity to the US, OECD

Table 3 presents the panel data results, using similarity to the US Sherman Act, with the two Gini indicators based on three specifications – fixed effects, geographical time trends, and autocorrelation of the dependent variable between 1990-2015. Table 4 does the same

for the top income shares data. The three specifications are intended to capture economic cycles: Year fixed effects capture the global trend. The geographical time trends are a powerful (but inefficient) tool to address economic shocks affecting regions, and the lag dependent variables are the persistence of inequality (over the country fixed effects). I added a few controls such as inflation, investment levels, and unemployment, again keeping benchmark estimation simple. I run multicollinearity tests to ensure I do not rely on random correlations. Most of these tests come up negative and re-running the analysis without the controls shows consistent results.

The similarity to the antitrust law is positive in all of the models with statistical significance (under  $\alpha < 0.1$ ), suggesting that competition laws that resemble the US textually are linked to a higher economic inequality level. The results concerning the two first columns in Table 3 are significant for the gross (or market) measure as compared to the net (or disposable) Gini measure (which is only significant in 6). In other words, it appears that the similarity to antitrust text has a stronger positive association on *pre-tax* incomes than *post-tax* incomes. This is expected; competition law is a form of pre-distribution affecting mostly market outcomes before the intervention of redistribution policies such as taxation. I return to this point in Part III. As such, the potential benefits (or disadvantages) of antitrust regarding inequality are more likely to be captured by changes in the gross (market) Gini. These correlations might be negated, amplified, or even cancelled out by the taxation and expenditure regimes adopted in a specific jurisdiction such that the net Gini does not show any conclusive correlation with competition laws anymore.

Notice that the control variables are primarily stable for the same dependent variable, with the expected sign. For example, the `gov_exp` is statistically significant and

negative; Unemployment is positive and statistically significant in one of the specifications, suggesting as expected that a change in the macro unemployment figures increases with inequality; Trade measures have the expected sign (import (+), export (-)). The lag of Gini (column 3,6) is absorbing most of the variations from the controls reflecting the persistence of inequality, boosting the R square measure which seems to be low for the other models (suggesting the model is not well specified, especially in column 2). I do not see a significant link between R&D investment which might be a result of the proxy showing little variations of the two studied decades (1990-2015). In the log-log models, the coefficient presents elasticity. For example, a 1% increase in government expenditure is associated with a -13% (=100\*0.132) change in the gini\_mkt.

**Table 3.** Gini, similarity to the US antitrust

	<i>Dependent variable:</i>					
	log(gini_mkt)			log(gini_disp)		
	(1)	(2)	(3)	(4)	(5)	(6)
resemb_us (after 1972)	0.023** (0.010)	0.021* (0.011)	0.005 (0.003)	-0.012 (0.027)	-0.012 (0.029)	0.007** (0.003)
log(GDP_PCG)	-0.001 (0.001)	-0.001 (0.002)	-0.0005 (0.001)	-0.001 (0.002)	-0.001 (0.003)	0.001 (0.001)
log(GOV_EXP)	-0.132** (0.053)	-0.091* (0.055)	0.008 (0.010)	-0.250*** (0.055)	-0.200*** (0.068)	0.004 (0.016)
log(IMP)	0.103** (0.052)	0.080 (0.061)	0.005 (0.006)	0.134** (0.062)	0.142* (0.073)	0.021** (0.010)
log(EXP)	-0.089* (0.054)	-0.057 (0.059)	-0.012 (0.008)	-0.151** (0.065)	-0.129* (0.077)	-0.029*** (0.010)
log(GC_F)	-0.029 (0.037)	-0.009 (0.044)	-0.002 (0.006)	-0.065 (0.053)	-0.033 (0.059)	-0.014** (0.007)
log(inflation)	0.003 (0.003)	0.003 (0.004)	0.001 (0.001)	0.001 (0.003)	0.003 (0.004)	0.002** (0.001)
log(unemploy)	0.025** (0.012)	0.023 (0.014)	0.002 (0.003)	0.018 (0.015)	0.023 (0.018)	0.002 (0.003)
log(TPC_GDP)	-0.002 (0.019)	-0.005 (0.022)	0.005 (0.003)	-0.016 (0.024)	-0.026 (0.028)	0.007 (0.005)
log(lag.gini_mkt)			0.955*** (0.022)			

log(lag.gini_disp)						0.929*** (0.022)
Observations	637	637	637	637	637	637
Country & Year FE	YES	YES	YES	YES	YES	YES
Geographical Region	NO	YES	YES	NO	YES	YES
Time Trend						
Adjusted R <sup>2</sup>	0.020	-0.006	0.926	0.084	0.034	0.903
F Statistic	9.231*** (df = 9; 566)	1.594*** (df = 96; 479)	84.251*** (df = 97; 478)	14.270*** (df = 9; 566)	1.868*** (df = 96; 479)	62.684*** (df = 97; 478)

*Note: Errors are clustered by country*

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The Gini models could be underestimating some of the correlation in the model due to the Gini index structure, which focuses on the whole distribution of income (Piketty and Goldhammer 2014, 266–69). I cannot observe if the link is channelling through the high or low ends of the distribution. However, given the literature on the link between competition and top incomes, I expected the income share measures to provide a clearer view of the distribution of gains in society. The results of the correlation with the top income share are presented in Table 4.

First, the link between the similarity to US antitrust and top income share seems more stable and robust. Tops shares are also correlated with GDP growth. The other controls' sign is consistent, government expenditure is negative, and unemployment is positive, while the technological proxy remains negative but becomes statistically significant. Government expenditure is used as an explanatory variable to go around issues of tax evasion. Yet, taxes can include both progressively collected taxes (e.g., income tax) and regressive taxes (e.g., VAT taxes), which have contrasting impacts on inequality. Hence, if the tax-mix changes as might happen during a studied period, that will affect inequality in ways that are not picked up by a government-spending variable. For this reason, I also use the income, profits, and capital tax burden as a sensitivity test for the

results – the results in Table 4 remain the same, with the treatment effects positive and statistically significant in columns 1-5.

**Table 4.** Top Income Share, similarity to the US antitrust

	<i>Dependent variable:</i>					
	log(top1)			log(top10)		
	(1)	(2)	(3)	(4)	(5)	(6)
resemb_us (after_1972)	0.063* (0.033)	0.067** (0.034)	0.048** (0.019)	0.034* (0.019)	0.035* (0.021)	0.014 (0.010)
log(GDP_PCG)	0.013* (0.007)	0.016* (0.009)	0.021** (0.010)	0.002 (0.003)	0.003 (0.003)	0.006** (0.003)
log(GOV_EXP)	-0.304** (0.134)	-0.267* (0.149)	-0.107 (0.074)	-0.165** (0.075)	-0.161* (0.087)	-0.059* (0.032)
log(IMP)	0.230 (0.223)	0.259 (0.262)	0.265** (0.104)	0.202* (0.104)	0.217* (0.117)	0.137*** (0.030)
log(EXP)	-0.064 (0.188)	-0.075 (0.234)	-0.152 (0.108)	-0.086 (0.079)	-0.096 (0.091)	-0.090*** (0.029)
log(GC_F)	0.067 (0.125)	0.064 (0.136)	-0.038 (0.069)	-0.041 (0.066)	-0.047 (0.069)	-0.046** (0.023)
log(inflation)	0.015 (0.011)	0.011 (0.013)	0.001 (0.007)	-0.001 (0.005)	-0.002 (0.006)	-0.001 (0.003)
log(unemploy)	0.006 (0.036)	0.002 (0.039)	0.019 (0.019)	0.004 (0.017)	0.002 (0.019)	0.009 (0.007)
log(TPC_GDP)	-0.206*** (0.068)	-0.197*** (0.072)	-0.035 (0.030)	-0.079** (0.033)	-0.074** (0.035)	-0.010 (0.011)
log(lag.top1)			0.681*** (0.045)			
log(lag.top10)						0.749*** (0.035)
Observations	528	528	526	528	528	526
Country & Year FE	YES	YES	YES	YES	YES	YES
Geographical Region	NO	YES	YES	NO	YES	YES
Time Trend						
Adjusted R <sup>2</sup>	0.062	0.031	0.509	0.069	0.025	0.605
F Statistic	11.094*** (df = 9; 462)	2.297*** (df = 56; 415)	11.545*** (df = 57; 412)	11.577*** (df = 9; 462)	2.238*** (df = 56; 415)	16.063*** (df = 57; 412)

*Note: Errors are clustered by country*

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The sign is consistent and statistically significant in the top income models in 5 out of 6 specifications. For the binary treatment link between income inequality, the shift to a closer US competition law model is associated with an increase in the top1 income share – supporting the notion that a US model is more inclined to top income inequality. Again, I

do not see this result as a causal link but a positive correlation that requires further investigation. The main problem with this estimation is that my treatment assignment is *not random*. Recall the explanation at the beginning of this chapter, by using the DID model, I am not eliminating the omitted variable bias or the parallel trends assumption. The similarity to the US model comes with many other uncontrol similarities. As explained, fixed effects for year and country help limit these concerns alongside the controls for the classic alternative explanations. In this model, the correlation with the technological proxy becomes statistically significant next to the GDP growth, suggesting the two operate via the top end of the distribution (in opposed signs). The GDP proxy relates to higher levels of income while the R&D to lower levels. The import and export behave in a similar way as in table 3, and the government expenditure proxy is again negatively correlated to the top income share.

(ii) Robustness tests

Even if I hold the parallel trends assumption true for now, the similarity to the US model comes with many other uncontrolled similarities, which could leave room for omitted variable bias, which is the main weakness of the DID model. In other words, the choice to copy US law is not a *random* one. As explained, fixed effects for year and country help limit these concerns alongside the controls for the classic alternative explanations.

Why countries decide to copy the antitrust language has more to do with the US's (or the EU's) willingness to invest resources in the institutional building of the new market economy putting political pressure on the copier. Bradford et al., 2019 investigated why the EU model of law has spread over the last decades marginalising the US antitrust laws to a narrow group of countries. They argue that the EU was more successful in spreading

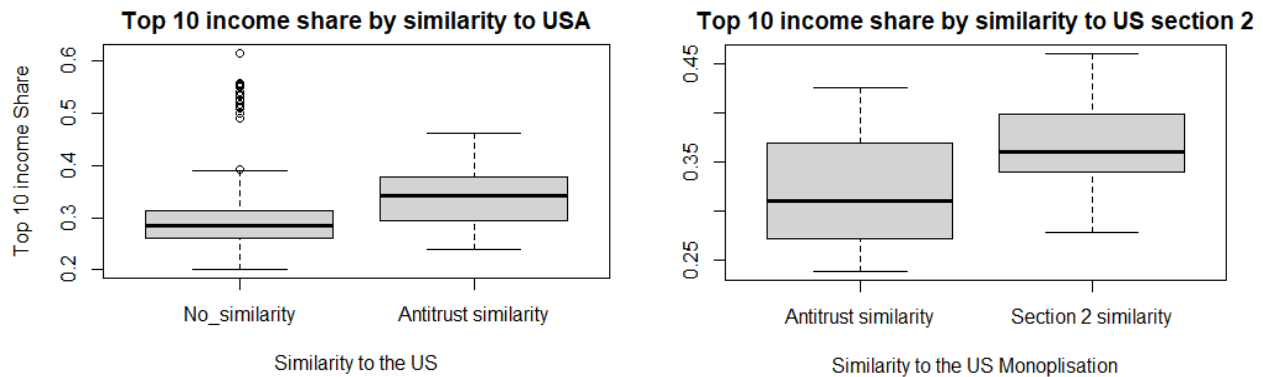
EU competition laws for several reasons, including their use of a desire to gain access to EU economic markets ('The Brussels Effect'). In addition, they argue that diversity of policy goals and preference to "defer less to markets and more to governments' ability to correct market failures" (Bradford et al. 2019, 735, 757–58). Due to this possible link between the US antitrust model's choice, I cannot fully distinguish the causal connection between the choice of model and economic inequality. It could still be a proxy for selection bias (an institutional bias broader than competition law) or even reverse causality when countries that are more inclined to economic inequality chose a form of competition law that seems less intrusive.

Going one step further, I re-run the same DID model using only a small number of countries that use Section 2 of the Sherman Act text (monopolisation) as a reduced treatment group instead of the similarity to the US general criterion used above. Next, instead of running the analysis on the OECD sample, I contrast this new treatment group (Section 2 similarity) with the small group of the original treated countries (10 countries found to have similarity to the US). In this model, I rely on the notion that section 2 enforcement efforts are a strong proxy for enforcement appetite.

In this way, I control for potential omitted variable bias resulting from political affiliation to the US: the control group is homogeneous, countries who *chose* to copy the US competition law. In other words, the decision to copy different parts of the antitrust laws acts as a spectrum. The countries that copy section 2 (Australia and Japan) are the closest to an enforcement approach that resembles the US antitrust laws. The contrast between similar to the US and similar to Section 2 acts as a continuous variable and helps mitigate the omitted variable bias.

In figure 18, two boxplots show the incremental increase between OECD countries to countries that resemble the US (left panel) and between countries that resemble the US to three countries that use section 2 monopolisation text (right panel).

*Figure 18: 10% income share similarity to the US model, OECD*



Source: Autor’s estimation. Figure 18 includes two box plots of averages of the top10 income share in our sample. On the left, the sample is divided into all OECD countries in the sample vs countries that are similar in their competition law text to the US antitrust. On the right, the averages represent the last group (similar to the US antitrust) vs three countries (US, Australia, and Japan), who also share the same text for the antimopolisy (Section 2) norm.

As can be seen, the median for the ‘similarity to US’ (LHS) is just over 0.3~ per cent (compared to 2.9 for the OECD no similarity), while the median value of the ‘similarity to Section 2 of the Sherman Act’ (RHS) is over 0.35~ per cent (compared to 0.3 for the OECD no similarity). In short, I can say that countries that get even closer to the US model within the US similarity group are associated with yet another increase in income inequality. Because I observe this difference within the group, I control for the main selection bias, focusing on Japan and Australia’s choice to follow the US model even more closely than the rest of the group.

In the appendix, I report the DID model’s results using the same specifications as before (Tables A2-A3). The main difference is that I have to use the GDP per Capita proxy (not growth) and drop the technological proxy (to have enough observations to run an

econometric analysis). The results are consistent with the main findings, showing a strong positive and statistically significant link between similarity to the US section 2 and economic inequality. In Table A4 of the appendix, I also include the econometric workhorse system-GMM model, although, given the long period (and the number of instruments), it is not necessarily ideal. Results are mostly consistent. More on the GMM method can be found in the next chapter.

## **6.5 General synthetic control specifications and results**

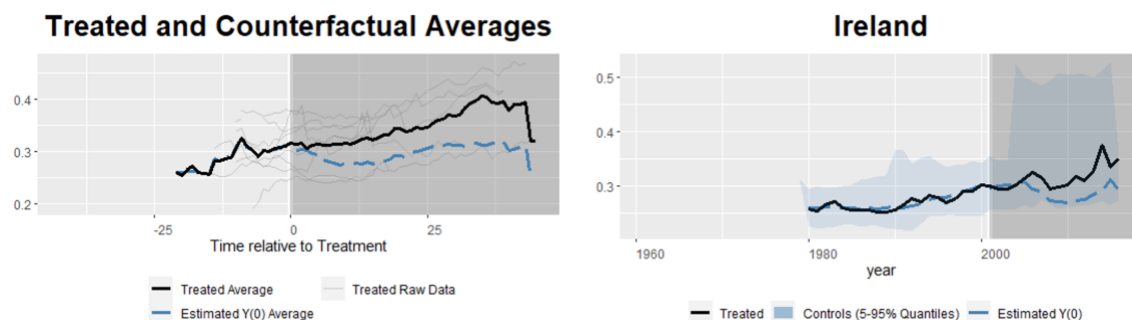
### **(i) EM algorithm**

All DID model relies on the parallel trend assumption so the GSC should have an important contribution (as it relaxes this assumption). The GSC method's primary assumption is that there are no spillover effects between the treated and control group (Stable Unit Treatment Value Assumption or SUTVA). I, therefore, use the GSC for the ten treated countries in the OECD sample group after 1972. However, the GSC requires enough pre-treatment data to calibrate the model. Therefore, in figure 17b, I show the treated units in the GSC (compared to figure 17a), taking out Estonia and Lithuania from the treatment list (which is done automatically by the algorithm). According to the developers of the method, a parametric bootstrap procedure is preferred when running a GSC model with a small ( $N < 40$ ) number of treated units. I also included the cross-validation procedure and EM algorithm that takes advantage of the treatment group information in the pre-treatment period (Gobillon and Magnac 2016), with an interactive fixed effects model (using `gsynth` function in R) as suggested in the developers' specification. Intuitively, the GSC models the error term for the match of pre-treatment periods (of all countries), producing the latent

factor. Following the analysis, the treatment countries counterfactuals are giving actual weights for all of the control units.

First, I use this specification without any controls to prevent any effect of multicollinearity. The results are positive and significant, with an estimated effect of 0.13 (\*\*p-value~0). Next, I included three controls only (as the algorithm does not support missing values), to maximise the number of observations, using log-log transformation for consistency with the DID models: government expenditure, GDP per capita growth, and inflation. With this specification, I report the top 10 income shares graphically as the dependent variables. The top 1 income share results are similar and consistent (see Table 5). The model includes 8 ‘treated’ countries (Estonia and Lithuania are out because of too few pre-treatment periods): Australia, Canada, Ireland, Japan, Poland, Slovenia, New Zealand, and the US. As can be seen in figure 19, the GSC estimates an increase in income share as a long-term effect of the US antitrust similarity. The blue line represents the Y (logarithm of the top 10% income share) zero counterfactual, while the black the treatment effect. Both the Average Treatment Effect (ATE) and the Ireland example show a positive correlation between the US text similarity criterion and an increase in the top income shares.

*Figure 19: 10% income share similarity to the US model, EM algorithm, OECD*



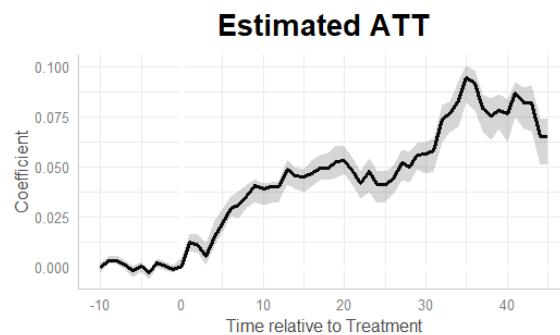
Source: Author's estimation, GSC model. On the left average treatment effect for all treated units on the right treatment effect for Ireland only. The black line represents the raw data (or average) for the dependent variable Y (logarithm of the top 10% income share). The blue line represents the Y zero counterfactual (the same unit/average without treatment trend).

This effect is evident in the first 20 years after the start of the treatment (countries start treatment at different times), which is in agreement with the finding in the US DID model.

The Average Treatment effect on Treated (ATT) is 0.0434 (SE 0.002, P-value<0.01\*\*\*), which is higher than the 0.035\* found in the DID model (Table 5 column 5).

Figure 20 presents the ATT coefficient over time, with a positive coefficient over the first 20 years. The later years are mostly an extrapolation of the model when the actual number of observations is significantly lower.

*Figure 20: 10% income share similarity to the US model, EM algorithm, OECD*

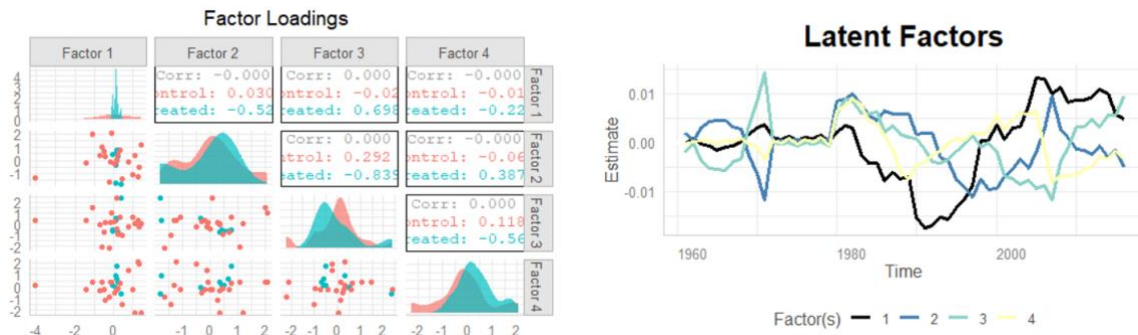


Source: Autor's estimation, GSC model. The long-term estimated coefficient of similarity to the US antitrust and top10 income share. The coefficient is positive in the sample, showing a positive increase over time (from treatment) averaged for all treated units per year. The grey area represents a 95% confidence interval.

The appendix includes the list (Table A1) of weights used in the analysis for Ireland, New Zealand, and Japan. In contrast to the SCM, the GSC method can use a negative weight for some countries. While the synthetic control method involves estimating weights for each control unit, the goal of GSC is to estimate factors using information from control units (so it does not directly involve weights estimation). The factors loading is the core of the GSC

algorithm used to create the treated countries' counterfactual trends. In figure 21, the latent factors and factor loading for the model are presented.

*Figure 21: 10% Income Share, similarity to the US, EM algorithm, OECD*

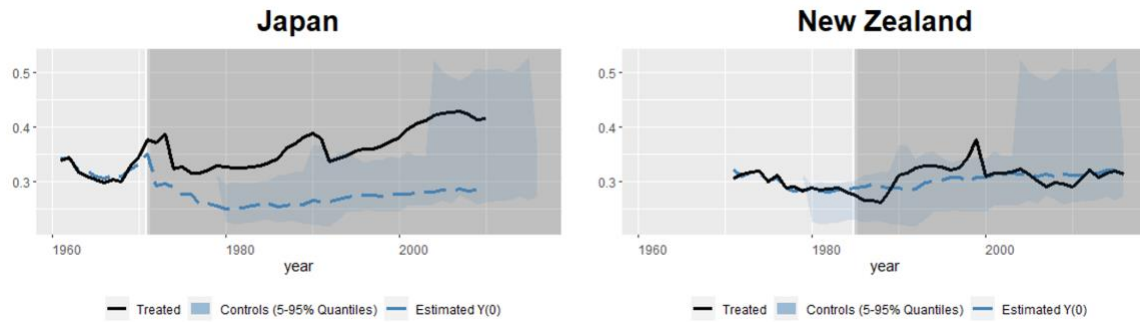


Source: Autor's estimation. In the right panel, the x-axis is the year, and the y-axis is the magnitude of factors. The left panel shows the estimated factors loadings for the treated unit (turquoise) and controls (red) units, with x- and y -axes indicating the magnitude of the loadings for the first and second factors, respectively. The caveat is that estimated factors may not be directly interpretable because they are, at best, linear transformations of the actual factors. These factors could relate to business cycles or other omitted variables.

## (ii) Robustness tests

I used another specification of Matrix Completion Methods (MC model) to test the results' robustness (Athey et al. 2018). This specification is not dependent on the latent factor analysis but uses a different regularisation scheme and takes advantage of the treatment group information in the pre-treatment period as well. The results remain similar where treated countries, such as Ireland in figure 19 and New Zealand in figure 22, exhibit an increase in income inequality after the change. While in the case of Ireland (figure 19) and Japan (figure 22 left), the change is stable, the New Zealand (figure 22 right) case seems less convincing.

Figure 22: Treatment effects US model 10% Income Share, MC model, OECD



Source: Author’s estimation, GSC model (MC). On the left treatment for Japan and on the right treatment effects for Ireland. The black line represents the raw data for the dependent variable Y (logarithm of the top 10% income share). The blue line represents the Y zero counterfactual (the same unit without treatment trend).

The ATT is similar (0.043, S.E. 0.002) but is only statistically significant at a level of 0.1 (P-value = 0.026\*\*). Table 5 summarises all GSC results.

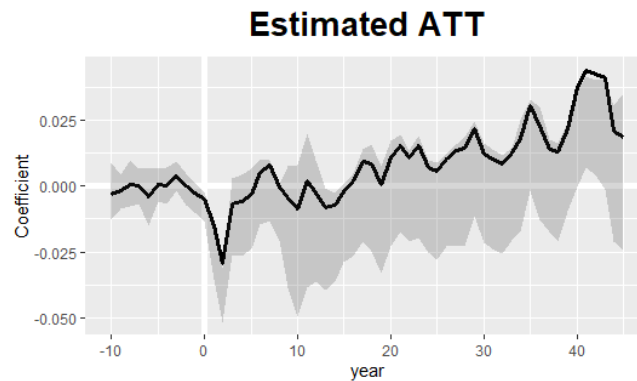
**Table 5.** Treatment Effect on the Treated, GSC models

	Model	Controls	Dependent Variable	ATT	S.E	CI.lower	CI.upper	P-value
1	EM – similarity	NO	top10	0.04611	0.00273	0.03951	0.05	~0***
2	EM – similarity	YES	top10	0.04345	0.00259	0.03637	0.04645	~0***
3	MC – similarity	YES	top10	0.04368	0.01684	0.001363	0.06159	0.026**
4	EM – similarity	NO	top1	0.01548	0.00154	0.01294	0.01905	~0***
5	EM – similarity	YES	top1	0.01507	0.0006	0.01327	0.01597	~0***
6	MC – similarity	YES	top1	0.01561	0.0063	-0.00346	0.02331	0.078*

The main problem remains: could I be capturing something else with US similarity? To try to mitigate this risk I run a placebo test for the similarity to the US proxy. The idea behind placebo testing is similar to the classic experiment terminology: a treatment, which is unrelated to my hypothesis, is expected to show no correlation to economic inequality. I used the legal origin literature (Klerman et al. 2011) to create a placebo treatment for the legal origin of ‘Common’ law countries and ‘British’ colonial power. Both groups include a similar sample from the OECD textual resemblance to the US. I considered all countries

in the two groups as treated after 1972, like in my estimation model, to make sure it not a time trend after all or related to legal origin (the group of treated countries includes five countries: US, Canada, Australia, Ireland, New Zealand, while the last two are excluded due-too few pre-treatment periods). Figure 23 shows the model ATT output, using the first placebo, and Table 6 summarises the results with the second placebo model.

Figure 23: 10% income share, placebo ‘legal origin’, EM algorithm, OECD



Source: Author’s estimation, GSC model (Placebo). The long-term estimated coefficient of legal origin and top10 income share. The coefficient is unstable in the sample (becomes positive after 20 years), showing a positive increase over time (from treatment) averaged for all treated units in the placebo per year. The grey area represents a 95% confidence interval. The small sample size creates uncertainty in the estimation.

Table 6. Treatment Effect on the Treated, GSC Placebo models

	Model	Dependent Variable	ATT.avg	S.E	CI.lower	CI.upper	P-value
1	EM – LO. (Common)	top10	0.01493	0.00473	0.00539	0.01354	0.364
2	EM – CO (British)	top10	0.01497	0.00472	-0.00520	0.01308	0.424

I use the same GSC specification EM-algorithm and find no effect (P-value>0.1). The results are consistent, but I do not discuss them here. Nevertheless, the interpretations of these results should be approached cautiously. The number of treated countries in the OECD dataset is small (8 in most models). This presents a very narrow picture. The advantage of using similarity to the US model is that the textual similarity is closer to an exogenous variable than other law measures, such as scope or number of antimonopoly

cases. It provides an exciting path for further inquiry and echoes previous work results (GUTIERREZ AND PHILIPPON, 2020).

## **6.6 Summary and discussion**

Chapter 5 looks at the evolution of the US antitrust model. I find that there appeared to be an association between an antitrust paradigmatic shift towards less active public enforcement and higher levels of economic inequality.

This chapter builds and expands on this analysis by investigating whether the US antitrust model is related to higher observed levels of income inequality across developed jurisdictions (OECD) that adopt it. Using a comparative analysis of the US and EU models, I find that the model of law choice incorporates institutions framework, appetite for enforcement and ideological differences between competition law regulations. The model of law hypothesis reflects key differences in antitrust enforcement efforts, such as the balance between cartel and monopolisation, and private vs public enforcement efforts. Overall, it relates to the question: on what side of the ‘error’ regulators prefer to fall? I test the hypothesis that the ‘model of law’, specifically the US model, could be linked to economic inequality trends. The main finding from the analysis is that the coefficient between the US model of law and economic inequality is robust to several econometric methods and sensitivity tests. In terms of competition law text, countries that are similar to the US are more likely to exhibit high inequality trends. Two main points emerge from this chapter:

- (1) Among the different aspects of the competition law model, the absence of strong public enforcement efforts seems to be a defining aspect of the US model

compared to the EU, considering judicial review and independence of the institutions. These findings are consistent with most of the legal literature on antitrust laws history and enforcement trends.

- (2) The US antitrust model is unique in its institutional framework. However, regulation choices that are essential parts of the antitrust model, such as a weaker role for the public enforcement agencies, might be associated with less competition and higher inequality. These findings are consistent with the literature which puts greater emphasis on the role of country-specific explanations for the macroeconomic trends.

The application of these findings could be crucial to competition policy in the future. I expect a high level of heterogeneity between countries' economic inequality causes, although the phenomenon seems to be relevant to most if not all developed countries (Nolan et al., 2018). If the claim that market power is on the rise *globally* proves to be robust (Diez, Fan, and Villegas-Sánchez 2020), competition laws (ineffectiveness) has likely played a passive part in these two common trends, i.e., inequality and the level of competition. In other words, it is possible that enforcers worldwide were lagging in their enforcement efforts, allowing concentration across industries to rise. In this case, there is little or no significance to cross-country differences between competition law enforcement models like the US and EU. Both of them failed consumers and workers. In this case, competition laws should be revamped entirely.

If market power is not a clear global trend (Gutiérrez and Philippon 2018; Covarrubias, Gutiérrez, and Philippon 2019) or not one of parallel significance, some of the concentration levels can be explained by innovation and efficiencies (the superstar

firms hypothesis) and some by ineffective enforcement associated with specific countries (like the US). In this case, it is possible that various enforcers did better than others controlling market power and anti-competitive practices. In this case, there is more to learn from the current application of competition laws – what is working and what is not working? The economy has changed dramatically since the 1970s, and law's stagnation is apparent, especially by the US antitrust. It is essential to recognise that this stagnation is a policy choice (Shapiro 2018). Researchers should further focus on the links between competition law enforcement and macroeconomic results, as highlighted in this chapter. I will revisit my findings in these two chapters after gathering more evidence in the cross-country datasets.

I could not fully distinguish two possible interpretations of the results from this chapter. Are countries copying the US antitrust language more likely to show over time higher levels of inequality? (Implying a causal link between the US model and economic inequality), or are unequal countries more likely to copy the US antitrust laws? (a form of reverse causality – indicating a potential omitted variable bias). In other words, does the choice of the US model of law reflect a more general tendency to prefer less intrusive public intervention, a laxer tax system, and similar choices? Given the growing economic literature on competition effects on economic inequality, I suspect that the positive link between the model of law and economic inequality goes both ways. It reflects both an effect of the US model and a selection bias. More legal and economic studies are required to build trust in the link between competition law and economic inequality.

This chapter is the second step in understanding the link between competition laws and economic inequality. The research gap is also part of the stagnation of antitrust and

competition laws that have yet to adapt to the pace of economic changes of the last decades. Moreover, as will be explored in the next chapter, data limitations and ex-post analysis of competition law effects are required to close the gap.

## CHAPTER SEVEN: A CROSS-COUNTRY STUDY

Chapter 6 investigated the second hypothesis that the US model of competition law is associated with higher economic inequality levels compared to countries that adopt the EU model. To test this, all I needed in principle is a basic dummy (binary variable) that captures the similarity to the US antitrust law. An off/on switch if you like.

While offering valuable insights, the first empirical study has limitations. As noted in chapter 6, such limitations include the legal assumptions based on the estimation strategy: distinct legal models and text similarity as a proxy for actual similarity. To relax these assumptions, a wide comparative law study is needed, including high-resolution variations. Such an endeavour, however, faces significant methodological challenges from this form of legal inquiry (Zweigert and Kötz 1992). It has been further argued that, in the context of competition law, US law dominates the world of comparative competition law scholarship and that its experience divides the writing in the area and often distorts it (Gerber 2006, 1194). In terms of methodological tools, the comparative law scholar is advised to ignore formal doctrine legal analysis and focus on the context of decision making:

Official language may be largely useless in predicting outcomes, because readers are not in a position to assess the factors that influence decisions. In order to be useful, therefore, comparative law must recreate that context through analysis of patterns of influence on decision-making. The need for tools to recreate this context or acquire insights into it are nowhere greater than in the competition law area, precisely because of the particularly wide gap between official pronouncements and actual decision-making factors. Another is the incapacity of traditional tools to analyse interactions among legal actors and between legal actors and foreign systems. They are simply not designed to penetrate the cognitive dimensions of these interactions (Gerber 2006, 1221).

Economic analysis of the law and behavioural sciences such as psychology, sociology, and political science research methods are suggested to meet these challenges (Gerber 2006, 1221-1222). Ideally, in small scale comparative legal analysis, the decision-making process in each of the countries examined should be dismantled to its smallest operating units of the procedure and substantive law. Such endeavour requires rewriting the textbooks of competition law from the ground up, with distributive effects in mind, with many scholars' collaboration (e.g., Sokol, Crane, and Ezrachi 2014).

To address some of these limitations, this chapter includes an econometric analysis of a continuous variable: the CLI index of the scope of the law, developed by Bradford and Chilton (2018). The chapter is based on the pre-print, as Zac et al. (2020).<sup>124</sup>

The chapter investigates the third hypothesis of the thesis – *The scope of competition law is linked to the level of economic inequality*. Using panel data techniques for a large sample of countries over the period 1960–2010 I test the correlation between the scope of the law and economic inequality. Applying the analysis to a World sample and OECD countries, I find consistent evidence of a negative, and in some specifications significant, relationship between competition law and levels of income and wage inequality. However, the result of the econometric analysis is inconclusive. Results suggest that the effect of competition law on inequality is generally small and not always significant. However, they are nevertheless suggestive that competition law *may* have an impact on income inequality via competition dynamics. To better understand the

---

<sup>124</sup> Models in this chapter were originally developed by me, but later benefited from work conducted as part of a research team with Carola Casti, Christopher Decker, and Ariel Ezrachi. Hereinafter, I continue to use the pronoun 'I', reflecting the author point of view, and the fact that the work here deviates from the joint analysis offered in the archived paper. The paper is forthcoming in the edited volume of Competition Law and Economic Inequality Amsterdam Conference.

relationship between competition law and inequality, I further analyse transmission mechanisms at the industry level in chapter 8.

The chapter comprises seven sections. Section 1 describes the estimation strategy and methods, while section 2 elaborates on the data sources, and 3 provides some descriptive statistics. Section 4 discusses the third hypothesis of the thesis. The findings on the relationship between competition law and perceived competition are presented in section 5, and the main empirical findings of the link between the scope of competition law and income and wage inequality are in section 6. Section 7 discusses the results and considers some implications of the findings.

## **7.1. Estimation Strategy and Methods**

The benchmark estimations are based on the DID model reviewed earlier in chapter 6.3 and are based on the CLI continuous variable to identify the link between competition law's scope and economic inequality. This strategy's key challenge is to separate other factors and specific issues related to the economic development of studied countries from the law's effect. The chapter estimation strategy does not rely on a binary dummy. So, issues of endogeneity are slightly less of a concern. Still, the scope of law could be correlated to institutional development or other business environment factors that I try to address across the specifications.

The analysis includes two different specifications to account for year and country fixed effects and regional time trends (specification I). By including country and time fixed effects, I control for the time-invariant unobservable heterogeneity across the economies (such as their preferences towards inequality aversion, their historical and legal background, their political system and cultural factors) and the common macroeconomic

shocks and potential global trends (such as global financial shocks). The interaction between geographical regions (according to the World Bank categorisation) and years captures region-time variant factors, taking account of the different effects of time (and shocks) among macro geographic regions. I estimate robust standard errors and cluster them at the country level to correct for heteroskedasticity and correlation in the error terms. All models are in logs to better control for outliers and to ease the interpretation of results in terms of elasticities. The econometric specifications for the ‘inequality-competition law’ relationship are as follows:

*Specification I*

$$Y_{i,t} = \beta_0 + \beta_1 CLI_{j,t} + \sum X_{i,t} + \alpha_i + \gamma_t + \delta_j * \gamma_t + \varepsilon_{i,t}$$

Where  $i$  defines the countries,  $j$  the region (categorised by the World Bank) and  $t$  the years;  $Y_{i,t}$  is the inequality measure (Gini or the EHII index). In both specification  $\beta_1 CLI_{j,t}$  captures the coefficient between the CLI score and  $Y$ , based on the country-level competition law scope,  $\sum X_{i,t}$  are the control variables, considered to be the co-founders of income inequality (imports, exports, life expectancy, investment, level of economic development, unemployment and inflation); they are consistent with the variables used in the ‘model of law’ study;  $\alpha_i$  refers to the country fixed effect;  $\gamma_t$  captures the time fixed effect;  $\delta_j * \gamma_t$  measures the regional time trend term;  $\varepsilon_{i,t}$  is the error term.

A similar specification was also used to model the ‘competition law - competition’ relationship (specification II), with some slight differences including a more limited set of controls which, in principle, might affect the competitive environment (inflation,

unemployment rate, imports, exports, government expenditure, education and the GDP per capita). I also use a different proxy for the competition law, namely the ‘anti-monopoly norm’ index (a measure of perceived competition law) taken from the GCI (Global Competition Index). I had to implement an alternative competition law index due to a mismatch in the time span of the time series. Specifically, while data for the CLI are available up to 2010, the data for the perceived competition only spans from 2007 to 2017.

Specification II

$$\text{Competition\_intensity}_{i,t} = \beta_0 + \beta_1 GCI_{i,t} + \sum X_{i,t} + \alpha_i + \gamma_t + \varepsilon_{i,t}$$

The second set of econometric estimations seek to address possible endogeneity and the dynamic nature of inequality data. Initially, I ran the IV 2SLS stage least square model using as an instrument the data (Klerman et al. 2011) of which combines legal origin (French, German, Mixed, Scandinavian, Common, Islamic) and colonial power (Austro-Hungarian, British, French, not-colonized, Others, other French civil law). This is a common estimation strategy for dealing with cross-country regression analysis. Yet, the IV estimates are not efficient and could be misleading in the absence of clear endogeneity and strong instruments (Baum 2013). Therefore, I run the Wu-Hausman test to check whether the CLI index is strongly endogenous or if it can be treated as an exogenous variable. In most of the specifications, I fail to reject the null hypothesis, meaning that OLS is preferred to the IV. Moreover, the Kleibergen-Paap F stat suggested that the instruments mentioned were of little relevance for our model. Therefore, I do not report IV estimations here.

Given the absence of a valid external instrument for a large cross-country study and the continuous treatment variable (which GSC methods are not yet programmed to handle), the study implements the System-GMM to account for an element of ‘persistence’ in inequality data. The System GMM estimator (Blundell, Bond, and Windmeijer 2001) fits linear dynamic panel-data models where the unobserved panel-level effects are correlated with the lags of the dependent variable. This estimator is designed for datasets with many panels (N) and a few periods (T). The assumptions that justify the implementation of this estimator are several: the process is dynamic, with current values of the dependent variables (inequality) being influenced by its past realisation (element of ‘persistence’); the presence of individual fixed effect; the presence of potential endogenous variables or some predetermined variables not being strictly exogenous (they are independent on current errors, but past disturbances might influence them).

I decided to run the system GMM model instead of the classic difference GMM. The system-GMM, unlike the diff-GMM, also includes a set of lagged first-differences to instrument the equations in levels. This estimator is well designed for datasets with many country panels (N) and a few periods (T).<sup>125</sup> Hence, as a standard post-estimation test, I run the Arellano-Bond test to detect the presence of first-order serial correlation in level by testing for serial correlation of II order in differenced residuals (Roodman 2006, 34; Roodman 2009). There is no autocorrelation of II order under the null, and the model’s dynamics is well specified. I also test for the goodness of the internal instruments by running the Hansen test - under the null of joint validity of the instruments. In most

---

<sup>125</sup> In this case  $T=10$  and  $T \ll N$ . As Baum (2013) observes: “By construction, the residuals of the differenced equation should possess serial correlation, but if the assumption of serial independence in the original errors is warranted, the differenced residuals should not exhibit significant AR(2) behavior”.

specifications, I had to include two or more lags of the dependent variables. The reason for this might be due to the slow-changing competitive environment, which could also be explained by the presence of some persistent distortions in the market, such as high levels of concentration and low rates of entry or expansion in a market.

## 7.2. Data sources

### (a) Competition law indices

Various competition law ‘indexes’ have been developed, which can be used to capture the goals and scope of competition laws in different jurisdictions, including how they changed over time. The analysis uses the two most comprehensive competition law indices available, which allow for panel data econometrics: the Competition Law Index (CLI) and the World Economic Forum Global Competitiveness Index (GCI). In the descriptive analysis, I include a third index (the Competition Policy Index, CPI) that measures competition law components’ changes over time but is limited in scope (120 observations only).<sup>126</sup>

Bradford and Chilton (2018) CLI is the most comprehensive and current index of the scope of competition laws available. It includes almost all countries globally (123 out of 126) that enacted competition laws between 1889-2010. A unique aspect of the CLI is that it allows for cross-country time-series research on competition laws (i.e., panel data).

---

<sup>126</sup> Other competition law indices include: Nicholson (2008)’s Antitrust Law Index which classifies competition law regimes according to three headings: (i) *Regime Structure* (scope, structure, and available remedies); (ii) *Merger Policy* (notification, assessment criteria, and rights of private enforcement); and (iii) *Anti-competitive Practices* (dominance and restrictive trade practices); and Voigt (2009) provides another competition law index based on four indicators: (i) the substantive content of competition laws; (ii) the degree to which they incorporate an economic approach; (iii) the formal independence of the competition agencies that are to implement the competition laws, and (iv) the actual independence of the competition agencies.

The CLI database includes aggregated dummy variables that capture the key elements of competition regulation: merger control; abuse of dominance; horizontal agreements; authority powers; and substance law (which refers to the aggregation of the three sub-categories of rules). Each element is based on a set of dummies (0/1) variables and aggregated into a 0-1 scale of the norm. The five elements are further aggregated to an overall CLI index 0-1 (0=worst; 1=best) that measures the scope of competition regulation (the net regulation or risk associated with it).

The GCI is also global in scope and contains data for 152 countries over a decade (2007-2017), covering a broad set of indicators dealing with institutions, infrastructure, ICT adoption, macroeconomic stability, health, skills, product markets, labour markets, financial system, market size, business dynamism and innovation capability. For the analysis, I use three indicators. The first two indicators are the (perceived) ‘intensity of local competition’ which is a survey proxy for competition (traditional concentration levels (HHI) or markups or profit margins), and the ‘extent of market dominance’, which captures the degree to which dominant providers are perceived to distort competition in markets. The leading competition law indicator I use is the effectiveness of the ‘anti-monopoly policy’, which ranges from 1 to 7, indicating the worst and the best score, respectively. Like the CLI, the GCI allows for cross-country time-series research on competition laws (i.e., panel data), albeit on a more limited time horizon. The extent of overlap between the two indicators is minimal (2007-2010) and coincided with the financial crisis, limiting the comparability of the two indexes. The GCI also allows us to examine the relationship between competition law and perceived competition intensity levels in local markets. This

data is limited by the collection method (survey) but allows for a closer look at how trust in competition law and the perceived competition in markets interact.

A third index, known as the Competition Policy Index (CPI), was compiled by Buccirosi et al. (2013) to measure competition policy quality. The index is based on data for 12 developed countries over the period 1995-2005.<sup>127</sup> The CPI is an aggregated index of a sub-set of indices that are calculated covering two main areas of study: competition law infringements (including hard-core cartels, anti-competitive agreements and abuse of dominance) and merger control policy (the number of mergers investigated in each year). The aggregate CPI index is constructed using a ‘pyramidal’ approach from ‘low level’ indicators, through ‘medium level’ sub-indices, to ‘high level’ indices.

The aggregate CPI is calculated by combining the four high-level indices: antitrust CPI, mergers CPI, institutional CPI, enforcement CPI. The resultant CPI aggregate measure includes, among others, the investigative powers of the competition authority, the level of the overall loss that can be imposed on firms and their employees, and the toughness of a competition authority (i.e., the level of activity of a competition authority). While the CPI differs from the CLI and GCI in its scope and coverage, it is useful to examine how changes in the quality of competition law in OECD countries might be connected to economic inequality.

### **(b) Economic inequality indicators and controls**

For this chapter, I implement the same income proxies adding wage inequality proxy EHII from the UTIP-UNIDO (University of Texas Inequality Project – United Nations Industrial

---

<sup>127</sup> Canada, Czech Republic, France, Germany, Hungary, Italy, Japan, Netherlands, Spain, Sweden, United Kingdom, United States.

Development Organization). While the Gini indices I used in previous chapters span between 1960 and 2019, the EHII covers a slightly shorter period, between 1963 and 2015. In this study, I excluded the top income shares alternative because the paucity of data (both in terms of time and cross-country coverage) was not enough to cover a similar sample as the Gini indices.

The decision to implement both Gini indicators (net Gini and gross Gini) is crucial as they can differ due to the different redistribution policies across countries. The indicators range from 0 (perfect equality in income distribution) to 1 (perfect inequality). The EHII proxy ranges from 0 (perfect equality) to 100 (perfect inequality). It is based on individual wage income, developed by the University of Texas inequality project (UTIP 2008). It is calculated by first regressing the Deininger and Squire (DS) Gini index on the UTIP-UNIDO Theil pay inequality index (which measures the dispersion of wages within the manufacturing sector, as an indicator of sector specialisation) and other control variables (such as the manufacturing employment share and other dummies related to data structure).<sup>128</sup> Predicted values are then used to construct the EHII indicator.<sup>129</sup> Since the EHII index is a wage-based measure, it does not include income from self-employment nor the agricultural sector. However, given its form of construction, this measure is more stable over time. It does not include capital income and other sources of financial gains, which depend largely on the fluctuations of the stock markets (such as stock options realisations,

---

<sup>128</sup> I decided not to use, as an alternative income inequality measure, the Gini index from the Deininger and Squire dataset (DS), given some inconsistencies and the lack of comparability of the information provided by this dataset. This is mainly due to the practice of mixing together different types of data, such as gross and net income, individual and household level, expenditure and income.

<sup>129</sup> Data based on average income of representative groups of people (such as industry, sector or even region) ‘may also contain a sufficiently large share of information on the evolution of inequality, so as to serve as good instruments for the movement of the distribution as a whole’ (Galbraith 2009; Galbraith et al. 2015).

wage or salary payout as a direct result of investments in venture capital). It is also calculated by taking account of information on individuals and not at the household level (or using mixed data), making it more consistent. Control variables included in the vector  $X'_{i,t}$  are consistent with previous work (Barro 2008; Delis, Hasan, and Kazakis 2014; Causa, De Serres, and Ruiz 2015; Jauch and Watzka 2016) and the model of law model in Tables 3-4. The full specification includes:

- Trade, separately export and import as % of GDP
- Gross Capital Formation % of GDP, as a proxy for investments
- GDP per Capita or GDP per Capita Growth % of GDP
- Inflation
- Total government spending % GDP
- Unemployment
- Life expectancy

### **7.3. Descriptive statistics**

#### **(a) Changes in competition laws across the world**

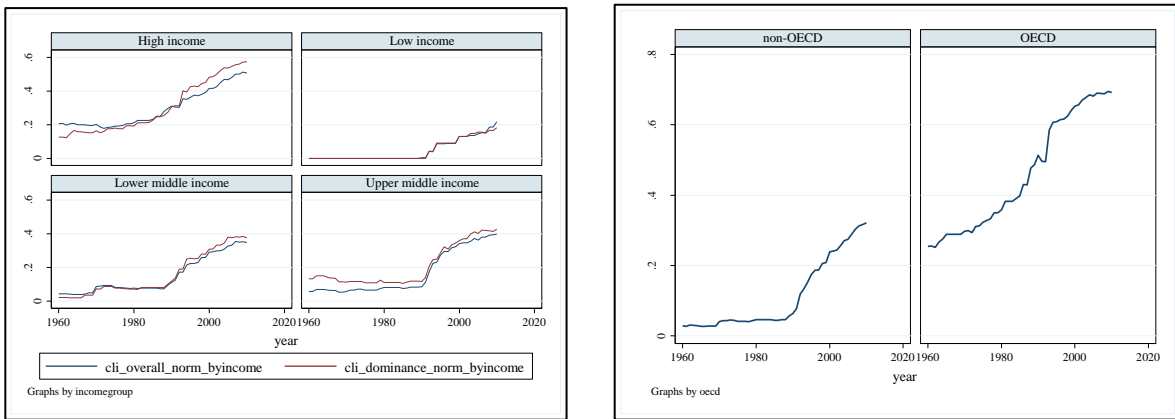
Figures 24-26 show the changes in the competition law indices over time. They provide insight into three points: how each aggregate competition law index has changed over time; how changes in the competition law index vary across income groups and regions.

#### CLI

In earlier chapters, I explored the CLI by region. The figure exhibits a positive trend since the early 1980s, suggesting that the scope of competition law has generally increased over the past four decades in many countries. Still, within-country, the CLI exhibits only a small variation over time in some jurisdictions, like the US case studied before. Given the data's long-time span, this allows for a broader look at the link between competition law and economic inequality. Figure 24, left panel, shows the CLI differences for low-income and high-income countries since the 1980s. It shows a more rapid rise of the CLI for the two

middle-income groups since the mid-1980s compared to high-income countries. To further investigate this gap, figure 24, the right panel, plots the CLI score over time, separating OECD vs non-OECD countries. The figures of the right panel almost look like a continuous development trend when the end of non-OECD countries touching upon the OECD line, suggesting that as countries become more developed, the scope of their competition law also expands. The non-OECD countries only started to expand the scope of their competition law regimes in the late 1990s.

*Figure 24: CLI averages by income group, and OECD membership*



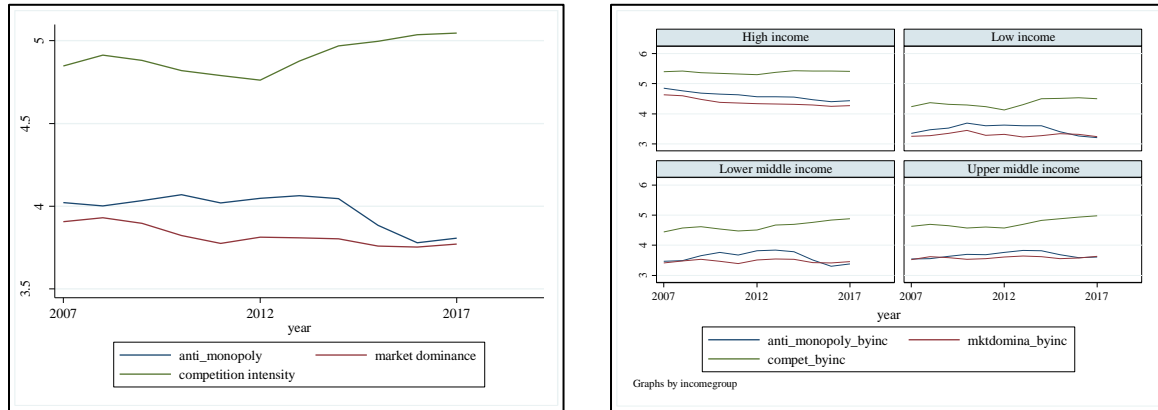
Source: (Zac et al. 2020). On the left panel averaged CLI by the years 1960-2010 for the four categories of income groups (as defined by the World Bank). The blue line is the average of the overall score of the CLI, while the red line is the average CLI score for the antimonopoly norm (i.e., monopolisation and abuse of dominance). On the right panel, the averages of the CLI overall norm for the OECD and non-OECD groups for the years 1960-2010.

### GCI

The left panel of figure 25 shows the changes in the three GCI indexes (competition intensity, the effectiveness of anti-monopoly and extent of market dominance) over 2007-2017. While the aggregate trend for market dominance’s effectiveness has been relatively stable, the other two proxies exhibit a more volatile pattern. The right panel of figure 25 reports the same statistics but disaggregated by income groups. The high-income group shows a slightly decreasing trend in the anti-monopoly policy’s effectiveness, possibly reflecting a decreasing trust in the regulation and markets. The rest of the income groups

display a similar non-linear pattern over time, with increasing anti-monopoly policy scores being followed by a rather sharp decrease around 2014.

Figure 25: GCI overall averages, and by income group

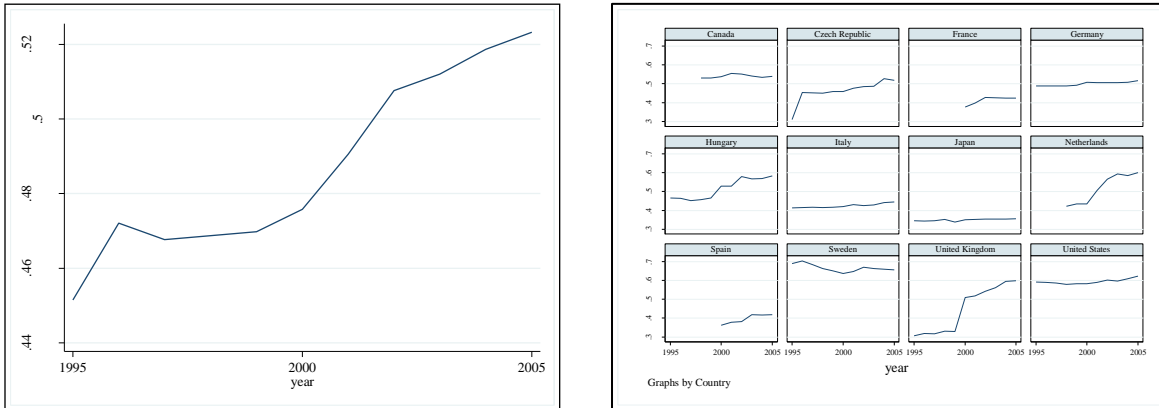


Source: (Zac et al. 2020). On the left panel averaged GCI by years 2007-2017, for the three indicators competition intensity, the effectiveness of anti-monopoly and extent of market dominance. The anti-monopoly indicator (blue) is capturing the survey data on the effectiveness of competition policy and is on a slow decline path, while the market dominance and competition intensity as expected show opposed trends to each other (competition-market power). On the right panel, the same averages for the three survey indices are divided into the four categories of income groups (as defined by the World Bank).

## CPI

Finally, the left panel in figure 26 shows the Competition Policy Index (CPI) change over time, which is consistent with some of the indices (notably the OECD CLI in figure 24). It exhibits an upward trend from about the year 2000 at the aggregate level. The right panel shows the changes in the CPI by country. It reveals significant CPI variation; some countries record flat CPI values (such as Italy, Japan, Germany, the US, Canada). In contrast, others (such as the UK, Netherlands and Czech Republic) depict a more volatile and upward trend over time. All the countries are part of the high-income group.

Figure 26: CPI overall average, and by country

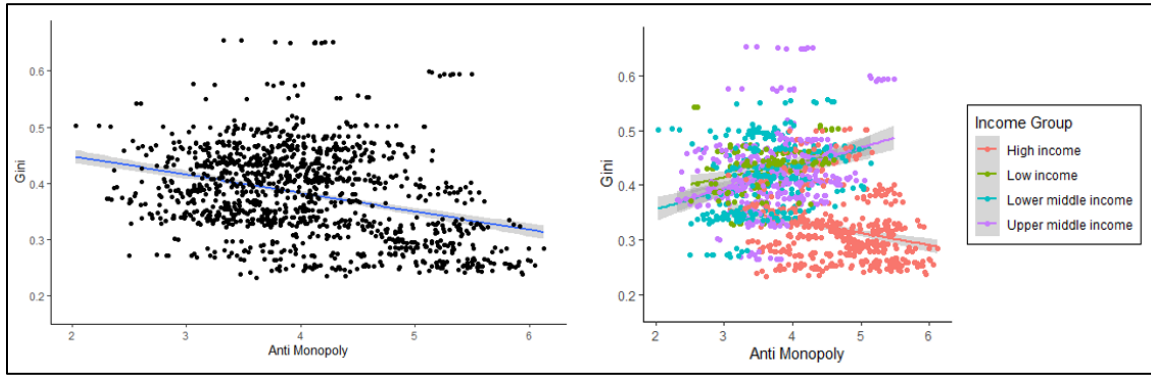


Source: (Zac et al. 2020). On the left panel averaged CPI by years 1995-2005 for all 12 countries together. On the right panel, the CPI by the country for the same period.

**(b) Changes in the competition laws as compared to the economic inequality**

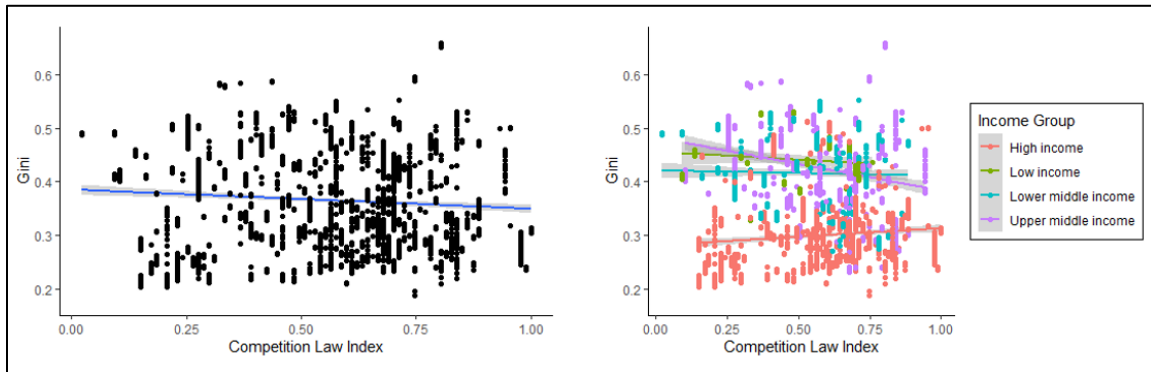
The left panel of the next figures (27 to 29) plots each of the three competition law indices against the Gini disposable income (*gini\_disp*). All three figures show a negative association between the relevant competition law indicator and the Gini indicator, suggesting that more comprehensive competition laws could be associated with reductions in the level of income inequality. However, the scatter plot is potentially misleading given the heterogeneity in the data, which is exposed once the model accounts for the income group of a country and its level of economic development, as shown in the right panels. The CPI, which includes data on 12 developed countries, is an exception, yet country-level differences could still lead to spurious correlation. It is also important to remember that each index measures different competition law aspects and over different periods. The GCI is survey data indicating perceptions and trust. The CLI is limited to the ‘Law of the Books’, and the CPI provides limited coverage in time and countries. Yet, this descriptive analysis provides a clear motivation to study this relationship using more advanced econometric tools.

Figure 27: GCI Effectiveness of anti-monopoly policy and The Gini disposable income



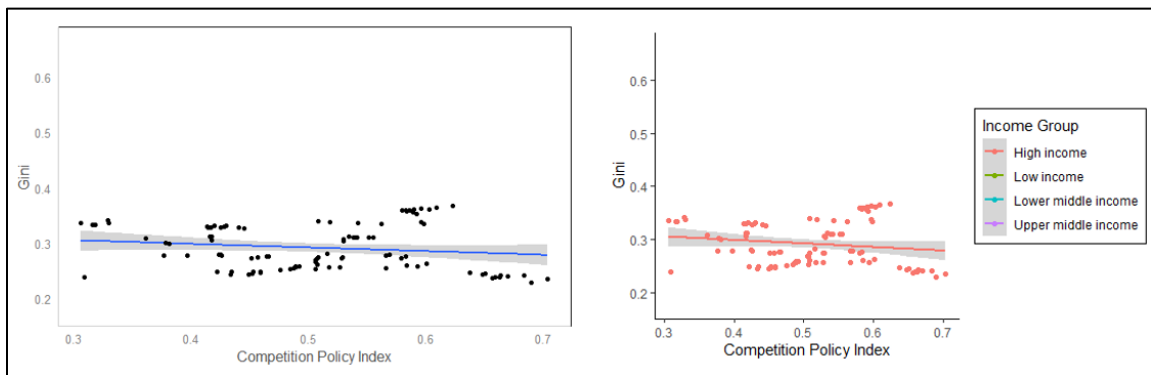
Source: (Zac et al. 2020). On the left panel averaged GCI scores correlation with the Gini disposable income (gini net). On the right, the data is divided into four categories of income groups (as defined by the World Bank).

Figure 28: CLI and The Gini disposable income



Source: (Zac et al. 2020). On the left panel averaged CLI scores (>0) correlation with the Gini disposable income (gini net). On the right, the data is divided into four categories of income groups (as defined by the World Bank).

Figure 29: CPI and The Gini disposable income



Source: (Zac et al. 2020). On the left panel averaged CPI scores correlation with the Gini disposable income (gini net). On the right, the data is divided into four categories of income groups (as defined by the World Bank). The CPI data set includes only 12 developed countries with high income (red).

Ultimately the econometric analysis in this chapter includes only two indices, the GCI for competition law and competition, and the CLI for competition law and inequality. While the CPI provides useful data on the competition law enforcement, it covers only a limited sample of developed economies for only a decade, making it less suited for cross-country data (I will go back to the CPI data in the next chapter). The data limits the ability to undertake an in-depth analysis across countries at different development stages, nor does it allow for examining how the relationship has changed over time. The period for the CPI (1995-2005) does not overlap with the time range for which I have data on competition intensity (2007-2017) and only a half of the coverage of the CLI (1990-2010).

#### **7.4. Hypothesis III: The scope of the law and economic inequality**

As explained in the introduction to Part II, each of the studies offers a different law measure or concept. First, I looked at the US, focusing on actual case law changes, enforcement efforts, and substantive law applications. Second, I generalized the findings to a ‘model of law’ theory, using the US and EU competition laws. I now move to observe the law from above, the law of the books, and apply a comparable quantification of the law’s scope.

The scope is a measure of the size of the net created by the law for prohibited business practices. It is trying to capture something like the comprehensiveness of the law. The scope of the law might vary between countries, with one extreme having a fully comprehensive scope of the law (e.g., including all the elements and prohibition captured in the CLI) and the other extreme having a weak scope (which contains only the bare minimum elements captured in the CLI). This measure can only provide an approximation for what the law is. Errors in the quantification process are expected. Each country studied

in the CLI dataset could be better explored on its own in a case study. Nevertheless, the advantage lies in the ability to compare on a continuous variable many countries for a few decades.

Based on the descriptive analysis and previous chapters' findings, the third hypothesis of the thesis can be formulated: *Countries with a comprehensive scope of the law, all else equal, are expected to be associated with lower levels of economic inequality and vice versa.* The intuition is simple: the more comprehensive the law is, the stronger its potential to affect. It is only a potential effect as the law of the books does not imply actual enforcement. Furthermore, it does not fully capture elements of capacity to enforce like budget and staff (like the CPI measure mentioned used later). In the next section, following Zac et al. (2020) paper, I explore the hypothesis, focusing on the links between the scope of law, development and economic inequality.

## **7.5. Competition law and competition dynamics**

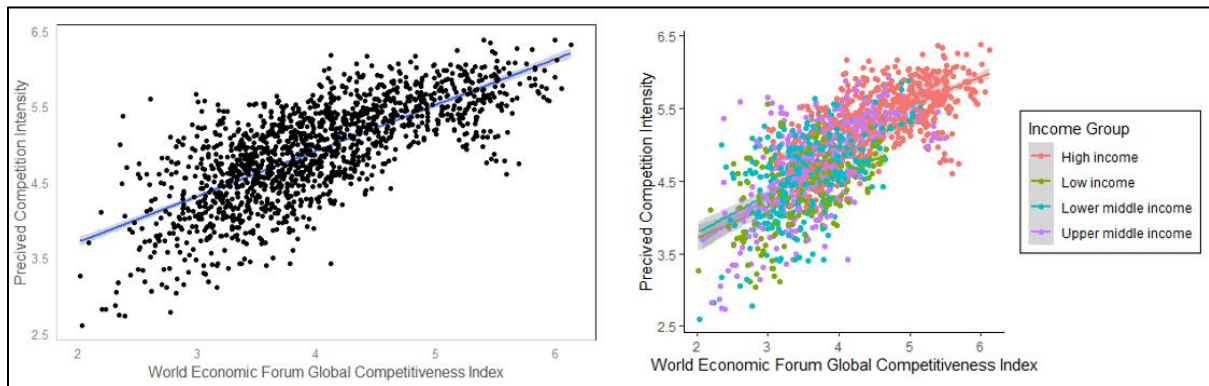
### **(a) Difference-in-difference results**

Before examining the relationship between the competition law indicators and inequality, I consider it useful to investigate the prior question of whether there is any evidence that there is a relationship between competition law and more intense competition. The theoretical foundation for the hypothesis that competition law could affect economic inequality depends on its effect on competition. Put another way, any effect the law may have on economic inequality results from its effect on competition intensity, as depicted in figure 1 of the thesis. On this reasoning, if there is evidence that competition law has increased the intensity of competition, then other things equal, it might be assumed that it

is affecting reducing inequality, and vice versa. Unfortunately, for the cross-country data, I have to rely on the GCI survey data – which means that I am referring to the perceived competition intensity. A better proxy would have been markups data or even aggregated concentration level data. So, this analysis should be taken with a grain of salt. I will try to mitigate this problem by running the analysis in the next chapter using data on industry-level markups.

Figure 30 depicts the scatterplots between the GCI anti-monopoly indicator and the competition intensity proxy. Both graphs suggest a positive relationship between the (perceived) competition intensity and anti-monopoly regulation as perceived in the World Economic Forum expert survey.

Figure 30: GCI and perceived competition intensity



On the left panel, the GCI antimonopoly scores are presented in correlation with the competition intensity scores. On the right panel, the data is divided into four categories of income groups (as defined by the World Bank). In both cases, the positive correlations are extremely strong.

OLS regressions confirm this relationship between competition intensity and more effective anti-monopoly laws. I apply the second specification and a log-log transformation, including the relevant controls, discussed in section 7.2. Data sources).

**Table 7.** World, GCI perceived competition and trust in competition law

	(1)	(2)
	log_compet_	log_compet

	intens	_intens
log_anti_monopoly	0.244*** (0.056)	0.244*** (0.054)
log_schoolsecond	-0.008 (0.047)	-0.052 (0.044)
log_inflat	0.004 (0.003)	0.001 (0.004)
log_unempl	0.018 (0.014)	0.023 (0.017)
log_exp	-0.021 (0.027)	-0.019 (0.027)
log_imp	0.036 (0.037)	0.072** (0.036)
log_gdp_pc	0.073* (0.040)	0.087* (0.051)
_cons	0.326 (0.473)	0.246 (0.583)
Obs.	994	994
R-squared	0.878	0.897
Country & Year FE	YES	YES
Regional Time Trends	No	YES

Robust standard errors are in parenthesis \*\*\*  $p < 0.01$ ,  
\*\*  $p < 0.05$ , \*  $p < 0.1$

Table 7 finds a positive and significant coefficient when I run the model using the GCI competition indicator against the GCI anti-monopoly indicator (as a proxy for the competition policy). This result is robust in on sub-samples of the data, including for both developed (OECD) and non-OECD countries, including all of the controls separately.

Table 8 presents the sub-sample results.

**Table 8.** OECD vs non-OECD, perceived competition and trust in competition law, sub-samples

	(1) Non-OECD log_compet_intens	(2) OECD log_compet_intens	(3) Non-OECD log_compet_intens	(4) OECD log_compet_intens
log_anti_monopoly	0.245*** (0.066)	0.413*** (0.096)	0.234*** (0.060)	0.307*** (0.082)
log_schoolsecond	-0.009 (0.045)	-0.112 (0.087)	-0.023 (0.047)	-0.094 (0.083)
log_inflat	-0.000 (0.004)	0.009* (0.005)	-0.002 (0.005)	0.004 (0.005)
log_unempl	0.006 (0.013)	0.016 (0.032)	0.015 (0.020)	0.008 (0.037)
log_exp	-0.018 (0.029)	0.081 (0.087)	-0.042 (0.026)	0.117 (0.070)
log_imp	0.062* (0.032)	-0.052 (0.032)	0.092** (0.032)	-0.052 (0.032)

	(0.035)	(0.084)	(0.038)	(0.078)
log_gdp_pc	0.063	0.129*	0.040	0.147
	(0.045)	(0.074)	(0.053)	(0.095)
_cons	0.336	0.213	0.561	-0.018
	(0.525)	(0.907)	(0.625)	(1.255)
Obs.	660	334	660	334
R-squared	0.858	0.787	0.883	0.835
Country & Year FE	YES	YES	YES	YES
Regional Time	NO	NO	YES	YES
Trends				

---

Robust standard errors are in parenthesis \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Taken together, these regressions suggest a positive and statistically significant strong correlation between more effective competition laws and more intense competition. As noted above, given the presumption of a link between more intense competition and reductions in inequality, this allows for a conjecture that there may also be an association between effective competition laws, more intense competition and reduced inequality.

#### **(b) Generalized method of moments results**

Because of the lack of valid external instruments, I decided to run the system GMM model (which relies on internal instruments) to assess the link between ‘competition intensity-competition law’ and address possible endogeneity for both the World and OECD samples. The system GMM, unlike the diff-GMM, also includes a set of lagged first-differences to instrument the equations in levels. As explained, I use the standard Arellano-Bond test to detect the presence of first-order serial correlation in level by testing for serial correlation of II order in differenced residuals. There is no autocorrelation of II order under the null, and the model’s dynamics is well specified. I also test for the goodness of the internal instruments by running the Hansen test – under the null of the instruments’ joint validity – and I do not reject it, with a p-value equal to 0.21 and 0.65 (respectively for the World and

OECD sample).<sup>130</sup> Results are reported in Table 9. The optimal estimated dynamics points at four lags, with both the Hansen and the Arellano-Bond test, perform well, suggesting the presence of persistence in the competition intensity (which translate into an autocorrelation between the dependent variable and its lags). The reason for this might be due to the perception of a slow-changing competitive environment, which could also be explained by the presence of some persistent distortions in the market, such as high market power shares, ‘too much’ concentration, few dominant companies and low rates of entry or expansion in a market.

**Table 9.** GMM, perceived competition and trust in competition law, sub-samples

	(1)	(2)
	log_compet_ intens	log_compet _intens
L.log_comp_intens	0.512*** (0.193)	0.760*** (0.120)
L2. log_comp_intens	-0.550*** (0.094)	-0.479*** (0.092)
L3. log_comp_intens	0.226** (0.092)	0.332*** (0.066)
L4. log_comp_intens	-0.139* (0.076)	-0.136** (0.060)
log_anti_mono~y	0.092** (0.043)	0.201** (0.081)
log_schoolsec~d	0.030 (0.051)	-0.065 (0.070)
log_unempl	0.020 (0.030)	-0.018 (0.020)
log_gdp_pc	0.039 (0.024)	0.039 (0.053)
log_exp	-0.007 (0.054)	-0.106 (0.067)
log_imp	0.095** (0.044)	0.089 (0.070)
log_inflat	-0.002	0.001

<sup>130</sup> This test becomes weaker, the less parsimonious is the model and the more instruments are included, especially in finite samples models, which may lack the amount of information for the estimation of the large variance matrix of moments (which is quadratic in the n. of instruments). Despite the coefficient estimates remaining robust they are weakened by many internal instruments. I also acknowledge the claim by (Roodman 2006, 12) that “the Sargan/Hansen test should not be relied upon too faithfully, as it is prone to weakness” and even too good p-values (close to 1) might be the proof of the proliferation of many instruments (even though there is no consensus on this point, nor one commonly accepted rule of thumb).

	(0.003)	(0.003)
log_gov_exp	-0.036	-0.147
	(0.047)	(0.094)
_cons	0.601*	0.996*
	(0.330)	(0.580)
Obs.	580	210
Sample	World	OECD
Time FE	YES	YES
N. instruments	55	55
Autocorrelation II order	0.60	0.10

Robust standard errors are in parenthesis \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The narrow overlap between the GCI and CLI (3 years) does not adequately test the relationship between the CLI and perceived competition. A key factor in the performance of the system-GMM model is the rule of thumb which requires that the number of instruments will be *lower* than the number of units of analysis (in this case, countries). In the World sample, I have a relatively high number of countries (between 68-106 depending on the specification), while in the OECD sample, the number of countries is smaller than the number of instruments (max of 38). The estimates are still robust, but the number of internal instruments weakens them.<sup>131</sup> This may raise concerns over the accuracy of the estimation in the OECD group, a problem I further try to mitigate in the next chapter by using the 2SLS model. In any case, for my purpose, the sign of the coefficient is more important than the magnitude of the relationship.

<sup>131</sup> The results hold when adding each control at a time (to prevent spurious correlation), with negative correlation in all columns and statistically significant results in most. I have tested several other specifications for the Gini measures, including a collapsed instruments form, like the analysis in Table 13 next. However, results were undermined by inconsistency with respect to all variables in the estimation equation suggesting a form of multicollinearity. I therefore decided to follow the full form acknowledging the potential weakness raising from the number of instruments and address this further using the CPI data in chapter 8.

## 7.6. Competition law and income inequality

### (a) Difference in difference results

This section presents the results of the analysis of the relationship between the CLI index and the GINI inequality or ehii wage inequality measures.

Table 10 presents the results for the entire World CLI dataset with a full set of controls. The law's country-level scope is the best proxy in the dataset to test the relationship between competition law and income and wage inequality across countries over time. I follow specification I. In the log-log panel model, I assume units are exposed to parallel trends (like in any difference-in-difference model). To make this assumption more reliable, after running the model on the full World dataset (Table 10), I limit the estimations to OECD countries (Table 11).<sup>132</sup>

**Table 10.** log-log, CLI and income inequality, World data

	(1)	(2)	(3)	(4)	(5)	(6)
	log_gini_mkt	log_gini_disp	log_ehii	log_gini_mkt	log_gini_disp	log_ehii
log_cli_overall	-0.007 (0.006)	-0.006 (0.008)	-0.007 (0.017)	0.001 (0.008)	0.001 (0.010)	-0.038* (0.020)
log_lifeexp	-0.173* (0.098)	-0.121 (0.111)	0.089 (0.214)	-0.233** (0.101)	-0.232* (0.135)	0.256 (0.338)
log_gdp_pc	0.050** (0.024)	0.057* (0.032)	-0.054 (0.046)	0.023 (0.026)	0.035 (0.033)	-0.082 (0.054)
log_exp	-0.010 (0.015)	-0.018 (0.016)	0.061** (0.027)	0.006 (0.013)	0.000 (0.016)	0.054** (0.026)
log_imp	0.032* (0.017)	0.034* (0.019)	-0.023 (0.034)	0.011 (0.016)	0.015 (0.018)	-0.050 (0.039)
log_unempl	0.012 (0.009)	0.013 (0.011)	-0.019 (0.018)	0.011 (0.009)	0.013 (0.011)	-0.020 (0.021)
log_inflat	0.001 (0.002)	0.001 (0.002)	-0.003 (0.004)	0.001 (0.002)	-0.000 (0.002)	-0.003 (0.004)
log_inv	-0.002 (0.010)	0.003 (0.010)	0.044** (0.021)	0.004 (0.009)	0.009 (0.009)	0.057** (0.022)
log_gov_exp	-0.004 (0.015)	-0.019 (0.021)	0.067 (0.041)	0.012 (0.014)	-0.003 (0.021)	0.046 (0.043)
_cons	-0.569 (0.454)	-0.992* (0.549)	3.503*** (0.957)	-0.137 (0.467)	-0.389 (0.624)	3.132** (1.412)

<sup>132</sup>

The parallel trend assumption is more likely to hold in a sub-sample of countries that are less heterogenous than the World sample (in terms, for example, of economic development), such as in the OECD countries.

Obs.	1527	1527	764	1527	1527	764
R-squared	0.971	0.986	0.931	0.976	0.988	0.949
Country & Year FE	YES	YES	YES	YES	YES	YES
Regional time trends	NO	NO	NO	YES	YES	YES

Robust standard errors are in parenthesis \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

**Table 11. log-log, CLI and income inequality, OECD data**

	(1)	(2)	(3)	(4)	(5)	(6)
	log_gini_mkt	log_gini_dis	log_ehii	log_gini_mk	log_gini_dis	log_ehii
		p		t	p	
log_cli_overnight	-0.019** (0.009)	-0.013 (0.016)	-0.037 (0.026)	-0.014 (0.011)	-0.009 (0.016)	-0.054*** (0.015)
log_lifeexp	-0.026 (0.367)	-0.669 (0.523)	0.225 (1.344)	-0.170 (0.428)	-1.010* (0.588)	0.095 (1.435)
log_gdp_pc	0.017 (0.036)	0.012 (0.049)	-0.149 (0.097)	0.009 (0.036)	0.015 (0.048)	-0.126 (0.092)
log_exp	-0.018 (0.039)	-0.091* (0.053)	0.164 (0.119)	0.016 (0.036)	-0.067 (0.056)	0.188* (0.110)
log_imp	0.055 (0.045)	0.094* (0.050)	-0.187* (0.101)	0.018 (0.045)	0.069 (0.050)	-0.216** (0.100)
log_unempl	0.017 (0.012)	0.028 (0.019)	0.015 (0.028)	0.023* (0.013)	0.042** (0.021)	0.007 (0.027)
log_inflat	0.003 (0.003)	0.001 (0.003)	0.006 (0.008)	0.001 (0.003)	-0.000 (0.004)	0.002 (0.007)
log_inv	-0.019 (0.034)	-0.035 (0.044)	0.141 (0.091)	0.009 (0.038)	0.016 (0.047)	0.181** (0.088)
log_gov_exp	-0.075* (0.041)	-0.206** (0.076)	0.053 (0.121)	-0.066** (0.032)	-0.198** (0.077)	0.079 (0.096)
_cons	-0.734 (1.570)	2.222 (2.422)	3.761 (6.011)	-0.158 (1.900)	3.458 (2.796)	3.979 (6.552)
Obs.	660	660	347	660	660	347
R-squared	0.927	0.980	0.950	0.940	0.983	0.966
Country & Year FE	YES	YES	YES	YES	YES	YES
Regional time trends	NO	NO	NO	YES	YES	YES

Robust standard errors are in parenthesis \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

In the full World dataset, the association between the CLI and the various inequality measures is inconsistent (Table 10), which likely reflects the significant underlying heterogeneity in the global dataset, including how the development level might relate to the relationship as described in section 7.3. The results in Table 11, which are based only on OECD data, are more consistent and show that other things being equal a 10% increase in the CLI score is associated with a statistically significant decrease by 0.19% and 0.54%

in the Gini and ehii inequality measures respectively in specifications 1 and 6. The rest of the regressions report a negative coefficient  $\beta_{CLI}$ , even though they are not significant.

Similarly, I test the consistency of the results also concerning the inequality-competition law relationship by using the alternative set of controls. Results are reported in Table 12.

**Table 12.** log-log, CLI controls sensitivity, OECD data

	(1)	(2)	(3)	(4)	(5)	(6)
	log_gini_mkt	log_gini_dis	log_ehii	log_gini_mk	log_gini_dis	log_ehii
		p		t	p	
log_cli_overall	-0.018*	-0.013	-0.032	-0.016	0.003	-0.053**
	(0.010)	(0.019)	(0.025)	(0.011)	(0.010)	(0.019)
log_schoolsecond	-0.035	-0.009	0.113	0.010	0.010	0.077
	(0.040)	(0.046)	(0.109)	(0.039)	(0.027)	(0.115)
log_exp	-0.011	-0.087	0.200**	0.017	0.007	0.205**
	(0.044)	(0.061)	(0.078)	(0.040)	(0.015)	(0.076)
log_imp	0.053	0.103	-0.223***	0.024	0.003	-0.233***
	(0.052)	(0.062)	(0.051)	(0.057)	(0.018)	(0.058)
log_unempl	0.019	0.023	0.021	0.024*	0.012	0.015
	(0.011)	(0.018)	(0.024)	(0.014)	(0.011)	(0.022)
log_inflat	0.002	0.002	0.001	0.001	-0.002	0.002
	(0.003)	(0.003)	(0.008)	(0.003)	(0.002)	(0.005)
log_inv	0.001	-0.039	0.208***	0.018	0.012	0.240***
	(0.037)	(0.060)	(0.052)	(0.039)	(0.010)	(0.057)
log_gov_exp	-0.085**	-0.200**	0.043	-0.069*	-0.027	0.069
	(0.041)	(0.074)	(0.114)	(0.038)	(0.024)	(0.083)
gdp_pc_g_anu	-0.001	-0.000	-0.003**	-0.001	0.000	-0.003
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
_cons	-0.564*	-0.575	2.470***	-0.901***	-1.067***	2.547***
	(0.289)	(0.400)	(0.693)	(0.286)	(0.120)	(0.621)
Obs.	586	586	307	586	586	307
R-squared	0.925	0.979	0.956	0.937	0.988	0.975
Country & Year FE	YES	YES	YES	YES	YES	YES
Regional time trends	NO	NO	NO	YES	YES	YES

Robust standard errors are in parenthesis \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

## (b) Generalized method of moments results

To take account of the element of ‘persistence’ of income inequality over time (and the issue of endogeneity as its direct consequence), I apply the GMM model to both World and OECD samples, again acknowledging the size limitations of the OECD sample (Number of instruments > number of countries). Results are shown in Table 13. This confirms the

negative and significant effect of the CLI on the Gini measures for both samples. A ten per cent increase in the CLI score is associated, *ceteris paribus*, with a decrease in income inequality of between 0.04% and 0.07%.

**Table 13. GMM, CLI and income inequality**

	(1) Log_gini_ mkt	(2) Log_gini_ disp	(3) Log_gini_ mkt	(4) Log_gini_ disp
L.log_gini_mkt	0.936*** (0.028)		0.932*** (0.021)	
L.log_gini_disp		0.896*** (0.024)		0.908*** (0.018)
log_cli_overall	-0.002 (0.002)	-0.004* (0.002)	-0.007** (0.003)	-0.007** (0.003)
log_lifexp	0.051* (0.030)	0.046 (0.033)	0.042 (0.063)	0.058 (0.083)
log_gdp_pc	0.013*** (0.003)	-0.008 (0.006)	0.010* (0.006)	-0.008 (0.008)
log_exp	-0.010*** (0.004)	-0.010* (0.005)	-0.001 (0.006)	-0.024*** (0.009)
log_imp	0.005* (0.003)	0.003 (0.005)	-0.000 (0.006)	0.017* (0.009)
log_unempl	0.005*** (0.001)	0.002 (0.003)	0.003 (0.002)	-0.001 (0.003)
log_inflat	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
log_inv	-0.000 (0.002)	0.001 (0.004)	0.001 (0.006)	-0.016** (0.008)
log_gov_exp	0.005 (0.004)	-0.000 (0.003)	0.036*** (0.012)	0.011 (0.010)
_cons	0.000 (0.000)	-0.216 (0.131)	-0.454* (0.263)	-0.244 (0.334)
Obs.	1517	1517	660	660
Sample	World	World	OECD	OECD
Time FE	YES	YES	YES	YES
N. instruments	809	790	631	631
Autocorrel II order	0.32	0.10	0.30	0.002

Robust standard errors are in parenthesis. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Given the unbalanced nature of our panel data, when I run the regression with the full set of controls, many observations drop out of the sample because of missing data, restricting the time span to nearly two decades. This results in a ‘large N, short T’ dataset more amenable to implementing the GMM model. The standard post-estimation tests are

run, and with respect to the Arellano-Bond test, a rejection of the null (such as in column 4) may raise concerns suggesting that deeper lags might be included in this specification to remove possible endogeneity.<sup>133</sup> Concerning the Hansen test, its p-value is  $> 0.90$  across the specifications in Table 13, suggesting the potential presence of ‘too many’ instruments. Again, this is very likely since the number of countries in the model is limited. The estimates are still robust, but the number of internal instruments weakens them.<sup>134</sup>

I re-run the model for the EHII by including the same set of controls but shaping the element of ‘persistence’ slightly differently than in Table 13 by including two optimal lags of the EHII variable to avoid the presence of serial auto-correlation.<sup>135</sup> As for the post-estimation results, the Arellano-Bond test p-value ranging between 0.56 and 0.76 (respectively in columns 1 and 2), and with a p-value of 0.36 and 0.98 for the Hansen test. Table 14 presents the results, which are consistent with the ones shown in Tables 12-13, with a negative effect of the CLI score on the ehii index: other things being equal, a ten per cent increase in the competition law index leads to a 0.4% reduction of the ehii score in the OECD countries. I do not find a statistically significant CLI effect concerning the World sample, even though the negative sign is confirmed.

**Table 14.** GMM, CLI and wage inequality

	(1)	(2)
	log_ehii	log_ehii
L.log_ehii	0.600***	0.890***

<sup>133</sup> I decided to run the same model and include the same number of lags with respect to the Gini measures, as they share a similar structure in data and to ensure a better comparability across the four specifications.

<sup>134</sup> The results hold when adding each control at a time (to prevent spurious correlation), with negative correlation in all columns and statistically significant results in most. Other specifications for the Gini measures failed the post estimation tests, including a collapsed instruments form. I therefore decided, again for consistency, to follow the full form acknowledging the potential weakness raising from the number of instruments and addressing these concerns regarding the OECD sample in chapter 8.

<sup>135</sup> I also collapsed the number of instruments to ensure its number is lower than the count of panel groups N.

	(0.214)	(0.209)
L2.log_chii	-0.292	-0.178
	(0.234)	(0.191)
log_cli_overn	-0.006	-0.040***
	(0.014)	(0.015)
log_lifecap	0.029	0.663
	(0.250)	(0.809)
log_gdp_pc	-0.017	0.028
	(0.037)	(0.063)
log_exp	0.020	0.075
	(0.022)	(0.051)
log_imp	-0.001	-0.080
	(0.028)	(0.049)
log_unempl	0.004	0.015
	(0.008)	(0.021)
log_inflat	-0.002	0.008
	(0.003)	(0.006)
log_inv	0.041*	0.113***
	(0.021)	(0.035)
log_gov_exp	0.005	0.112
	(0.028)	(0.093)
_cons	2.414*	-2.815
	(1.376)	(3.229)
Obs.	667	307
Sample	World	OECD
Time FE	YES	YES
N. instruments	56	56
Autocorrelation II order	0.56	0.76

Robust standard errors are in parenthesis. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

As for the control variables, while some of them are more sensitive to the sample on which the analysis is performed (World vs OECD) or the type of inequality measures employed in the analysis (such as gross Gini versus net Gini), others are robust across specifications, such as the positive coefficient associated to the unemployment measure, the pro-equality effect of the exports and, on the contrary, the positive coefficient linked to the imports.

## 7.7. Summary and discussion

Overall, the findings of this chapter are inconclusive. Using the CLI ‘scope of law’ is too crud and abstract to explore cross-country differences in enforcement levels. The law of the books does not capture subtleties such as the ones were explored in the US context in

previous chapters. Yet the results presented in this chapter suggest several key insights about the relationships between competition law, competition and inequality.

First, I find evidence of a link between competition law and perceived competition intensity. Given the commonly held presumption that more competitive markets should, other things equal, be associated with lower levels of inequality (Comanor and Smiley 1975; Khan and Vaheesan 2017; Ennis, Gonzaga, and Pike 2019), these results imply that the existence of an effective competition law regime might naturally result in lower levels of inequality other things equal. Yet, as discussed above, the proxy of perceived competition is not good enough to establish a causal link between competition law and market power.

Second, when delving deeper into the data, the modelling suggests that a competition law regime's scope and comprehensiveness are often associated with the degree of inequality. In almost all estimations, I find a consistent negative relationship between the comprehensiveness of competition law and inequality. This relationship is statistically significant in some specifications, implying that the more comprehensive competition law regimes are correlated with lower levels of inequality. Once the models are adapted to account for the persistence of inequality across time, I generally continue to find a negative relationship between the comprehensiveness of a competition law regime and inequality, with the results being enhanced for those statistically significant coefficients. While I acknowledge that the results are not enough to establish causality, I consider the results suggestive that the scope of competition law could be correlated with levels of income inequality.

I see this correlation as part of the broader literature on the effects of the quality of institutions and economic development on income inequality (e.g. Chong and Gradstein 2007). While myriad factors could explain this result, I conjecture that there may be a threshold for development after which competition law begins to have a more robust link between competition and inequality. The results suggest that this threshold may depend on a country's level of development. For example, while the results suggest a negative correlation between competition law comprehensiveness and inequality in high-income countries (such as OECD member states), the relationship is less clear for countries in lower-income brackets and at the World level. Among the factors which could combine to create such a threshold include the institutional capacity and resourcing of competition law authorities; the independence of competition law and degree of political involvement; and the ability of wider stakeholders (such as affected consumers or their representatives) to be more actively involved in the development and application of competition law.

Third and finally, the analysis suggests that the relationship between competition law and inequality can vary depending on the specific inequality indicator examined. Two observations stand out. The first observation is that, in most specifications, there appears to be a stronger statistical relationship between competition law and the gross (or market) Gini measure as compared to the net (or disposable) Gini measure. In other words, it appears that competition law has a stronger negative correlation with pre-tax incomes than post-tax incomes. This finding raises an important point about the interaction between taxation policies and other complementary policies in tackling inequality, which I will go back to in Part III. Competition law in most countries is a form of pre-distribution and not redistribution policy such as taxation. As such, the potential benefits of competition law in

reducing inequality, which are captured by changes in the gross Gini, might be negated, amplified or even cancelled out, by the taxation and expenditure regimes adopted in a specific jurisdiction such that the net Gini does not show any conclusive correlation with competition laws anymore. A second observation concerns the apparent differences between the income-based measures of inequality (Gini) and the wage-based measures (ehii). The results generally indicate a more consistent significant negative relationship between competition law and wages than they do for competition law and income. There might be many reasons why I observe this systematic trend. One explanation might relate to the methodological procedure used to construct each proxy. The ehii is wage-based and created from an industry pay dataset. As such, it does not include capital income, financial commissions, capital gains and, more in general, any source of income that might be related to the volatility of capital markets. An alternative, more speculative explanation is that competition law might act as a policy tool to favour rent sharing among workers, which could eventually translate into a lower wage inequality level. This may arise where competition law is targeted towards industries/sectors where workers' bargaining power and their labour share have declined over time. In these settings, competition law enforcement might constrain the ability of highly skilled or high-management type workers to extract profits, making the distribution of wages more equal.

I move on to investigate such expectations in the next chapter focusing on a narrow group of OECD countries, using a more granular scale of data – industry levels data. I also return to focus on the CPI measure that was observed descriptively in this chapter and could perhaps be a better-suited index for my purposes.

## CHAPTER EIGHT: A CROSS-INDUSTRY STUDY

The previous chapter focuses on a large cross-country dataset exploring the correlations between two main law indicators (the GCI and CLI) with several inequality metrics of income and wage inequality. The findings so far support the overarching hypothesis which connects competition law to inequality.

In this chapter, I investigate whether there is a link between competition policy, as measured by the Competition Policy Index (CPI), and the labour share, taking a step closer to establish the link between the competition law and inequality.<sup>136</sup>

By using a panel of 22 industries in 12 OECD economies over the period 1995-2005, I explore the link between an effective competition policy and the labour share. The findings support the hypothesis that a lax or inactive competition policy may have contributed to the decline of the labour share across some developed countries, potentially offering an ‘offsetting mechanism keeping the labor shares of some countries flat’ (Gutiérrez and Piton 2020, 323). The main mechanism through which competition policy affects the labour share is through its ability to constrain markups: competition policy is negatively correlated to markups, while markups are negatively correlated to labour share. As part of the inquiry, I use the CLI indicator analysed in the previous chapters to test whether results concerning the scope of the law and the model of law hypothesis are consistent with the findings at the industry level.

---

<sup>136</sup> This chapter summarizes the findings of Zac et al. (2021) and expands key points related to the thesis (scope of law and model of law). The hypothesis and models in this chapter were originally developed by myself, but later benefited from work conducted as part of a research team with Carola Casti, Christopher Decker, and Ariel Ezrachi. I continue to use the pronoun ‘I’, reflecting the author point of view, and the fact that the work here deviates from the joint analysis offered in the archived paper. The paper is under review at the Journal of Competition Law Economics and Organization.

The chapter follows the structure of the previous chapters: First, I discuss estimation strategy and data sources. Next, I provide basic descriptive analysis and draft the fourth hypothesis of the thesis. The following sections describe the results of the benchmark model, IV estimates and interactions models. The last section summarises and discusses the findings.

## **8.1. Competition policy, markups and the labour share**

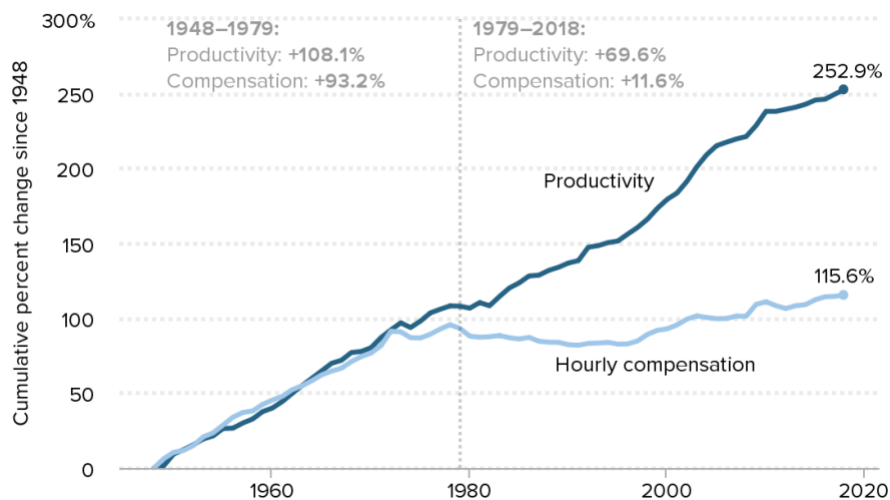
After decades of stability, the labour share of national income has steadily been in decline. This trend is evident in many countries since the 1980s, and in particular in advanced economies (Karabarbounis and Neiman 2013, Dao et al. 2017). Various *global* factors have been identified as contributing to this decline, including: privatization (Azmat, Manning, and Van Reenen 2012), structural transformation within the economy (Ngai and Pissarides 2007); capital-augmenting technological change (Acemoglu 2003), globalization (Bassanini and Manfredi 2012), capital accumulation (Piketty and Zucman 2014) and the labour force bargaining power (Blanchard and Giavazzi, 2003; Pak and Schwellnus 2019).

In addition to these factors, recent studies suggest that the labour share is inversely proportional to markups and negatively correlated to profit rates. Studies have found that increases in monopoly rents tend to decrease the labour share of national income and vice versa (Barkai 2016; De Loecker, Eeckhout, and Unger 2020), using measures for the intensity of competition and market power, such as markups or profit rates. These studies were explored more deeply in the US context (5.1. Economic inequality in the United States) showing three parallel macro-trends:

(1) Rise of markups (2) The decline of the labour share and (3) The rise of economic inequality. The rise of markups could be a *local*, idiosyncratic explanation, relevant to some developed economies like the US.

The decline of the labour share starts from the detachment of labour compensation and labour productivity. When an employer is able to constrain wages below productivity (‘markdown’), the labour share of the firm starts to decline as resources are shifted elsewhere.

*Figure 31: Percentage change of workers’ productivity vs hourly compensation in the US, 1960-2020*



Source: Bivens et al. (2014, 2020). Economic Policy Institute, State of Working America Data Library. The dark blue line represents productivity (growth of output of goods and services less depreciation per hour worked) and light blue compensation wage and benefits. The gap initiates around the mid-late 1970s when productivity continues rates of growth over the period while labour compensation stabilizes from the early 1980s.

The wage productivity gap is, in a way, a mirror image for the labour share. Whenever labour productivity grows faster than wages, the labour share is supposed to decline (Böckerman and Maliranta, 2012). The correlated rise of markups (as a proxy for market power) alongside the decline of the labour share in the US suggests that lax (effective) competition law enforcement could be associated with a decrease (increases) in the labour

share of national income – assuming competition policy has the expected effect on markups (negative correlation between enforcement and markups). If indeed so, effective competition law enforcement could generate positive effects beyond its ‘traditional’ welfare goals and result in labour receiving a higher share of any such welfare gains. These possible distributional effects are significant since labour income is more evenly distributed across households than capital income (Jacobson and Occhino 2012). Accordingly, an effective competition policy may be an important contributor to lowering levels of economic inequality in the long run via the changes in the labour share.

Recall Figure 1 of the thesis and the theoretical foundations of the link between competition law, competition, and inequality. Competition law and policy have two main effects: via product markets (price effect) and via labour markets (wage effect). Given that in most countries, competition policy enforcement in labour markets is very limited, the effects of competition policy on the labour share should mostly materialize via its effect on product markets. In the background, other economic factors (e.g., economic cycles, trade, technologic change) and policies (e.g., product market regulation) influence markups via labour bargaining power or consumer prices. When prices rise and labour compensation is stagnated (in monetary terms), markups are rising together with profit rates (via the biggest/productive firms). When this happens across industries, aggregated markups rise on the country level as well. The rise of markups reflects suboptimal output produced and lower demand for labour. This results in both lower labour force participation and lower wages, especially for low-skilled labour leading to further income inequality: ‘An increase in markups implies a decrease in aggregate output produced, whenever demand is not perfectly inelastic. Lower output produced then implies lower demand for labour. This

results in both lower labour force participation and lower wages’ (De Loecker, Eeckhout, and Unger 2020, 611).

## 8.2. Estimation strategy and methods

To assess the relationship between competition policy (CPI) and the country-industry level labour share,  $L\_share$ , I follow the estimation strategy in Buccirosi et al. (2013):

$$L\_share_{i,j,t} = \alpha + \beta CPI_{i,t-1} + \sum X_{i,j,t-1} + \sum Z_{i,t-1} + \varepsilon_{i,j,t}$$

Overall, I expect a positive relationship between competition policy and the labour share ( $L\_share$ ) with the coefficient  $E(\beta_{CPI}) > 0$ . In estimation equation ‘ $i$ ’ refers to country, ‘ $j$ ’ to industry and ‘ $t$ ’ to year. As described in section 8.3, I include a set of country-industry controls  $X_{i,j,t-1}$  related to the main dependent variable (such as human capital and import penetration), while  $Z_{i,t-1}$  captures country-specific controls (such as product market regulation (pmr) and scope of the law, CLI). Following Buccirosi et al. (2013), I model the unobserved heterogeneity through the error term’s structure:  $\varepsilon_{j,i,t} = \psi_{i,j} + \varphi_t + u_{i,j,t}$ . Specifically, I control for country-industry specific fixed-effects  $\psi_{i,j}$  to capture a variety of specific time-invariant unobservable factors and year fixed effect  $\varphi_t$  to consider macroeconomic shocks that might affect the labour share ( $L\_share$ ) in all countries at the same time. Lastly, the residual standard component of the error term  $u_{i,j,t}$ . I also cluster the standard errors at country-level, to allow for correlation across industries within the same country (and for the presence of possible *spillovers*). The estimation panel data equation is based on the methods detailed in previous chapters; the DID OLS correlation.

To limit the potential bias from reverse causality, I use a standard approach and lag the control variables by one period with respect to the labour share indicator (Griffith et al., 2004; Buccirossi et al., 2013). The assumption is that lagged values are uncorrelated with the error terms of the equation. Moreover, policy variables may take, in most cases, time before producing some measurable effects. I do not suspect the presence of two-way causality bias in the analysis, yet I prefer to adopt a more conservative approach and also control for that possibility.

In the context of this analysis, the main source of endogeneity, which might harm the identification strategy, is omitted variable bias. While I control for the time-invariant unobserved heterogeneity, by using the wide set of fixed effects in the estimation, there might be other variables and policies that may affect the CPI and the labour share and might not be observable in the baseline model. To address this possible issue, I implement an IV-2SLS estimation strategy, which should make the analysis more robust and reliable. It is a standard approach to deal with endogeneity issues in panel data (Han and Pyun 2020).

I explore the effects of the CPI using different assumed labour protection levels as both factors and their interplay can influence the level of markups and, ultimately, the labour share. For instance, in countries with low competition policy enforcement and weak labour protections, the correlation between markups and the labour share is expected to be greater and more statistically significant than in countries with both higher levels of competition policy enforcement and labour protection.

Despite these possible identification issues, relying on country-industry-level rather than on country-level data, like in previous chapters, allows me to understand better the relationship between competition policy and the labour share at a more granular level (even

though it may be more difficult, at times, to compare the findings to country-level studies). Indeed, the main body of literature on labour share has focused on macroeconomic aggregates. It is only more recently that the focus has shifted to the micro-dynamics of the labour share, both at the industry and firm level. Ultimately, the analysis helps unravel the implication of competition policy on distributional outcomes and economic inequality.

### **8.3. Data sources**

The country-industry-level dataset is compiled by combining different sources: the EU-KLEMS and the OECD database for twelve OECD countries – Canada, Czech Republic, France, Germany, Hungary, Italy, Japan, Netherlands, Spain, Sweden, United Kingdom, United States – in the period between 1995-2005.<sup>137</sup> For each of these countries, the data is gathered for 22 industries (see Appendix A8). In this section, I describe the data that is included in the different specifications of the model. The economic environment variables in the analysis are based on country-industry-year observations. The policy variables, which do not vary between industries, are at the country-year level.

#### **(a) Dependent variables**

The labour share (*L\_share*) is defined as the ratio between the gross total labour compensation (including wages and the additional costs of employing labour) and the total gross value-added.<sup>138</sup> Data on labour compensation and value-added are retrieved from the EUKLEMS dataset. Labour compensation of self-employed is not registered in the

---

<sup>137</sup> In the analysis, the only two countries that might be considered ‘outliers’ are the ex-soviet economies, namely Hungary and Czech Republic. That is the reason why in the robustness test, I re-run the baseline analysis by excluding both and results still hold.

<sup>138</sup> Both components are in nominal terms.

National Accounts. Therefore, in the construction of the EUKLEMS database, a standard imputation is made by assuming that the hourly compensation of self-employed equals the hourly compensation of employees. This assumption is made at the industry level in each country and can be rather ‘crude’ for some industries if there is a great variation across the earnings of the self-employed and employees.<sup>139</sup>

### **(b) Explanatory variables**

The Competition Policy Index (*CPI*) was compiled by Buccirossi et al. (2011) as a measure of the quality of competition policy. The index includes data for 12 developed countries over the period 1995-2005: Canada, Czech Republic, France, Germany, Hungary, Italy, Japan, Netherlands, Spain, Sweden, United Kingdom, United States. The CPI is an aggregated index of a sub-set of indices that are calculated covering two main areas of study: competition policy infringements (including hard-core cartels, anti-competitive agreements, and abuse of dominance) and merger control policy. The aggregate CPI index is constructed using a ‘pyramidal’ approach from ‘low level’ indicators, through ‘medium level’ sub-indices, to ‘high level’ indices.

At the lowest level, indices data was gathered on each area of policy under five categories: Independence of enforcement; separation of powers; quality of law; powers of

---

<sup>139</sup> As a result, labour compensation is sometimes higher than value added, such that capital compensation, which is defined as the residual, becomes negative and, consequently, the labour share takes value higher than one. This is the reason why the labour share sometimes takes value higher than 1. Some of these measurement errors are found in some specific sectors, such as agriculture and mining, at the beginning of the sample, but, as their relevance has progressively diminished over time (because of structural change), it should not represent a major problem for the analysis. I also re-run the model by discarding the bottom and the top percentiles of observations (to limit the impact of these values) and results are still confirmed.

investigation; sanctions policy and damages; resources (budget, staff) and in the case of hard-core cartel and mergers enforcement activity (cases opened or reviewed).

The resultant CPI aggregate measure includes, among other things, the investigative powers of the competition authority, the level of the overall loss that can be imposed on firms and their employees, and the ‘toughness’ of a competition authority (i.e., the level of activity of a competition authority). The weighted aggregation of the information is assigned a score on a continuous scale from 0 to 1 (from worst to best). A principal advantage of the CPI compared to other competition policy metrics is that it moves beyond the legal text and encompasses measures that reflect the effectiveness of enforcement, including agencies’ independence and powers comparing to the two indicators used in the previous chapters. Still, while offering a valuable qualitative measure, the CPI shares some of the limitations of other measures such as survey bias (concerning data which was gathered directly by questioning competition agencies), limited timespan and a small country sample.

In the analysis, I use some explanatory variables at the country-industry level that were found to be associated with the labour share in previous studies:

- To control for the effects of trade liberalisation and globalization on the labour share, I use a measure of import penetration (*tradelib*), defined as the ratio of industry import over value-added in each specific country-industry. The data is collected from the OECD STAN database. Exposure to international trade and competitive pressure may influence firms in re-setting their structures and potentially reconsidering the role of labour (Caliendo, Monte, & Rossi-Hansberg, 2017). According to Rodrik (1997), an increase in the aggregate share of imported intermediate inputs might lead to a

substitution of domestic workers with foreign ones, resulting in a reduction in the aggregate labour share.

- Shares of high skilled workers (*HHS*) and medium-skilled workers (*HMS*) to capture the degree of human capital accumulation/education and the changing skill composition of the labour force at the country-industry level. Higher levels of human capital are found to be positively related to the labour share in some previous studies (Daudey and Decreuse, 2006; Daudey and Garcia-Penalosa, 2007; Guerriero and Sen, 2012). However, according to the *capital-skill complementarity* hypothesis, capital may be less substitutable for skilled labour than for unskilled labour (Griliches, 1969). Therefore, depending on the elasticity of substitution between the two inputs, a decrease in the relative price of capital may result in a larger drop in the employment of the unskilled workers compared to skilled workers, leading to a decrease in the compensation of the former, and eventually a possible overall decline in the aggregate labour share (Arpaia et al., 2009; Grossman et. al., 2017).
- I also include the growth rate of the labour compensation (*wagegrowth*), as reductions in the salaries of workers across industries tend to decrease the labour share (Arpaia et al., 2009; Ennis, Gonzaga, and Pike 2019). In addition, this variable may capture differences in compensation growth across industries with similar workers' skills composition (i.e., the financial sector pay premium). Note that the *wagegrowth* proxy is calculated by using the gross nominal labour compensation (wages including benefits for the workers) and is not intended to capture the so-called 'pay-productivity' gap (defined as the difference between the wage growth and the labour productivity

growth).<sup>140</sup> The *wagegrowth* proxy may also be capturing, to a certain extent, the role of trade unions in the wage formation process.

- To capture the possible influence of business cycles and other exogenous economic fluctuations on the labour share (Young, 2004; Growiec et al., 2018), I include the *industry\_trend* variable. This approach is consistent with Buccirossi et al. (2013) and measures the deviation over time between the actual industry production and the predicted level of production. This variable allows me to account for different demand fluctuations at the country-industry level (these deviations can be positive or negative, whether the actual value-added production is, respectively, bigger or smaller than the predicted one).
- I also include R&D intensity as a proxy for technological progress (*resdev*), measured as the ratio between R&D expenditure and the value-added at country-industry level (from the combined source of EUKLEMS and OECD Analytical Business Enterprise Research and Development database, ANBERD). Technological progress, in the form of both innovation and automation (new production process), is overall negatively linked to the aggregate labour share (Zeira, 1998; Grossman et al., 2017; Bergholt et al. 2019; Basso and Jimeno, 2020).<sup>141</sup>

---

<sup>140</sup> As a sensitivity test, I run an analysis which included the country-industry level labour productivity growth (*LPgrowth*) as additional regressor to the *wagegrowth*. However, because it was never significant, regardless of the estimated specification, I excluded it in the benchmark analysis to avoid overfitting the model. The lack of significance of the *LPgrowth* may be justified considering the limited length of the time span (1995-2005), which might not be adequately long to capture the long-run effects of the labour productivity on the labour share (Karanassou and Sala, 2010; Stansbury and Summers, 2017).

<sup>141</sup> I am aware that wage growth, human capital share and R&D might all be connected to each other, and this may rise concern of multicollinearity. Hence, I run the model multiple times, by removing each time one of these proxies and by also re-running the specifications following a different order of inclusion of these variables. However, this did not severely affect the consistency of the estimates.

As described in the introduction of the chapter, I seek to test the hypothesis that competition policy affects the labour share via its effect on the intensity of product market competition. Therefore, at the country level, I use additional factors to control for other product market regulations, competition policy metrics and labour institutions that could also be associated with changes in the labour share:

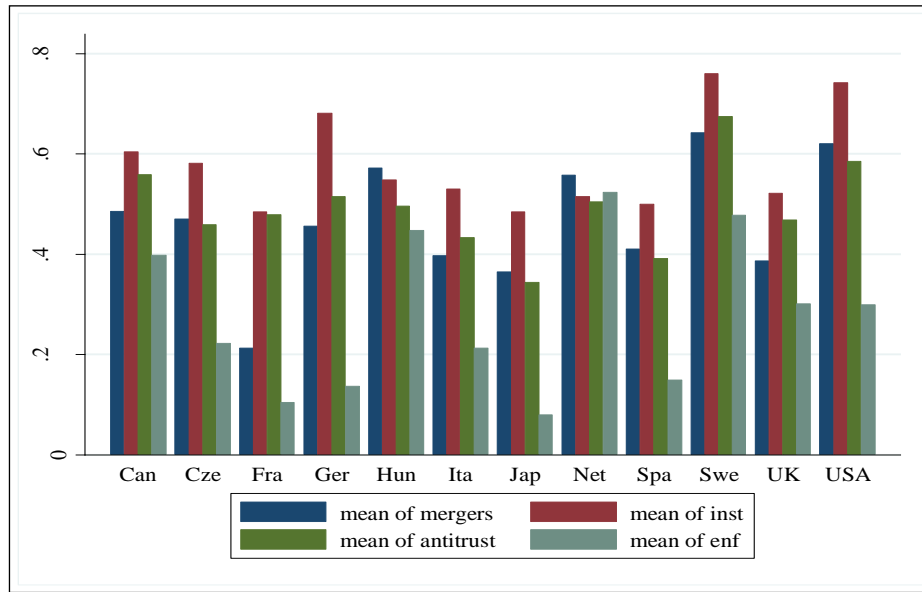
- I use the product market regulation indicator (*pmr*) from the OECD database, ranging from 0 to 6. The proxy measures a country's regulatory barriers to competition and tracks reform progress over time. Lower values of the *pmr* reflect a more competition-friendly regulatory stance (Vitale et al. 2020).
- I also use a second index for the scope of competition policy (*CLI*) from Bradford and Chilton (2018) that was mentioned in previous chapters. I use this second index at a later stage in the analysis (in the interaction model) to capture its interplay with the CPI on the labour shares as another way to test the robustness of the results. The *CLI* and the *CPI* should be seen as complementary measures rather than substitute proxies, as they capture different aspects of the competition policy, i.e., the 'law of the books' as opposed to enforcement and institutions, respectively.
- To control for policies that could affect the level of bargaining power of labour, I use the strictness of employment protection (*empl\_protec*) as a proxy for labour market institutions. It takes a range of values from 0 to 6, with higher scores representing stricter labour market regulation. The coefficient for employment protection has been found to be negative and statistically significant for the labour share (Cette, Lopez & Mairesse, 2016; Pak and Schwellnus, 2019). Reduced employment protection for workers (flexible labour contracts) can increase the labour share in the long run, as it

encourages substitution of labour for capital, given lower labour costs. However, such effects could be dependent on the elasticity of the labour-capital substitution and acceptance rate of employment protection policies (Ciminelli, Duval, and Furceri 2018). I also use, as alternative control, the number of employees being members in trade unions (unionmembres) as a proxy for the bargaining power.

#### **8.4. Descriptive statistics**

I begin by exploring the CPI distribution across the database. Figure 32 presents the CPI disaggregated into its four components (merger regulation, antitrust, institution and enforcement) by country averaged over the years. Focusing on substantive laws (merger and antitrust), the variations are slight, with Sweden leading both components. The lowest score for merger regulation is given to France, and for antitrust, it is Japan. Looking at institutions, a similar picture emerges with Sweden in the lead (followed by the US and Germany) and France and Japan close the group of the 12 countries. Enforcement measures are often the ‘weakest link’ in cross-country comparisons as statistics reported may be based on different measures and not always offer an accurate reflection of actual enforcement actions.

Figure 32: Distribution of CPI sub-indices by country



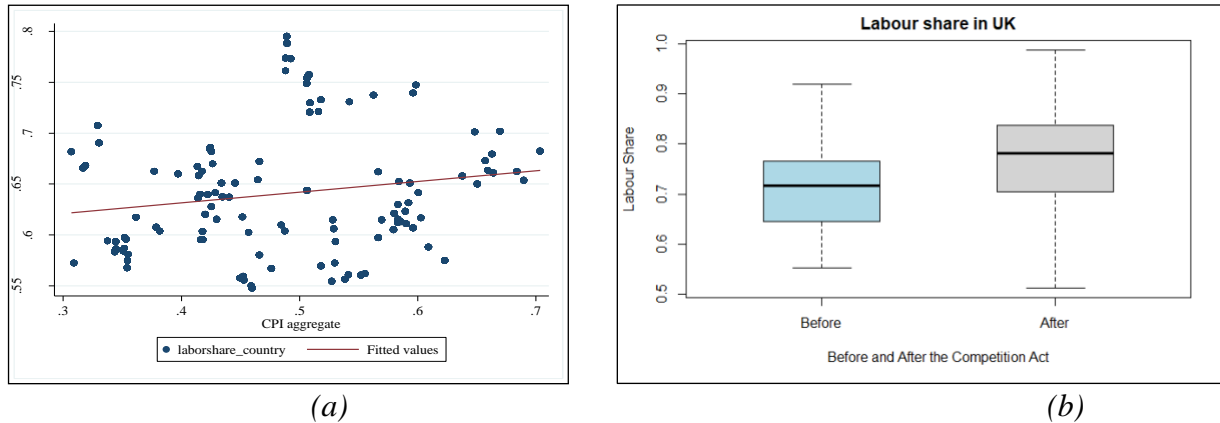
Source: Author's elaboration. The graph shows the values of the CPI sub-indices averaged over the period 1995-2005.

Figure 33 (left) plots the CPI (country-year) on the horizontal axis and the labour share (aggregated by country) on the vertical axis. While there is variation in the observations, a general positive correlation can be seen: higher levels of the CPI appear to be correlated with higher values of the labour share. Note that since I am looking at a decade of data, I cannot confirm or reject the argument concerning the *global* decline of the labour share. If anything in these decades, the general trend is positive.

On the right of figure 33, I focus on the UK, which underwent a major change in competition law and is one of the few countries that experienced an upward labour share trend over the studied period. Looking at the shift reflected in the CPI in 1999 (after the enactment of the Competition Act, see panel b of figure 33). The change from lower levels of CPI to higher levels of the CPI in the UK time series appears to be associated with a positive shift in the aggregated labour share. Note that the data on the labour share is disaggregated by industry, so figure 33 does not reflect the actual analysis. This descriptive

overview requires an elaborated econometric diagnosis. In Table 15, I present the descriptive statistics of the main variables of this chapter.

Figure 33: Labour share and the CPI



Source: Author's elaboration. The scatter plot between aggregate labour share (by country) and the aggregate CPI in the left panel (a); box plot depicting the labour share in the UK over the period 1995-1999 and 1999-2005 (before and after the Competition Act).

Table 15. Descriptive statistics

Variable	Description	Obs	Mean	Std.Dev.	Min	Max
L_share	Labour share	2860	0.641	0.189	0.04	1.482
CPI	Competition policy index	2552	0.49	0.1	0.307	0.703
Pmr	Product mkt regulation	2904	1.761	0.521	0.923	3.034
Tradelib	Import penetration	2706	1.066	1.799	0	17.279
ind_trend	Industry trend	2860	0.11	0.462	-0.011	4.555
wagegrowth	compensation growth rate	2420	0.037	0.071	-0.503	0.67
HHS	% of high skilled	2662	0.115	0.094	0.002	0.559
HMS	% of medium skilled	2662	0.684	0.165	0.077	0.984
Resdev	R&D	2248	0.034	0.069	0	0.847
log_markup	Markups(log)	2505	0.165	0.268	-1.38	2.354
empl_protec	Employment protection	2904	2.151	1.01	0.093	3.638

## 8.5. Hypothesis IV: Competition policy and the labour share

The last hypothesis in Part II connects the main macro-economic trends that were explored in the literature and previous chapters. The relative deterioration in effective enforcement

in many developed countries (due to failure to keep up with changing market reality) may have contributed to a decline in market competitiveness, rise of markups, and reduction in labour share. Countries that experience a reverse trend of enforcement like the UK (positive), could be showing higher levels of the labour share (an offsetting mechanism). Of course, there are other explanations for these trends, and it is the job of the estimation strategy and econometric analysis to correct for possible omitted variables. In section 8.8, I elaborate on the limitations of the current strategy. The fourth hypothesis of the thesis is that: *The effectiveness of competition law is linked to the labour share.*

In other words, competition enforcement is *expected* to be negatively associated with markups and positively associated with the labour share, implying that markups are negatively correlated with the labour share. In the next section, I explore this hypothesis trying to mitigate some of the econometrics difficulties mentioned in previous chapters.

## **8.6. Competition policy and markups**

First of all, to explore the first link of the transmission mechanism (policy-markups-labour share), I explored a reduced form of the specification that estimates markups as a function of specific controls identified in previous studies as being co-founding factors and competition policy. This includes a proxy for import penetration (*tradelib*) to capture the relative exposure of different industries to international trade, which might have consequences in terms of production (and especially low-skilled labour) outsourcing, potentially widening the price-cost margin (Goldschmidt and Schmieder, 2017). To control for the potential for markups to be related to scale, I use a size of the industry proxy in the form of value-added (*log\_va*) as markups tend to be a positive function of the size of the firms (Autor et al., 2020, Dorn et al. 2017). Similarly, to account for the fact that most

innovative and productive industries tend to grow faster than others, and as a consequence, have higher market shares and markups (Autor et al. 2020), I include an R&D variable (*resdev*) as a proxy for innovation, following De Loecker, Eeckhout, and Unger (2020). However, I cannot exclude the existence of a negative correlation between markups and R&D intensity, as the incentive for investing and innovating might become lower as the competition pressure declines and market power increases (Falk, 2004; Gutierrez and Philippon, 2017).

Besides these standard controls, I also include three additional policy proxies, namely competition policy (CPI), product market regulations (*pmr*) and labour market policies and institutions (in the form of employment protection, trade union density and number of union members). I expect competition policy to exert a negative effect on the markups, as it should reduce distortions in the market. As for the product market regulation, increasing levels of *pmr* indicate a higher economic burden in the form of high barriers to entry, which are expected to be positively associated with markups (Dorn et al., 2017; Cavallari et al., 2019).<sup>142</sup> The relationship between labour market regulation/institutions and markups is more difficult to predict. On the one hand, stricter labour market regulations and institutions could bolster the ability for labour to negotiate, which could raise costs and reduce markups. On the other hand, in some industries, this might induce firms to substitute labour with capital, hence widening the price-cost margins (assuming that attributable costs are lower than labour costs).

---

<sup>142</sup> The OECD's Product Market Regulation (PMR) index measures the degree of vertical integration, public ownership, open access and market concentration in regulated markets. PMR values range from 0 (full deregulation) to a maximum of 6 (most restrictive conditions for competition).

To address potential multicollinearity between the labour market regulations/institutions and the CPI, I split the sample according to whether a particular labour market regulation/institution is below or above the median. This approach enables me to assess the relationship between markups, competition policy (CPI) and product market regulations (*pmr*) under different assumed labour market regulation/institutional scenarios. This allows for an investigation of the three main policies (CPI, CLI and labour), which could impact markups simultaneously.

Table 16 reports the results of the reduced form. The coefficient of the (lagged) CPI is negative and statistically significant at a 1% level across all specifications. As for the other controls, the results suggest that markups tend to increase with the industry size (*log\_va*) and that there is a positive relationship between product market regulation (*pmr*) and higher markups. The other variables, namely *tradelib* and the R&D proxy (*resdev*), are mostly non-statistically significant (except for columns 3 and 6).

**Table 16.** CPI and Markups

	(1) Below median emp_prot	(2) Above median emp_prot	(3) Below median tradunion	(4) Above median tradunion	(5) Below median unionmembe	(6) Above median unionmemb
	<i>log_markups</i>					
L.CPI	-0.524*** (0.133)	-0.581*** (0.110)	-0.608*** (0.101)	-0.199** (0.080)	-0.659*** (0.126)	-0.395*** (0.054)
L.tradelib	-0.006 (0.012)	0.011 (0.009)	0.024*** (0.007)	0.015 (0.011)	-0.000 (0.010)	0.033*** (0.006)
L.resdev	0.336 (0.361)	0.221 (0.182)	0.363* (0.187)	-0.069 (0.181)	0.027 (0.202)	0.255 (0.164)
L.pmr	0.361*** (0.120)	0.423*** (0.028)	-0.042 (0.031)	0.150*** (0.039)	0.284*** (0.034)	0.058** (0.024)
log_va	0.139*** (0.039)	0.768*** (0.026)	0.653*** (0.020)	0.699*** (0.032)	0.816*** (0.031)	0.525*** (0.017)
_cons	-1.602*** (0.327)	-7.242*** (0.267)	-10.269*** (0.337)	-6.789*** (0.307)	-6.602*** (0.273)	-3.900*** (0.161)
Obs.	623	916	788	718	637	869
Adj R <sup>2</sup>	0.861	0.849	0.958	0.836	0.853	0.956
Year FE	YES	YES	YES	YES	YES	YES

Country- Industry FE	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES

---

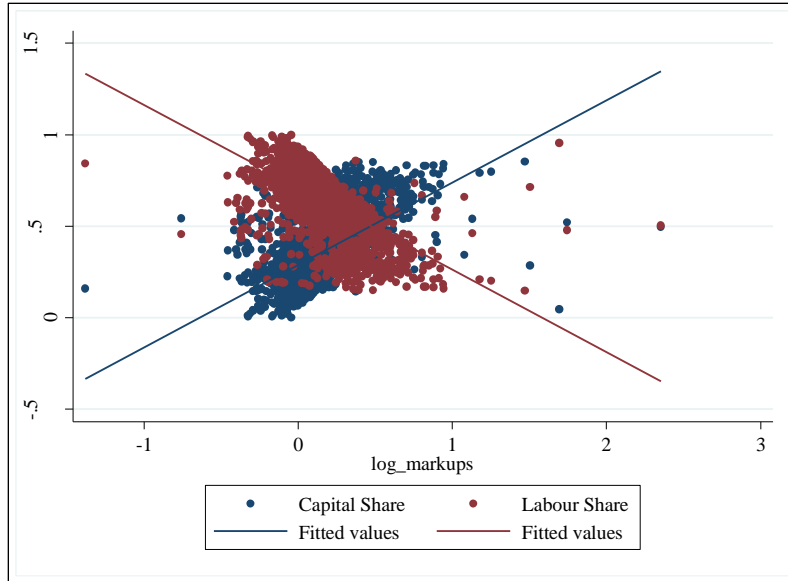
Robust standard errors are in parenthesis \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

The L. operator stands for the 'lag' by one year.

Except for columns 1 and 2 (which models differences in the level of employment protection), the coefficients of the CPI drop dramatically as between the below and above median sub-samples that relate to labour bargaining power (e.g., low vs high level of trade unions, and low vs high level of union membership). As discussed in Section 8.2, this may suggest that competition law enforcement may be more important in environments characterised by low levels of labour protection and labour bargaining power.

Before evaluating the relationship between the CPI and the labour share, it is worth remembering that the second part of the mechanism, i.e., the link between markups and the labour share (and inequality), has been explored in the literature and previous chapters. The full econometric analysis of this link in the CPI dataset can be found in (Zac et al. 2021). Here, I present this correlation graphically. Figure 34 plots the correlation between (log) markups (country-industry-year) on the horizontal axis and labour and capital shares on the vertical axis (which, by construction, are complementary to one other). This shows a clear negative correlation between markups (in logs) and the labour share, in contrast to the rising capital share in blue. Higher levels of industry markups (representing possible distortions in competition) are correlated to lower levels of the labour share but higher levels of capital shares:

*Figure 34: Scatter Labour - Capital share and markups*



Source: Author’s elaboration. The scatterplot depicts the direction of the relationship between the labour share and the markups (in logs) in red, while in blue concerning the capital share (being complementary to the labour share by construction).

I now move to the main analysis of this chapter, the econometric model of the CPI and labour share.

## 8.7. Competition policy and labour share

### (a) Benchmark estimations

I first report the OLS univariate model with different sets of fixed effects in Table 17. Except for column 1, the positive sign and the statistical significance of the CPI is consistent across all other specifications.

**Table 17.** Univariate model with different sets of FE

	(1)	(2)	(3)	(4)
	L_share			
L.CPI	0.107 (0.097)	0.185** (0.064)	0.185** (0.065)	0.185** (0.068)
_cons	0.59*** (0.053)	0.451*** (0.04)	0.536*** (0.066)	0.453*** (0.034)
Obs.	2244	2244	2244	2244

Adj R <sup>2</sup>	-0.001	0.084	0.606	0.919
Year FE	YES	YES	YES	YES
Country FE	NO	YES	YES	NO
Industry FE	NO	NO	YES	NO
Country-Industry FE	NO	NO	NO	YES
Controls	NO	NO	NO	NO

Robust clustered standard errors are in parenthesis. Significant at \*10%, \*\*5%, and \*\*\*1%.  
The L. operator stands for the 'lag' by one year.

As expected, given the several fixed effects included in the model (which allow me to control for time-invariant unobserved heterogeneity at the country-industry level), the (adjusted) R-squared takes high values. This means that specific country-industry characteristics already explain much of the variance of our outcome variable. Table 18 presents the baseline model results, starting first with the univariate model (column 1) and gradually including all the controls in the full specification (see Column 8). The coefficient of the (lagged) CPI is always positive and statistically significant, suggesting that a more effective competition policy is positively linked to the labour share. This result remains consistent across the different specifications.

**Table 18.** Regression results: Labour share and aggregate CPI

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	L_share							
L.CPI	0.185** (0.068)	0.184** (0.069)	0.181** (0.069)	0.159** (0.063)	0.159*** (0.048)	0.174** (0.068)	0.187** (0.071)	0.158* (0.077)
L.tradelib		-0.003 (0.009)	-0.003 (0.009)	0.003 (0.009)	0.003 (0.009)	0.003 (0.012)	0.003 (0.012)	0.003 (0.012)
ind_trend			-0.058*** (0.008)	-0.065*** (0.008)	-0.069*** (0.010)	-0.091*** (0.011)	-0.091*** (0.011)	-0.091*** (0.011)
L.wagegrowth				0.103*** (0.025)	0.103*** (0.024)	0.114*** (0.028)	0.116*** (0.027)	0.114*** (0.027)
L.HHS					0.390* (0.198)	0.428* (0.212)	0.452* (0.204)	0.466** (0.205)
L.HMS					0.192 (0.134)	0.120 (0.108)	0.121 (0.099)	0.130 (0.105)
L.resdev						0.286 (0.189)	0.282 (0.192)	0.275 (0.192)
L.pmr							-0.014 (0.017)	-0.014 (0.017)

L.empl_protec								0.044 (0.084)
_cons	0.453*** (0.034)	0.723*** (0.034)	0.546*** (0.120)	0.930*** (0.044)	0.699*** (0.152)	0.352*** (0.036)	0.378*** (0.052)	0.280 (0.342)
Obs.	2244	2244	2244	1958	1958	1649	1649	1649
Adj R <sup>2</sup>	0.919	0.919	0.919	0.922	0.923	0.919	0.919	0.919
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country-Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Controls	NO	YES	YES	YES	YES	YES	YES	YES

---

Robust standard errors clustered at country level are in parenthesis \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

The L. operator stands for the ‘lag’ by one year.

Concerning control variables in the baseline model, the negative coefficient for the *ind\_trend* variable suggests that economic fluctuations and business cycles effects (deviations from the predicted levels of production) tend to be negatively associated with the country-industry labour share (see Growiec et al. 2018 for the counter-cyclicity of the labour share in the short-run).<sup>143</sup> As expected, the coefficient for wage growth is positive and highly statistically significant (ranging from 0.103 to 0.116) on the labour share. As for the human capital proxies, while the HMS is positive but not statistically significant, the HHS is positive and statistically significant at 10% level, even after controlling for the wage growth, suggesting that higher shares of high skilled workers are positively linked to labour share at country- industry level.

Both import penetration (*tradelib*) and the R&D proxy (*resdev*) are not statistically significant at the country-industry level.<sup>144</sup> I believe that this lack of significance might depend both on the sample composition and the period that is used to perform the

---

<sup>143</sup> Besides, if the extra industrial production is dragged by an increase in productivity but stagnated wages, the ultimate effect on the labour force might be negative (potentially dragged by wage stagnation and/or capital labour substitution). In the work of Buccirossi et al. (2013), they find a positive effect of the *ind\_trend* both on the total factor productivity and the labour productivity, validating the intuition of the reason why its coefficient takes a negative sign in this analysis.

<sup>144</sup> This is consistent with Bassanini and Manfredi (2012, OECD).

analysis.<sup>145</sup> A decade is likely too short of a period to capture the long-run dynamics of foreign competition and innovation process on the labour share. Concerning import penetration, I suspect that the lack of significance could reflect the fact that some industries in tradable sectors might have been more exposed to international pressure than others (Huwart, Jean-Yves and Loïc Verdier, 2013 OECD report), making the final effect on the country-industry labour share uncertain. The lack of significance for the R&D proxy may reflect the fact that the data shows a limited variation of the R&D proxy over time and across most sectors in the 12 countries of our sample (there are only a few industries and countries that experienced non-flat patterns over the decade).<sup>146</sup>

Specifications 7 and 8 include the two additional country-level policies that could be linked to labour share through product market regulation index (*pmr*) in column 7 and the strictness of employment protection (*empl\_prot*) in column 8. Neither of these policies are statistically significant in the specification (in line, respectively with Bassanini and Manfredi, 2012 and Azmat et al., 2012). The variation in the employment protection proxy over time within and, in some cases, also across countries is rather limited. Therefore, it might be hard to capture its influence separately from the set of fixed effects, making it a rather weak proxy (Azmat et al., 2012).

Specifically, to address the risk that two potential outliers (Hungary and the Czech Republic) might be skewing the results, a sub-sample excluding these two countries from the benchmark model is studied. The reason for doing so is two-fold: first because of

---

<sup>145</sup> Böckerman and Maliranta (2012) also find a negative relationship between the import penetration and the change in the labour share, using Finnish manufacturing-industry-level data but using a longer time span. In contrast, Elsby, Hobijn, and Sahin (2013) find a negative relationship between the change in the labour shares and the growth of total import intensity

<sup>146</sup> See Fig. A1 in Zac et al. (2021).

potential measurement error (particularly, the high CPI values for Hungary) and second because during this period, both countries were in the process of transitioning towards market-based economies. The results of the analysis are still consistent with the main findings. I also run a similar test, taking out of the sample Sweden and the US (due to their high CPI values). Results are consistent. Overall, the findings of the benchmark model suggest that competition policy is positively linked to the labour share, possibly via product market competition. However, it is too early to interpret the relationship as a causal one because omitted variable bias could be affecting our benchmark estimations.

#### **(b) IV- 2SLS Model**

I apply an IV-2SLS model to control for endogeneity as a direct consequence of potential omitted variable bias. An instrumental variable (IV) is valid when: i) it is uncorrelated with the error term (exogeneity); ii) it is correlated with the regressor of interest, namely the CPI in our case (relevance); iii) it does not exert a direct effect on the dependent variable, or it is excluded in the structural form (exclusion).

The pool of instruments includes a political proxy (*Econ\_plann*) used by Buccirossi et al. (2013) that measures favourable mentions in the parties' programs of long-standing economic planning of a consultative or indicative nature; and various proxies for the legal-institutional background. Some of the instruments – the quality of the overall legal system (*legal\_sys*), judicial independence (*judic\_indep*), the impartiality of the courts (*impartialcourts*) and protection of personal economic freedom (*protectionofpropertyrights*) – are taken from the Fraser Economic Freedom dataset (area

of legal system and property rights) (Buccirosi et al., 2013).<sup>147</sup> These instruments are highly relevant to competition policy enforcement and the legal aspects of competition policy implementation but should not indirectly affect the labour share. This indirect exclusion effect (validity requirement iii) is confirmed in the post-estimation econometric diagnoses.

**Table 19.** IV 2SLS regressions-CPI

	(1)	(2)	(3)
		L_share	
L. CPI	0.348** (0.165)	0.421* (0.222)	0.325** (0.139)
L.tradelib	0.004 (0.009)	0.004 (0.009)	0.004 (0.009)
ind_trend	-0.090*** (0.024)	-0.090*** (0.024)	-0.090*** (0.024)
L.wagegrowth	0.116*** (0.035)	0.118*** (0.036)	0.118*** (0.035)
L.HHS	0.411*** (0.142)	0.401*** (0.141)	0.407*** (0.136)
L.HMS	0.150 (0.096)	0.162 (0.101)	0.145 (0.096)
L.resdev	0.227 (0.317)	0.201 (0.321)	0.233 (0.308)
_cons	-0.005 (0.137)	-0.054 (0.178)	0.013 (0.134)
Obs.	1628	1628	1649
Adj R <sup>2</sup>	0.929	0.928	0.929
Year FE	YES	YES	YES
Country-Industry FE	YES	YES	YES
Instruments	Econ_plann; legal_sys; judic_indep	Econ_plann impartialcourts	impartialcourts; protectionofpropertyrights
First stage F stat	88.51	72.21	107.18
Kleibergen-P Wald F st	30.02	43.69	50.14
Hansen J p-val	0.22	0.24	0.30
Wu-Hausman p-val	0.29	0.10	0.23

Standard errors in parentheses are robust and allow for correlation among industries in the same country. Different sets of instruments are implemented: *Econ\_plann* is the programmatic position for favourable

<sup>147</sup> ‘Impartiality of courts’ ranges between 1 (totally impartial and inefficient) and 7 (neutral and clear process). ‘Protection of property rights’ ranges between 1 (poorly defined and not protected by law) and 7 (clearly defined and well protected by law). See ‘Economic Freedom of the World’ 2020 Annual report.

mentions of long-standing economic planning; *legal\_sys* is the integrity of the legal system; *judic\_indep* is judicial independence; *impartialcourts* is the proxy for the impartiality of the courts and judges and last, *protectionofpropertyrights*. The value of the *F*-statistic for the test of excluded instruments in the first-stage regressions is reported. It is also reported the *p*-value associated with the Hansen *J*-statistic. Last, the *p*-value for the Wu-Hausman *F*-statistic endogeneity test of the CPI is reported as well. All regressions include country-industry FE and time FE. Significant at \*10%, \*\*5%, and \*\*\*1%. The L. operator stands for the 'lag' by one year.

The Instrumental Variable (IV) model shown in Table 19 confirms the results obtained in the benchmark (OLS) model. The coefficient of the (lagged) CPI index is positive and statistically significant across all of the different combinations of selected instruments, and the other controls have the same signs of the benchmark model. The post-estimation tests perform well, suggesting that the proxies chosen for the model have the required characteristics to be good instruments: relevance, exogeneity and exclusion. For the Kleibergen-Paap Wald F, under the null, there is a weak correlation between the instruments and the regressors (system identified but weak instruments if the F statistics is <10). Concerning the Hansen J stat, under the null, the instruments are not correlated with the error terms and are valid and exogenous (as in our case). Although always consistent, IV estimates are not efficient in the absence of endogeneity. This is the reason why I also run the Wu-Hausman test (endogeneity test) to check whether the CPI index is strongly endogenous or if it can be treated as exogenous. Rejecting the null hypothesis means that IV is preferred to the OLS. In this case, the *p*-value  $\gg 0.05$  confirms that the benchmark (OLS) estimates are more efficient in this case than the IV ones, and the CPI can be treated as an exogenous variable. This additional set of findings confirms the effect exerted by the CPI on the labour share.

### **(c) Interaction analysis, industry, the scope of law and model of law**

To further test the robustness of the results and compared them to previous findings of part II of the thesis, I investigated the interaction between the CPI and other potentially endogenous factors using an interaction analysis. This analysis allows investigating how the scope of competition policy, and the degree of industry-specific regulation, might affect the relationship between the CPI and the labour share. Following these interactions, I also included a model interacting the CPI with the model of law proxy explored in Chapter six: The United States and the European Union laws as models of competition laws. Table 20 presents the results for three different interaction specifications. For each of these interactions, I have a clear expectation for the sign of the coefficient, making the analysis another way to test the robustness of the OLS estimations.

The first interaction specification tests whether the CPI has a different relationship with the labour share, depending on the type of industry where it is enforced (column 1), namely *manufacturing* versus *services*. Investigating this source of heterogeneity is important for numerous reasons. First, the services industry is typically subject to greater sectoral-specific economic regulation and oversight (such as sector-specific regulators for financial services and telecommunications) than the manufacturing sector. This might suggest that the CPI would have a stronger impact in manufacturing industries and a weaker or non-significant impact in those sectors which are already subject to economic regulation. Second, this interaction can provide insights relevant to the debate about relative changes in the labour share in capital versus labour-intensive industries.<sup>148</sup> Manufacturing industries tend to be capital intensive (and involve major investments in

<sup>148</sup>

---

Autor et al. (2020) found that capital intensive sectors display a lower labour share.

fixed assets and machinery) and rely less on labour, while service industries tend to rely more heavily on labour. Third, capital-intensive industries, such as manufacturing, tend to have greater international exposure and to rely on intermediate service outsourcing (e.g., manufacturing), mostly for unskilled labour, as in Germany (Goldschmidt and Schmieder, 2017).

Taken together, the above points suggest that a stronger and more significant relationship should exist between competition policy enforcement in capital-intensive industries, such as manufacturing, as compared to service industries. Column 1 of Table 6 confirms this hypothesis.<sup>149</sup>

Column 2 of Table 20 reports the results of the second interaction analysis, which focuses on the relationship between the ‘scope’ of competition law and competition policy. I test the hypothesis that the greater the scope of competition law (CLI), the greater the impact of the CPI (which captures competition policy enforcement) on the labour share. As a proxy for the scope of competition policy, I use again the Competition Law Index (CLI) retrieved from the dataset of Bradford and Chilton (2018). As the CPI already reflects an element of the scope of competition policy, I expect the CLI and the CPI to correlate to a certain extent.<sup>150</sup> However, the CLI is limited to scope alone (presence of competition policy) but does not take account of the level of enforcement. Some jurisdictions may have enacted the laws but engage in limited or no effective enforcement.

---

<sup>149</sup> These results are, to a certain extent, complementary to the recent work of Affeldt et al. (2021), who use industry level data and enforcement decisions scrutinized by the European Commission, finding a negative statistically significant link between (past) enforcement decisions and concentration levels (HHI) in manufacturing sector, while a non-significant effect in the service industry.

<sup>150</sup> In my sample the correlation is -0.36.

**Table 20. Interactions Regressions<sup>151</sup>**

	(1)	(2)	(3)
		L_share	
L.tradelib	0.003 (0.012)	0.003 (0.012)	0.003 (0.012)
ind_trend	-0.092*** (0.011)	-0.091*** (0.010)	-0.093*** (0.012)
L.wagegrowth	0.116*** (0.029)	0.110*** (0.026)	0.113*** (0.029)
L.HHS	0.415* (0.192)	0.384* (0.190)	0.436* (0.203)
L.HMS	0.081 (0.101)	0.111 (0.110)	0.105 (0.098)
L.resdev	0.278 (0.180)	0.292 (0.189)	0.284 (0.193)
L.CPI*service	-0.005 (0.121)		
L.CPI*manufacturing	0.220** (0.070)		
Manufacturing	0.129 (0.083)		
L.CPI *L.CLI		0.224*** (0.052)	
L.CPI		0.019 (0.060)	
L.CLI		-0.197*** (0.045)	
L.CPI* EU_model			0.160** (0.071)
L.CPI* US_model			-0.610 (0.438)
US_model			0.130 (0.258)
_cons	0.336*** (0.033)	0.276* (0.148)	0.455*** (0.122)
Obs.	1649	1649	1649
Adj R <sup>2</sup>	0.919	0.919	0.930
Year FE	YES	YES	yes
Country-Industry FE	YES	YES	yes
Controls	YES	YES	yes

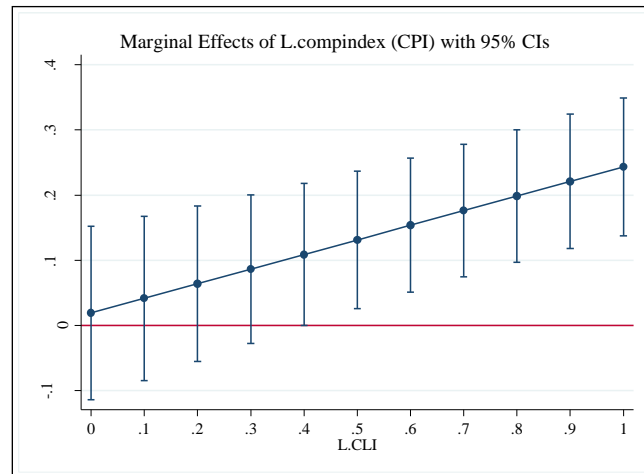
Robust standard errors clustered at country level are in parenthesis \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The L. operator stands for the 'lag' by one year.

<sup>151</sup>

In model 1 a 'reparametrized' version of the full model (including all the constitutive terms) has been applied. This is a valid praxis which applies specifically to those cases when one of the interactive terms is a dummy (0/1) – categorical variable. See Wright (1976) and Brambor (2006, pp 69-70).

The results shown in Column 2 of Table 20 seem to be in line with the hypothesis that the greater the scope of competition policy, the greater the impact of the CPI on labour share. The coefficient of the (lagged) interaction variable (L.CPI\*L.CLI) is positive and statistically significant. Figure 35 shows the predictive marginal effects of the CPI on the labour share (in the y-axis) for fixed values of the CLI (on the x-axis). As shown, the marginal effect of the CPI on the dependent variable becomes gradually bigger as the CLI increases.

*Figure 35: Marginal effects of the CPI index on the labour share, for different levels of the CLI*



Source: Author's elaboration. The graph displays the marginal effects of the CPI on the labour share for different levels of the CLI. Lower values of the CLI reflects less scope of the law.

Finally, in column 3 in Table 20, I report the model of law interaction and test how the EU and US models might interfere with the effect of the CPI on the labour share (columns 3). In chapter six, I found that countries that copy the US model tend to exhibit higher levels of income inequality. Results point towards a positive and significant effect of the CPI in countries with the EU law model, while no other significant outcome emerges for the US model groups of countries (including Canada, US and Japan only). While the positive sign of the interaction between the CPI and the EU model is expected, I was unable to confirm

previous findings concerning the US model (results are statistically insignificant). I suspect the sample size (12 countries) for this analysis is too small to infer from the correlation.

## **8.8. Summary and discussion**

The analysis suggests that competition policy, as measured using the Competition Policy Index (CPI), is negatively associated with industry markups and positively associated with the labour share. By permitting higher markups to be sustained in some industries and jurisdictions, the results suggest that weak competition policy may have contributed to higher levels of economic inequality. This is because labour income is more evenly distributed across households than capital income, and reductions in the labour share would therefore expect to impact more households than reductions in the capital share. These results hold over several specifications, using fixed effects, IV and interaction models. Several points can be drawn from the analysis.

First, the findings build on the conclusions of previous studies (Barkai 2016; De Loecker, Eeckhout, and Unger 2020; Affeldt et al. 2021) by introducing another factor that can explain the decline in the labour share. Specifically, the results indicate that a less effective competition policy may have contributed to labour share decline in some countries. Note that the positive correlation founds here is driven mostly by countries like the UK, Hungary and the Netherlands, which experienced an increase in the CPI and the labour share. From this positive correlation between the CPI and the labour share, it is reasonable to argue that a lack of effective competition enforcement (negative trend or constant trend of the CPI) might be associated with lower levels of labour shares.

Second, the results also suggest that the effect of competition policy on the labour share, and by extension economic inequality, may vary across sectors depending on the extent to which they are subject to economic regulation. Third, the results suggest that the scope of competition law (as measured by the CLI index) in a jurisdiction might positively contribute to the relationship between competition policy and the labour share. These findings correspond with the findings in the previous chapters. In terms of economic inequality, this suggests that the degree of comprehensiveness of the scope of competition laws could be associated with relative levels of economic inequality in a specific jurisdiction.

Third, the results of the transmission channels analysis are illuminating. They provide further empirical support to (a) competition law enforcement being linked with lower markups; and (b) that markups can impact the labour share. Up until this chapter, the measures used to capture actual competitiveness or market power were limited to the survey data of the GCI. This chapter provides strong evidence of a negative association between competition policy and market power (proxied by markups).

While the results provide new insights into factors that have contributed to the declining labour share and increase in economic inequality in some jurisdictions, there are three main caveats to the analysis which should be borne in mind.

First, the results only cover a single decade (1995-2005). While they are corroborated with other studies in that time horizon (Affeldt et al. 2021), I cannot exclude the possibility that the relationship between competition policy and the labour share investigated here changed after 2005. In particular, I acknowledge that a decade might not be long enough to capture heterogeneity and variation in the analysis, particularly with

respect to some variables (such as institutional variables), which vary very little over the decade. The short time horizon limits my ability to study the long run effects of competition policy that might also induce investment growth and substitution of capital and labour, reducing the labour share over time. In addition, the analysis does not allow for an investigation on any long run trends of the labour share on its own. Therefore, both the *global* (e.g., globalisation) and *local* (e.g., antitrust decline) explanations concerning the labour share are still possible. I return to this point in the last chapters.

Second, while from the three indices explored in the thesis, I considered the CPI to provide the most suitably available metric to measure competition policy, I do recognise that competition policy is, in fact, not merely a corrective tool for markets but, at the same time, it may shape or correlate with the quality of economic institutions in general (e.g., central banks). Such factors could act as omitted confounders as they are also interconnected with economic performance and labour market outcomes (Hartmann et al. 2017; Gutiérrez and Philippon 2020). I believe, however, that most of these effects are absorbed in the country-industry fixed effects.

Third, the analysis is based on aggregated industry data which does not allow us to account for labour shares among firms within the same industry. The decline of the labour share and the rise of markups has been connected to dominant firms in recent influential studies (Autor et al. 2020; De Loecker, Eeckhout, and Unger 2020). This chapter relies on industry data rather than firm-level data, and it is therefore not possible to determine to what extent these firms hold a superior technology, operate in a sector with network effects and scale economies naturally leading to a monopoly, or are benefitting from hidden or artificial barriers to entry and market power.

The analysis explored the relationship between competition policy and the labour share, to provide insights on how this relationship could have affected economic inequality. Overall, the findings supplement this literature and suggest that competition policy (proxied by the CPI) is positively correlated with the labour share. Higher levels of competition policy enforcement were statistically associated with higher labour shares at the country-industry level in 12 OECD sample of economies during the period 1995-2005.

### **PART III: POLICY IMPLICATIONS**

This part offers a novel analytical approach that may assist us in better understanding the role competition law plays or can play in distributing wealth and income. The empirical findings described in Part II allow me to revisit the debates in Part I on the possible role that competition law can play as a distributive tool for wealth and income. This analysis offers an opportunity to put forward a new terminology for the law's role. By making explicit in the terminology the difference between competition law (*pre-distribution*) and tax (*redistribution*), the different normative challenges are acknowledged as well, and more common ground can be found to develop competition law in the direction of recognising distributional outcomes.

In chapter nine, I start with a concise overview of the thesis' empirical findings. Then, in chapter ten, I develop further the distinction between competition law as a pre-distribution tool (not aimed to affect economic inequality) and a direct re-distribution tool (like taxation) which can change distributional outcomes resulting from the market mechanism of competition on the merits. In chapter eleven I consider the thesis findings and their limitations and develop possible means by which competition laws can be utilised to address economic inequality. Finally, chapter twelve concludes the thesis.

## CHAPTER NINE: EMPIRICAL CONCLUSIONS

Scholars and policymakers have long recognized inequality as a major social problem (Salverda, Nolan, and Smeeding 2009, 4-7), mostly debating how it should be handled (Stiglitz 2012; Piketty 2015; Hollanders 2015). It is increasingly acknowledged in public discourse that competition law could have important effects on inequality levels (Stiglitz 2017; Shapiro 2018) and could be one of the main contributors to income imbalances (Joyce and Xu 2019). However, the specific ways and mechanisms through which a competition law regime might interact with economic inequality remain largely unexplored from an empirical perspective. This lack of empirical understanding is arguably becoming more urgent, particularly given the acknowledged practical and political challenges in using traditional mechanisms such as taxation and public expenditure to address inequality in many countries.

I empirically investigated the relationship between competition law and income and wage inequality by incremental steps in Part II: from a case study to a large cross-country and industry studies. The findings of this part can be summarized into four main points:

First, the US case study supports the notion that competition policy, competition and economic inequality are strongly linked. The theoretical drivers for the law's effect on competition are rooted in the literature on optimal enforcement efforts. Deterrence effects are eroded over time. When the antitrust movement declined, under the push of new technologies, automation and globalisation, US markets become more concentrated and less competitive. Even the more efficient, innovative companies may become too powerful, dedicating large portions of their resources to buying innovating mavericks or blocking new entry. The rising market power of large dominant firms has translated into higher

prices and lower wages, creating a gap between productivity growth and labour compensation.

The low and middle classes are those most suffering from high prices and stagnated wages, while a small group of workers and owners pump up markups gains to the top income groups; a group that narrows down from decade to decade.

Second, countries that choose the US model of competition law over other off the shelf models such as the EU are more likely to be associated with higher economic inequality values. The ‘copy-paste’ of antitrust laws’ language is not causing economic inequality. Rather, the bias of antitrust towards self-correcting markets could be among the contributing factors. When a country copies the antitrust model, it is more likely to import such an approach or reveal itself as committing the ideological theories behind it. The institutional drift of antitrust enforcers and differences in the preferences over false-positive errors (compared with the laws of the EU) can push the threshold for intervention beyond optimal levels making competition law enforcers weak against the rise of market power in their countries.

Third, across a large cross-country data, the study finds consistent evidence of a negative, and in some specifications statistically significant, correlation between the scope of competition law and the level of income and wage inequality. The overall results of the cross-country study are inconclusive therefore require further research.

The study did discover that the relationship between competition law and inequality appears to be affected by factors such as the country's level of development and the metric used to capture inequality (e.g., income or wages). The study offered some conjectures as to why each of these different factors could affect the results obtained. Specifically, I find

that the correlations between competition law and pre-tax Gini indexes across countries are stronger. As such, the potential benefits of competition law in reducing inequality, which are captured by changes in the gross Gini, might be negated, amplified, or even cancelled out, by the taxation and expenditure regimes adopted in a specific jurisdiction; such that the net Gini (post-tax) does not show any conclusive correlation with competition laws.

Although the overall results suggest that the effect of competition law on inequality is generally small and not always significant across all specifications, it does not necessarily appear to be immaterial when considered alongside some of the other standard inequality drivers.

The analysis of the two competition law indices (CLI, GCI) presented in chapters six and seven does not show causality. However, it supports the intuition that legislation and enforcement of competition law may be associated with reductions in inequality. As the independent variable (the measure of competition law) is not a random phenomenon, I recognise that omitted variable bias could be affecting the estimations. In other words, the correlations could reflect uncontrolled heterogeneity arising, for example, from institutional differences between countries rather than differences in competition laws.

Fourth, I explored more disaggregated macroeconomic data at the industry level for twelve OECD countries with the previous lessons in mind. I examined whether changes in labour share are related to changes in the effectiveness of competition policy (measured by the CPI) and found consistently strong results (chapter eight). At the industry level, the correlation between competition policy and markups is negative and statistically significant, while the correlation between markups and the labour share is negative and statistically significant. The two chains in the transmission process led to the positive

association between competition policy and the labour share. The labour share reflects the systematic ‘winners and losers’ of our economy. In broad terms, when prices rise, and labour compensation is stagnant, markups will rise together with profit rates (via the biggest and most productive firms). When this happens across industries, we would expect the national labour share to shrink. In such circumstances, low-skilled workers (low and middle classes) will systematically receive a smaller share of the profits, while a small group of high-skilled workers of firms and their owners will benefit from the fruits of progress.

In most countries studied in chapter 8, I observed a stagnant competition policy (competition law enforcement evolved at a slower pace in relation to market activity). Given this observation, competition law could be one of the reasons why in some developed countries, the labour share is declining, while inequality is rising. In other words, the potential benefits of competition laws to constrain these trends were not maximised equally in all the countries.

Finally, the thesis’s results suggest that a very high level of data aggregation (at the country level) might not be the most suited way for revealing the relationship between competition law and economic inequality. Undoubtedly, more can be done to understand and appraise the links between competition law and inequality. Still, these results offer a first empirical insight using comprehensive cross-country panel datasets of the nature and extent of the link. These findings alone merit further and more detailed analysis about the exact transmission mechanisms which could link the different attributes of a competition law regime with economic inequality. More empirical work is needed on the firm level. Besides, investigating the effects of specific competition law decisions ex-post is important

as well. Such a micro approach could connect consumption data to different industries or sections to better account for the possible heterogeneous effect of enforcement decisions on consumers (e.g. Ganglmair, Kann, and Tsanko 2020).

The initial empirical findings allow me to move on to the more practical and policy focussed part of the thesis, debating how competition law can suppress economic inequality. First, I present the two avenues for competition law: pre-distribution and re-distribution. Then, I develop five possible directions for research and policy.

## CHAPTER TEN: PRE-DISTRIBUTION VS RE-DISTRIBUTION

Economic thinking and scholars have been heavily criticized for avoiding distributional questions (Lianos 2018) in the analysis of competition policy. In his book, *Economics and Reality*, Lawson goes much further and argues that both theory and methods of the economic discipline are flawed from the roots due to their limited ability to study stable regularities when economic reality is often irregular (Lawson 1997; Ormerod 1997). Appelbaum (2019), like many others before him (Fullbrook 2004; Klein 2006), argues that economics is not the unbiased, data-driven science that it claims to be.

In the two parts of the thesis up until now, I have tried to challenge some of the basic working assumptions of lawyers and economists debating the role of competition law in influencing economic inequality. As I see it, the main problem is that economic conclusions and arguments were used in the political and legal sphere to promote a narrow point of view when the subtleties of economic analysis were lost on the way. We need to acknowledge the limitations of the methods and encourage a careful interpretation of the results.

This thesis attempts to address the economic inequality problem in this spirit, widening the scope of economic debate, applying economic research methods, and recognising the tools' limitations without avoiding the normative questions.

To contribute to this, I offer a new terminology that distinguishes between two main avenues for competition law to advance equality considerations. The first, 'ancillary', avenue concerns the effect competition law enforcement generates through the promotion of greater competitiveness. The second avenue is a 'direct' approach, which relies on

provisions that address inequality as a parameter influencing the conduct's substantive assessment. These provisions can include general references to the law's goals or unique mechanisms for transferring wealth. The use of this terminology helps emphasise the normative challenges each avenues faces. The debate I found in the literature has hardly made such distinction, putting together ideas that rarely challenge the normative core of competition law, next to suggestions that can alter altogether the way anti-competitive acts are judged.

In this chapter, I will elaborate on the normative considerations for these two avenues. In the next chapter, I will take a practical approach drafting a few possible ways to move forward.

### **10.1. Pre-distribution – via competition – effects on inequality**

As I explored in Part I, it has been argued that greater competition law enforcement would support market competitiveness and reduce economic inequality. Stiglitz notes: 'While market power has long been front and center in competition policy, recent advances have, as we have noted, provided new arguments for the importance of attacking it. It leads to inequality, and inequality leads to poorer economic performance, including lower growth and more instability' (Stiglitz 2017).

However, *competition* effects on inequality do not automatically imply that *competition law* enforcement reduces inequality. Intuitively it should. The core of this thesis focused on this intuition. The working assumption of most legal scholars, who argue for the use of competition law for promoting greater equality, seems to find some empirical support in this thesis, as summarized in the previous chapter. However, it can argued (e.g.

Stucke and Ezrachi 2020) that too much competition, in a specific context, could also be detrimental to societal change.

Moreover, competition policy is not always successful in protecting competitive markets. Like other rules and regulations, it can harm competition or cause negative externalities. In other words, in both levels of the causal argument, more needs to be done to provide robust evidence to support the greater use of pro-competition tools, such as competition law, to advance equality.

The role of competition law, in this case, is not conditioned on the normative scope of the law (the presence, or lack, of specific provisions aimed to promote fairness or equality). Suppose we accept the principle claim that more competition will result in lower economic inequality. In that case, countries can effectively utilise the competition toolbox – mostly merger control, enforcement against anti-competitive agreements, enforcement against abuse of market power and advocacy efforts – to reduce economic inequality.

I refer to this interface as *pre-distribution* as it is aimed at affecting the disposable income of individuals via prices and wages. We can harness competition law to change distributional results without changing the main substantive analysis.

The main normative arguments reviewed in Part I, which supports the exclusive use of taxation policies as a superior legal tool to advance equity concerns, are irrelevant for competition law as a pre-distribution tool. We are no longer referring to the ‘double distortion’ argument (work-leisure and care-level distortions) coming from law and economics (Shavell 1981) as we are at a pre-income-tax stage and are not adjusting (distorting) the substantive analysis under the law.

The main advantage of competition policy is that it can change market results without the distorting influence of tax and transfer policies. If market outcomes create a more equal society, the tax system will be less needed and create fewer distortions. When competition law works effectively, it operates in large numbers, untargeted, when the expected effects on low and middle classes offset the potential benefits' spillover to the highest income levels.

When debating the use of competition law for advancing equality via its effects on competition, the main concern is the possible chilling effect of competition enforcement. Competition laws can create a dead-weight loss by limiting competition and innovation (i.e., affecting firms' incentives). This distortion effect is equivalent to the *care-level distortion* in the Kaplow and Shavell model, referred to in previous chapters as the false-positive error or over-deterrence problem.

Competition policy, under such view, might prevent 'pie-expanding' competition for market shares via the tendency of enforcers to punish innovative, cost-reducing efficient behaviour. The discussion is related to the sources of market power: 'good or bad' concentrations? Competition law is tasked to determine to what extent dominant firms either hold a superior technology, operate in a sector with network effects and scale economies naturally leading to a monopoly, or benefit from hidden or artificial barriers to entry and market power. Such judgments are made on individual cases by competition agencies and courts.

In terms of efficiency of distortion, the relevant comparison under the first avenue is between the potential distortion of taxation (to provide optimal incentives to work) vs the distortion of competition law (to provide the optimal incentives to compete and

innovate). Going back to the debate in Part I, I believe there are good reasons why society should not rely on taxation alone. Moreover, considering the striking data on the rise of markups, it seems reasonable to assume that, if anything, competition law is in an under-deterrence status quo. According to this proposition, anti-competitive activity goes on without being detected and challenged. Therefore, increasing the intensity of competition law enforcement will bring us closer to the optimal incentives to compete and innovate.

In this one-on-one (distortion) comparison I do not see a reason to a-priori prefer a tax over competition law and therefore I will suggest developing competition law, without changing the substantive analysis of anti-competitive behaviour, in order to effectively reduce economic inequality and poverty.

Again, this does not mean that competition law is working in its optimal capacity. The empirical observations, summarised in the previous chapter, support the notion that competition law enforcement has, in many ways, failed consumers and workers. It failed its greatest role to encourage greater competition, constrain markups and markdowns. It is part of the problem, and debates will continue on how to fix it. My inquiry is a first step in filling the gap concerning the empirical distributional effects of competition law. Future research should focus on the context in which competition law might promote competition and inequality using different datasets and methods.

However, many would argue that using competition law as an ancillary way is not enough. This point leads me to the second avenue which competition policy can take.

## 10.2. Redistribution – direct provisions targeting inequality

The second role competition law can play concerns the competition rulebook's direct provisions to advance equality as part of the law's enforcement; for example, when the legislator incorporates in the law specific references or goals related to equality, or more widely, to fairness. I see this as a tool for direct redistribution as it requires the policymaker to deviate from what would be otherwise considered pro- or anti-competitive. So, in other words, the second avenue may alter the substantive analysis adding another dimension to the analysis of what is considered unlawful under competition policy.

One example is South Africa, where the Constitution requires affirmative action to empower historically disadvantaged groups (Constitution Sec. 9(2)). The Competition law in the country (Competition Act of 1998) directly includes inclusiveness as a relevant value (Fox 2000) and aims to encourage: 'greater spread of ownership, particularly to increase the ownership stakes of historically disadvantaged persons'.<sup>152</sup> Such examples are most common in countries attempting to rise from colonial and discriminating regimes (Fox 2000; M. Gal 2019).

Putting the South Africa case aside, competition law's role is usually set in the act's goals, but without specific provisions to transfer resources between individuals. In some cases, general values could still be utilised to address rising inequality as debated in Part I of the thesis, like social contract or fairness theories. For example, the EU competition law reference the value of fairness,<sup>153</sup> via 'unfair pricing' can be applied and developed in light

---

<sup>152</sup> The Competition Act 1998, South Africa. Available at: <https://www.gov.za/documents/competition-act>.

<sup>153</sup> Article 101(3) TFEU; Article 102 (a) TFEU.

of wider policy concerns.<sup>154</sup> In South Korea, competition law promotes, among other goals, the balanced development of the national economy by encouraging fair and free competition (Yang 2009).

The inclusion of parameters such as fairness and equality in the competition provisions or their interpretation is controversial, to say the least. The normative debate on the adequate scope and purposes of competition laws and the formulation of intervention benchmarks is as old as competition law itself as was explored in the case of US antitrust history in chapter five. In any case, the following debate emerges on the extent to which competition policy should seek to encourage distributional outcomes in practice. Moreover, how should competition law enforcers balance the different goals of the law (hierarchy within the law values)? Efficiency and distribution can go hand in hand, but not always.

If one is only interested in the ideals or a narrow definition of their applications, incorporating economic inequality under the goals of competition laws could be simple, or simply empty talk. However, we can consider more experimental approaches such as providing specific procedural rules prioritising claims that are more likely to affect economic inequality adversely. Another option would be to change the threshold for intervention according to such cases. As we go further away from the core use of competition law to promote competition, the risk of creating distortions to competition increases. Let us consider the meaning of walking down the more experimental path.

---

<sup>154</sup> Article 9 TFEU refers to ‘the promotion of a high level of employment, the guarantee of adequate social protection, the fight against social exclusion, and a high level of education, training and protection of human health.’ See also Article 12 TFEU; Article 38 Charter of Fundamental Rights of the European Union (2000/C 364/01).

Maybe the most extreme example I can think of (similar examples are debated in the context of sustainability) is a ‘robin hood cartel’. In a short article Schinkel (2021) argues that competition law to advance social goals may backfire quickly in circumstances of a trade-off between the classic goals of the policy and equity concerns. For example, competition authorities may be convinced to allow a merger that protects low-skilled workers, even though it creates market power or allows horizontal cooperation between competitors if it benefits lower-income groups at the expense of wealthier individuals (via price discrimination, for example). Competition authorities, in such circumstances, may be inclined to allow the build-up of market power in return for a redistribution of wealth from the rich to the poor. A few scholars seem to support such use of competition law (Lianos 2020; Waked 2020). More broadly, such use may also be consistent with Gal’s and Fox’s vision of competition law. The notion is not purely theoretical and may even find a legal basis under the EU treaties (Schinkel 2021, 3).

Using a simplified model, Schinkel argues that using competition law in such instances, employing a Kaldor-Hicks criterion of total consumer welfare (as, e.g., Gal 2019 suggested) will be inefficient, helping the poor very little at a large cost to society as a whole (Schinkel 2021, 19). The basic insight from this model is that rent-seeking behaviour is inefficient even if a sub-group of consumers (in this case, the low-income) is made slightly better off. In this regard, the point is intuitive;<sup>155</sup> it is hard to escape the inefficiency of a Robin Hood cartel – because it is a cartel. Using more sophisticated models will not

---

<sup>155</sup> The weighing of welfare essentially allows a redistribution agreement to discount its inefficiency losses on the rich, so that it can compensate the poor, despite wasting total welfare.

change that. Most of these models rely on similar assumptions concerning the utility function, demand curves etc.

Note that a Robin Hood cartel is still a pre-tax mechanism as it is a direct transfer between individuals before the tax system comes into action (as opposed to compensation for anti-competitive harm). So, this inefficiency could still be compared to the dead-weight loss of an alternative mechanism, i.e., taxation. Nevertheless, it is a direct tool for distribution by my interpretation, as it alters what is considered anti-competitive by the law.

The key difference between the first and the second avenues is the possible contradictions in following the law's goals. Under the first avenue, any inefficiencies resulting from the application of competition law is accidental; cases of over deterrence and false-positive enforcement activities. In the second avenue, the distortion is guaranteed by default, and as argued by Schinkel (2021, 19), quickly becomes significant in size.

Moreover, under both avenues, the inefficiencies should be compared to the dead-weight loss of the work-leisure distortion (tax).<sup>156</sup> But under the second avenue, there is a potential for a double distortion resulting from the use of competition law as a direct redistribution tool influencing both optimal incentives to compete and innovate, and the consumer's incentives to seek income (for example via higher levels of compensation) if his level of income is taken into account. To make this problem concrete, I will provide an

---

<sup>156</sup> Just as a comparison, a well-known study suggests that the dead-weight loss of taxation can reach up to one-third of each marginal tax dollar (Ballard, Shoven, and Whalley 1985). Ballard et. al., refer to the marginal, not the average, cost of funds, which is the relevant comparison (Auerbach and Hines Jr 2002). So, yes, there is some legroom.

example for such circumstances in the next chapter (under section 11.4 compensations and damages).

Some competition regimes can utilise specific provisions aimed at fairness and equality, turning the competition tool into a flexible instrument. When these provisions are applied, they may well support an equal society; they may as well not, if distortions are significant and enforcement costs are high. If one argues for the use of competition law in this way (i.e., direct redistribution), the minimum burden of proof requires them to put forward a theoretical argument as to how the conflict will promote not only economic equality but the broader mandate of the law: competition, growth and innovation; or in cases of contradiction (such as the Robin Hood cartel), arguing that the trade-off is still efficient enough.

To summarise the debate over the two avenues, as I have argued in this thesis, the main advantage of competition law vis-à-vis taxation is its pre-distribution element and its potential to affect large groups of consumers from the low and middle classes by its general unspecified effects. Practically competition law is not designed to identify low- or middle-class individuals. Even if such information is easily attainable, competition authorities usually do not have the procedural tools to transfer back lost markups or markdowns to the consumer or employee – efficiently. It will also be costly to enforce the boundaries of a robin hood cartel, for example, making sure the agreement keeps to its original purpose. My suggestion is to use competition law as an addition to the taxation and welfare system, not instead. Society should still aspire to create optimal tax regimes that redistribute income and wealth to the most needed individuals in modern societies, such as the elderly, the sick and the poor.

As I do not have specific examples which were empirically studied on which such arguments can be tested, this debate is constrained to abstract and theoretical notions and is, by definition, more experimental. I provide some examples in chapter eleven and debate what I see are the immediate limitations. However, without examining the potential implications of such trade-off between the law's goals closely, the main conclusion of the thesis is that the primary use of competition law should be via its effects on competition dynamics, ensuring the benefits of competition and innovation. The way I see it, the task is putting competitive law enforcement back on a sustainable path, becoming part of the solution to the current inequality crisis.

## CHAPTER ELEVEN: COMPETITION LAW AS A DISTRIBUTION MECHANISM

The main insight of the thesis is that competition policy is an important policy for social change. Acknowledging the linkages between competition law enforcement, markups, labour share, and economic inequality is a strong argument favouring effective competition law enforcement. To put this simply, enforcement actions by well-resourced agencies that target anti-competitive activities support greater competition in the markets and are likely to generate a positive effect by helping to reduce the economic inequality gap. As long as an adequate level of intervention is observed, more effective enforcement will result in more competition and less inequality (Ezrachi et al. 2021). At this level of generalisation, the effects of competition enforcement on economic inequality are treated almost as a by-product – welcomed effect, which may support investment in enhancing the competition regime and its effectiveness. The literature concerning the needed reform in competition laws, specifically in digital platforms market power, is overwhelming. The main policy focus should be putting competition law back on track to constrain markups and market power.

Having acknowledged that, this chapter explores further actions that can be used to focus the benefits of competition law enforcement to the low and middle classes.<sup>157</sup> Rather than celebrate the potential effects as incidental by-products, could we utilise competition enforcement and form an additional path for societal change? Such strategic leveraging may take different forms, and I explore various possibilities below, drawing examples from

---

<sup>157</sup> Some of the suggestions made in this chapter (1, 3 and 4) were mentioned in a recent paper by the research group and archived at SSRN (Ezrachi et al. 2021). Yet the suggestions made here reflect the opinion of the author and are not identical to ones presented by the group. They were developed independently of the group effort.

other areas of policy where similar approaches are being adopted as part of a wider recognition that many tools are needed to address the extremes of inequality. In addition, I add two more tentative suggestions for future research and the possible use of competition law as a direct redistribution mechanism. These two suggestions involve a change to the substantive analysis of compensation, damages and the welfare criterion of the laws.

### **11.1. Setting priorities straight**

Maybe the most cited proposal in this regard is prioritising enforcement efforts based on the likelihood of their distributional effects. Such an approach, which could include inequality among the relevant parameters affecting the choice of cases, could help utilise the competition law lever to support competition while targeting areas of inequality (avoiding the main trade-off between the goals). It will require an adaptation of the lens used by competition agencies when they review complaints and possible cases they may pursue. As competition agencies consider how to best utilise their limited resources in their quest to protect consumer welfare and market competitiveness, inequality can form part of the equation.

In practice, case prioritisation is already taken place by many authorities around the world. However, prioritisation is not always the result of a precise or structured process but may intuitively address inequality concerns. To the extent to which they can, some agencies may do so informally, as they focus on issues that most citizens worry about or seek to justify their budget request by showing a wider impact on the average consumer or community. Indeed, many investigations by competition agencies have focussed on food, energy, transport, healthcare and retail products and services.

Another reason to prioritise cases is the differentiated behavioural response (engagement in the market) of low-income and high-income consumers. Researchers have found that scarcity, among other factors, affects consumers decision-making process (Dohmen et al., 2010; Shah et al., 2012). It was shown that resource scarcity might affect decision making in several psychological mechanisms: risk preference, present bias, increase attention to scarcity-related concerns and prioritize the scarce resource over other less relevant factors (Mani et al., 2013; Fernbach et al., 2015; Cannon et al., 2019). For instance, advertisements that signal a limited time to buy a product is more likely to affect low-income consumers. A competition agency might choose to take a case to deter strategies that target low-income consumers in the hope to create spillover effects in other industries which follow similar techniques.

The vulnerability of consumers was also recognized by competition authorities such as the Competition and Markets Authority (CMA) in the United Kingdom.<sup>158</sup> Analysis by the CMA in the energy sector suggests that vulnerable customers were more likely to see higher potential gains from switching suppliers, indicating that they are more likely to pay higher energy prices.<sup>159</sup> Prioritising a case due to the unique strategy of abuse of dominance (e.g. creating switching costs) could, in such cases, offer potential benefits to vulnerable consumers. One example might be false price comparison methods (e.g., creating a facade of comparison between competitors).

---

<sup>158</sup> Consumer vulnerability: challenges and potential solutions (2019) <https://www.gov.uk/government/publications/consumer-vulnerability-challenges-and-potential-solutions/consumer-vulnerability-challenges-and-potential-solutions>.

<sup>159</sup> <https://assets.publishing.service.gov.uk/media/5773de34e5274a0da3000113/final-report-energy-market-investigation.pdf>

The inclusion of inequality in prioritisation consideration may necessitate distributional judgements, but not such which affect the analysis of the anti-competitive activity. Such an approach can increase the added value generated through the enforcement action and, in so doing, help to achieve what is presumably one of the aims of competition policy – promote the overall welfare for a larger proportion of a community. For example, suppose that a competition authority is faced with a choice between investigating two cartels that would involve similar resources and yield similar benefits (in terms of savings to consumers) but have different distributional consequences (one action would save lower-income households more income in relative terms). In that case, the authority might choose to prioritise the investigation into the cartel that impacts low-income consumers since a dollar worth of savings for low-income households is worth more than a dollar of savings for high-income households.

It is important to note that the formal inclusion of inequality as a parameter for prioritisation does not override other considerations. It requires an ongoing balancing act that should not result in the ‘abandonment’ of investigations in sectors that serve higher-income customers. It requires long term planning of enforcement efforts. Not just reacting to complaints, but putting on the agenda market studies, investigations and pro-active elements to avoid unintended signalling, which encourages anti-competitive activity in areas less enforced. The best example is the signalling to labour markets that I explore in the next sections.

One way to move forward is by developing metrics that would estimate the market power generated by an anti-competitive effect and incorporate the potential impact of such activity on different income levels of households. Such an example was offered by

Ganglmair, Kann, and Tsanko (2020). Classic measures of markups (used in this thesis) treat different industries and sectors equally, ignoring how relevant they are for consumers. Ganglmair et al. propose a markup measure in which firm-level price markups are weighted according to consumption expenditures in the respective industries. Matching consumption categories (otherwise used to calculate consumer price indices) with the firm's industry classification, the authors report results for Germany for 14 years (2002-2016). Their consumption-weighted price markups are higher than the conventionally reported revenue-weighted markups, showing a faster increase, particularly for medium-income households (middle classes). These findings highlight a central claim in the thesis: the importance of competition law for the squeezed middle classes and its potential role in shaping past inequality trends.

Overall, such techniques can provide guidance and structure for setting priorities straight alongside ex-post research on the impact of competition enforcement activities.

## **11.2. Model of law insights**

Chapters five and six of the thesis analyse the case study of the US and empirically compared countries that adopted US antitrust text into their competition laws with countries that used the EU terminology of the law. While these two studies are mostly descriptive, they suggest that the antitrust approach since the early 1970s could have resulted in under-deterrence. The stagnated antitrust laws, combined with an institutional drift of the Supreme Court and the public enforcement authorities, could have exacerbated cross-country trends of the rise of market power, declining labour shares and increasing economic inequality. These findings are consistent with the work of Gutiérrez and Philippon (2020).

However, the results in chapter eight could be seen, at first glance, as inconsistent with the findings on the US. While the early chapters celebrate the differences between the EU and the US, the findings of the cross-industry study show that the trend is possibly broader, relevant to developed economies, not only the US. So, in that aspect, it would be naïve to argue that antitrust in the US should be completely reformed or made more similar to the EU model.

However, the results of chapter eight do not confirm or refute the global explanations for the possible decline of the labour share in some countries. The study is based on a short time span (one decade) and cannot provide cutting evidence to answer this open question. From my perspective, the picture is complex, with both *global* and *local* explanations affecting the labour share and inequality across countries. Trends observed for the US exemplifies the potential links between competition law, competition and inequality. Despite being a broader phenomenon, the rise of markups is shown to be the strongest in a small group of highly developed economies, among them the US and countries that follow its market philosophy (see figure 15). Some studies that explore the trends over leading EU countries show that overall the rise of market power (measured by concentrations levels or markups) and decline of market dynamism is less dramatic than the trends observed in the US (Cavalleri et al. 2019; Bajgar et al. 2019; Weche and Wambach 2021).<sup>160</sup> Concerning the decline of the labour share, evidence is still mixed when some authors even argue against the global decline of the labour shares (Gutiérrez

---

<sup>160</sup> An exception for that is the study by Ennis, Gonzaga, and Pike (2019, 529), who finds excess markups for France, Germany, South Korea and Spain which are almost twice as much as estimates for the US and Japan for example.

and Piton 2020). Most likely the global and local forces identified in the literature are operating at different magnitudes and times across countries.

The empirical analysis of the model of law relies on factors that are mostly not exogenous. In other words, omitted variable bias could affect the results. For example, there may be missing variables such as market ‘ideology’ related to the model of law chosen and, simultaneously, to the market outcomes. It is hard to disentangle the effects of broader ideological influences from the effects of the antitrust regime.

Thus, what can we learn from the model of law analysis? At the minimum, if the antitrust text is nothing more than a proxy for a *laissez-faire* ideology (ideology more favourable of market operation), countries following such an ideological approach may also be the ones that experience greater degrees of inequality. This is already an important observation concerning market mechanisms. The efforts to find a link between competition law and other macro-economic performance factors (e.g., growth) have long had substantial difficulty achieving compelling results, so it is not surprising to find a similar difficulty with relation to economic inequality.

Taking another step forward, the greatest differences between the EU and US models are related to the framework of enforcement, i.e., the institutions of the antitrust and competition law regimes. One of the most striking data points reviewed in this thesis was the decline of public enforcement efforts in the US, especially the Section 2 cases of monopolisation. This decline of public enforcement efforts, as discussed in the legal literature, was connected to the rise of the Chicago school thought and the drift of the US Supreme Court. Without going into the debate on the merits of this school of thought, I believe it is important to note the difficulties of public enforcement bodies in the US, in

picking up the pace ever since the early 1970s. Change to the operation of antitrust laws was almost impossible after the Chicago School.

If optimal levels of enforcement are the aim, a system should be allowed to change over time, to be dynamic enough to respond to the markets. Ideological movement, research in economics and societal preferences should be allowed to influence the way and magnitude in which laws, and maybe especially competition laws, are enforced. It is almost unreasonable to think that the same legal and economic tools used in antitrust almost 50 years ago are still implemented in courts these days. In the United States, the Supreme Court holds the key to the antitrust regime, while in other countries, it could be a public governmental body. It might be that the latter is more suitable to adjust to changes. The reasons could be constitutional, political or other, but in the end, the framework in the US has failed to produce the flexibility required from the system as a whole. As lawyers, we are trained to argue for stability and certainty of the law; yet markets are dynamic, and the law cannot stay so much behind. In every country, regardless of its constitutional background, the evolution of the law should be the aim. Otherwise, every few decades, a revolution is needed. The slow parallel development is a healthy process for competition laws, much more than big revolutions. The complexity of issues and tools requires caution. It is too soon to say whether the rebirth of antitrust is needed and if we are heading towards a true revolution in the US.

### **11.3. The new role of competition law in labour markets**

As reviewed in chapter eight, since the early 1980s, the link between productivity growth and real increases in wages appears to have declined (Karabarbounis and Neiman 2013; Dao et al. n.d.). It has been argued that companies are sharing less of the gains than they

previously did (Bell, Bukowski, and Machin 2018) and that this is partly a result of rising market power (De Loecker, Eeckhout, and Unger 2020), at least for a few countries. The decline in the labour share and the rise of market power are affected by changes in labour market competition in both demand (employers) and supply (workers). Employers who enjoy (labour) market power can set wages below workers' marginal revenue product of labour (A. Krueger and Ashenfelter 2018; Starr, Prescott, and Bishara 2018). In principle, this might suggest a role for competition policy in tackling employer market power (monopsony) (Baker and Salop 2015) in labour markets where it has the effect of suppressing wages and, as a consequence, reduces the labour share.

While other factors, such as de-unionising the workforce, affect the bargaining power of the labour force, *anti-competitive* behaviour in labour markets could also contribute to the observed wage stagnation. For example, non-poaching agreements or information sharing via third parties could result in a cartel-like outcome pushing wages below productivity levels (mark-downs).

The fact is that in most countries, workers are exempt from competition policy, but employers are not. Still, competition policy is rarely applied in labour market settings. Anti-competitive behaviour to suppress wages, as documented recently, was always illegal but only lately enforced.<sup>161</sup> Similarly, while mergers can change managers and employees' bargaining power and affect rent-sharing (Majumdar, Moussawi, and Yaylacicegi 2019), they are only rarely reviewed by competition agencies (Marinescu and Hovenkamp 2018).

---

<sup>161</sup> The Antitrust Division of the Department of Justice (DOJ) declared its plan to criminally prosecute collusion in labour and employment markets when it announced on December 10, 2020, its first wage-fixing prosecution, charging the former owner of a Texas home healthcare staffing agency with violating Section 1 of the Sherman Act by participating in a conspiracy to suppress rates for physical therapists and physical therapy assistants. See <https://www.justice.gov/opa/pr/former-owner-health-care-staffing-company-indicted-wage-fixing>.

Initially, in the US, for example, attention was focused on high tech employees;<sup>162</sup> newer evidence supports the claim that such anti-competitive acts are much more widespread than thought in the past (Krueger and Ashenfelter 2018).

The findings of chapter eight show that the decline in the labour share (and by extension, an increase in economic inequality) was greater where there was weaker competition policy, lower levels of labour protection, and limited labour bargaining power. This interaction between competition policy (which focuses on the product market (prices)), labour policies and institutions (labour bargaining power and wage-setting) illustrates how these forces jointly contribute to the competitive environment, labour market outcomes and economic inequality. They also emphasise the effects of market power on the working middle classes. When strong labour institutions are in place, the need for competition policy to control excessive markups is reduced as employees can use their bargaining power in labour markets to call for higher wages, reducing markups. However, where the bargaining power of labour is weak, or there are inadequate employment protections, this provides scope for firms with market power to increase markups by lowering wages. The task, therefore, falls on competition policy alone to constrain markups. In the context of inequality, this suggests that competition policy may have a greater role to play in reducing economic inequality in jurisdictions with weak labour laws or limited labour bargaining power.

<sup>162</sup>

---

<https://www.justice.gov/opa/pr/justice-department-requires-six-high-tech-companies-stop-entering-anticompetitive-employee>.

These findings, connecting competition policy and the labour share, call for a whole new approach concerning labour markets. However, similar voices in the debate were heard for the last five years (in the US) and more recently in the EU.

One may rightly ask, why are we not moving forward on this topic? I believe the reasons for the delay are both ideological and practical. For many lawyers and economists, using competition law to advance labour rights seem as an overstep on the territory of labour protections laws. While contradiction might rise, I do not see any justifications to protect the cartels (e.g., non-poaching agreements) and switching barriers methods (e.g., non-compete clauses) that have spread in the last decades in developed countries like the US. Going down that path will lead to potential overlap and require more legal and economic thinking to set the right boundaries. Nowag (2016) provides a good example of the potential overlap between labour protection and competition law, analysing the case of Uber in the US. Nowag argues that the Uber business model, which presents drivers as independent contractors (accepted by a few states in the US), could result in a ‘hub-and-spoke cartel’ organised by the tech giant. Uber profits from the fixing of the driver’s prices, using a computer algorithm. Uber’s fees are depended on the prices, making it a direct party in the cartel. In the last five years, Uber has fought and won an antitrust price-fixing case in New York (*Spencer Meyer v Travis Kalanick*, 15 Civ 9796; 2016 US. Dist. Lexis 43944) on similar grounds. The case was finally won in arbitration in 2020, but left many open questions for the future related, specifically, to issues of the ‘Gig Economy’ and antitrust.

This leads me to practical challenges. While the economic analysis of labour markets is a mirror image of the classic micro model, the legal treatment of these markets

is lacking. Further research in the legal sphere is required to build the legal apparatus for analyzing new theories of harm. For example, can a court analyze a claim for unfair, excessive markdown? And how? Relying on the doctrine of excessive price could be a start, but it will need to be adjusted to a wage-setting power. Again here, the clash with labour protection (minimum wage laws) is immediate and will need to be addressed legally. More legal thinking on such topics is required and relying on the economic theory alone will not do.

In the economic sphere, more research is needed to establish the connection between the ‘working poor’ phenomenon, for example, and market power. With wage-setting powers in the EU and US, multinational companies like Amazon might be creating focal points stabilizing wages from reacting to rising profits. The Amazon battle over the minimum wages in several countries like the US and Germany is just an example.<sup>163</sup> The spillover effects of their behaviour could affect other low-skilled workers as well. Studying the competitive dynamics of labour markets is key to understand the gap between productivity growth and compensation.

In future work, I plan to inquire into the effects of competition on rent-sharing decisions. As I explored in previous chapters, empirical findings suggest that market power (lack of competition) is associated with lower rent-sharing. I am interested in managerial decision making and the dynamics of employee-employer under competition pressure. The connection between decision making in social dynamics is robust, but the effects of competition on rent-sharing decision making by managers are mostly unexplored.

---

<sup>163</sup> See in Germany <https://www.equaltimes.org/amazon-germany-the-low-price-and?lang=en#.YOLUWegzZnJ> and the US <https://www.bloomberg.com/news/features/2020-12-17/amazon-amzn-job-pay-rate-leaves-some-warehouse-employees-homeless>.

## 11.4 Compensations and damages as a direct tool for redistribution

So far, I have discussed three suggestions, which relates to prioritisation and competition law evolution. In short, competition law as a pre-distribution tool should be aimed at the low-medium workers; it should be adjusted to deal with prices in essential goods and consumption of the low and middle classes and wages setting powers of monopsonies and multinational giants. However, can competition law offer more for specific victims of market power from the lowest income levels? Can competition law help vulnerable consumers? Note that vulnerability does not end with income levels. Age, experience in the online environment, or computer savviness could, for example, create vulnerability in middle-upper classes as well.

### (a) Targeted compensations

One way competition law enforcement may enhance its role in reducing poverty may be through targeted compensation. A hybrid mechanism that will enable the competition agency to impose a fine and award a certain form of compensation to the injured class at the end of a public investigation. Such compensation may be in cash transfer or in-kind benefit, which is similar to a tax benefit.<sup>164</sup> This tool, in comparison to the previous suggestions, may *target* specific individuals. It could also be used to compensate a group with sufficient nexus to an antitrust violation. For example, in Israel, the competition agency initiated criminal charges against a group of leading bread makers who cartelised

---

<sup>164</sup> There is longstanding debate about the different effects of cash-in versus in-kind (noncash) transfers in terms of consumers and social welfare. Some argue that cash-in transfers might be better and more efficient in terms of welfare gain and for redistribution purposes, as they do not constrain the behaviour of the beneficiaries recipients (Aaron and Von Furstenberg 1971). Conversely, others argue that in-kind transfers are superior in certain settings because they may interfere less with the labour supply (incentive to work), can lead to an increase of the supply of goods as well, by eventually decreasing the level of prices (Cunha, De Giorgi, and Jayachandran 2019).

to raise the prices of their products.<sup>165</sup> In such cases, groups of harmed consumers could be targeted via discounts based on actual consumption or an estimation based on location (such data is usually attainable).

Ezrachi and Ioannidou (2012) explored targeted compensation as a mechanism that can support, and supplement damage claims due to limited private litigation and shortcomings in collective redress. Public enforcement could be deployed to promote some of the objectives traditionally linked to damages actions in national courts. In their study, they suggest that targeted compensation goes hand in hand with private claims for damages. Although not common, there are numerous examples of instances in which public enforcement has resulted in payments or refunds to the complainant or the injured class. Some are embedded in law,<sup>166</sup> while others are in practice. For example, in the UK case of *Independent Schools*, the OFT found that the information exchange agreement between 50 fee-paying independent schools on future pricing constituted an infringement of competition laws (Ezrachi and Ioannidou 2012, 540). The defendants accepted the infringement claim on their part and made an ex-gratia payment amounting to £3 million in total to a charitable, educational trust, benefiting those who attended the schools in the relevant period. Another example closer to the concerns for equality (and essential goods) can be found in the recent case of gas suppliers in the UK who charged excessive prices and were ordered to refund their victims. The approach has also been adopted in some regulated sectors where firms that breach regulations – including requirements to treat

---

<sup>165</sup> <https://en.globes.co.il/en/article-1000780640>.

<sup>166</sup> Note for example the Voluntary Redress Schemes framework in the UK – CMA Guidance on the approval of voluntary redress schemes for infringements of competition law.

customers fairly – and are required to refund and compensate consumers directly.<sup>167</sup> In some cases, additional penalty payments have been given to charities that work with vulnerable consumers.<sup>168</sup>

Targeted compensations are justified as a tool for corrective justice and advancing equality in cases related to vulnerable consumers or essential goods. The targeted compensation may enable the competition agency not only to prioritise cases, as was suggested, which can help address the inequality gap, but also offer corrective measures.

This form of corrective justice, compared to damages, may be of significance, in particular, in cases that address the inequality gap. Those cases often concern injured parties that are less likely to obtain effective relief through damage claims. Difficulties with access to justice and shortcomings of possible class actions support such an approach.

The transfer of value to the class or individuals in these cases is likely to have a distinct impact on available income and economic inequality. A key question, not fully addressed by Ezrachi and Ioannidou (2012), is how much? When a case has been prioritised due to its effects on inequality, and a fine is levied, part of that fine can be channelled back to the class of the injured parties. In such cases, the level of the targeted compensation may be derived from the fine levied on the parties, either as a portion of the original fine or an addition to the original fine (subject to the maximum level of fine set-in legislation) as a form of aggravating circumstances. Such an approach has the benefit of relying first on the fine setting under the main enforcement procedure, which is an instrument for deterrence

---

<sup>167</sup> See <https://www.ofgem.gov.uk/publications-and-updates/npower-pay-26m-failing-treat-customers-fairly-0>

<sup>168</sup> Centrica, *British Gas pay £11m to charity for late CERT/CESP delivery* (03.12.2014), available at: <https://www.centrica.com/media-centre/news/2014/british-gas-pay-11m-to-charity-for-late-certcesp-delivery/>

and is unlikely to create an over-deterrence problem. As debated in Chapter six: The United States and the European Union laws as models of competition laws), the EU model of fines is not based on actual harm (as the US model), but proxies such as firm's turnover. Theoretically, such fines can be set higher than actual harm, causing a chilling effect. However, this is unlikely for several reasons; the most important one is that the detection rate in competition law enforcement is much lower than 100%. Studies suggest that detection rates for cartels, as an example, are anywhere between 12%-20%, depending on the country and methods used to estimate the rate (Ormosi 2011). Under a classic enforcement model (Hylton 2012), the fine size is multiplied by the detection rate to set the 'price' of activity in the eyes of the potential violator. Moreover, under the current suggestion, as noted above, such cases will often involve weaker communities or individuals who may have limited access to justice – so their ability to raise a complaint with the public agency is even more limited without aid or boosted incentives.

In other cases, when an investigation concludes with agreed commitments or settlement, these may include voluntary targeted compensation; in such cases, the defendant superior knowledge of the harm will serve as a cap for the compensation guaranteeing over-deterrence is avoided. When the harm is clear, and individuals are identified, compensation may be channelled to each of the victims (in the form of direct payment, rebate, or increased subsidy). In other instances, an indirect transfer may be used, compensating a group of victims, contributing to an affected community, or supporting wider policies that target inequality.

## **(b) Damages**

Targeted compensation does not replace damage claims. As always, injured parties should be encouraged to launch damages actions in court. The more traditional route for corrective justice relies on damage claims for antitrust violations. Be it follow-on or stand-alone; these claims can assist in transferring back losses to the injured parties. Where part of the targeted compensation was directly paid to these parties, that sum could be deducted from any future compensation they obtain through the court.

Another approach could be to treat it as a separate compensation that does not affect damage claim – considering that in cases involving vulnerable consumers, the likelihood of optimal incentives reached via private damages alone is unlikely due to low detection rates. Moreover, many incentive issues can justify additional damages over and above the targeted compensation. For example, the mere cost of litigation on the private parties and the low probability for actual liability (Polinsky and Rubinfeld 1988) are likely to reduce incentives for claiming damages. Such an approach is theoretically similar to the cases of punitive damages (Cooter 1988) in tort law, and may justify setting damages in addition to targeted compensation, especially if the latter is kept to a minimum. Such an approach would increase the deterrent and punitive effects, retain incentives to launch damage claims and increase the impact of the corrective measure.

The problems of under-deterrence resulting from weak incentives mentioned above could also suggest a need to reform damages claims (regardless of compensation), setting a rule for damages that are potentially higher than harm (estimated by the courts). Recall the debates on the double distortion argument and the need to *target* individuals via the tax system. The most fundamental aspect of the tax substitution argument analysed is that the

government uses information about individuals' income to target people on both sides of the welfare transfer when relying on taxation. As the government cannot observe the differences between individuals' abilities to earn money or other possible reasons for inequality, it uses a possible signal: personal income. The fact that an individual pays higher taxes is linked to the fact that she or he is earning more money. If we address the income inequality problem, then income information is probably the best signal that can be asked for, giving that the differences in abilities (which are potentially causing the gap) are unobservable by the state. Even so, it is still a proxy, and if opportunity inequality, for example, is the focus, than income is not necessarily the best proxy (Okun 1975; Salverda, Nolan, and Smeeding 2009, 60–61).<sup>169</sup>

So theoretically speaking, a damage claim which is adjusted according to the victim's or offenders' income could be used to transfer income between producers to consumers. A practical example is the European system of Day Fines (Kantorowicz-Reznichenko 2015). But using a firm or individual level of income puts us back in the double distortion model and theoretically in circumstances of an inefficient transfer.

If damages are not set based on the individual income of the victims but on the average group' income, the double distortion argument does not fully hold. If damages paid by or to an individual does not vary with income, there is no reason for their work-leisure

---

<sup>169</sup> The different aims are linked to the roots of inequality. For example, if opportunity inequality is the key, it is easier to accept the claim that inequality is a result of a much more than innate abilities. In this case other characteristics can potentially provide more information.

choice to change as a response. So, as simple as it may sound, we can avoid the work-leisure distortion by choosing not to adopt income as a proxy for targeting individuals.<sup>170</sup>

The possibility to target individuals using competition law is by using data on consumption and income on the group level avoiding any use of individual-level incomes. Matching markets with high consumption by extremely low-income groups and increasing damages for these specific cases. But, as mentioned earlier, using a group's income is more likely to be inefficient, as large groups of consumers are bound to be heterogeneous. If such a proxy is used, benefits will be targeted to all levels of income via consumption. Moreover, the work-leisure incentive problem is transformed to the group level once a damage claim under competition law intensifies the incentives to 'join' the group (consume more of the product). In addition, the greater damages can alter the producer's behaviour, which is by definition being over punished (paying damages that are higher than harm). He can, for example, reduce the quantity produced (a chilling effect), creating a greater dead-weight loss. So, it is another form of the double distortion argument but on the group level.

In the unique case of a product that is mostly consumed by the low classes (e.g., public transportation like buses), there is a possibility that the transfer (via greater damages) could still be efficient despite the two distortions: the over incentive to join the group and the potential chilling effect on the producers. In such cases, there is a *double justification* in the form of corrective damages and redistribution. Individuals from low-

---

<sup>170</sup> The difference between a group's average income to the individual's income can prove to be very important. The individual's lack of ability to influence the average income of her or his group reduces the incentive to alter work-leisure choices. Think of a large group of people in a population; the group is big enough to include nearly the entire population. A change to the damages paid by the members of the group does not make them feel as though their income caused the change. If you consider the opposite option – a group of one person – then the individual is likely to alter her or his choices.

socioeconomic minorities are less likely to bring successful claims in civil courts and, when doing so, are likely to receive lower damages than other victims (Rachlinski et al., 2008). This justification is in addition to the general incentives' issues like the low probability for actual liability in a class action mentioned above. Adopting the US treble damages in such cases (Polinsky 1986) or incentivising more class actions may offer a partial solution to the problem of sub-optimal incentives via damages and save the need to transfer income via taxation by providing higher damages for those groups of consumers.

Overall, as I argued in the case of the Robin Hood cartel, such a suggestion is very unorthodox. To consider such an approach, a careful model is required in addition to behavioural experiments and data collection. Such an endeavour is beyond the scope of this thesis. Society and regulators can also consider increased subsidies and measures for cost and risk mitigation which would apply when a case also involves inequality considerations as a more practical step. For example, regulators might consider lower courts fees, procedural changes, shifts to the burden of proof and more. Such changes are much more likely to be cost-efficient and are much less likely to backfire.

No doubt, the issue is complex and requires fine-tuning that ensures incentives do not result in frivolous litigation. Still, the careful embodiment of inequality considerations may offer three distinct benefits – increased competition law enforcement in cases that address economic inequality, direct compensation to injured class, and increased deterrent effect for anticompetitive actions that target weaker communities.

## 11.5 On the choice of the welfare criterion

In recent years, a fierce legal debate focused on the right legal standard for antitrust infringements. The outcomes of this debate, naturally affect the scope and intensity of enforcement, and by extension, the likely role competition law may play in limiting economic inequality.

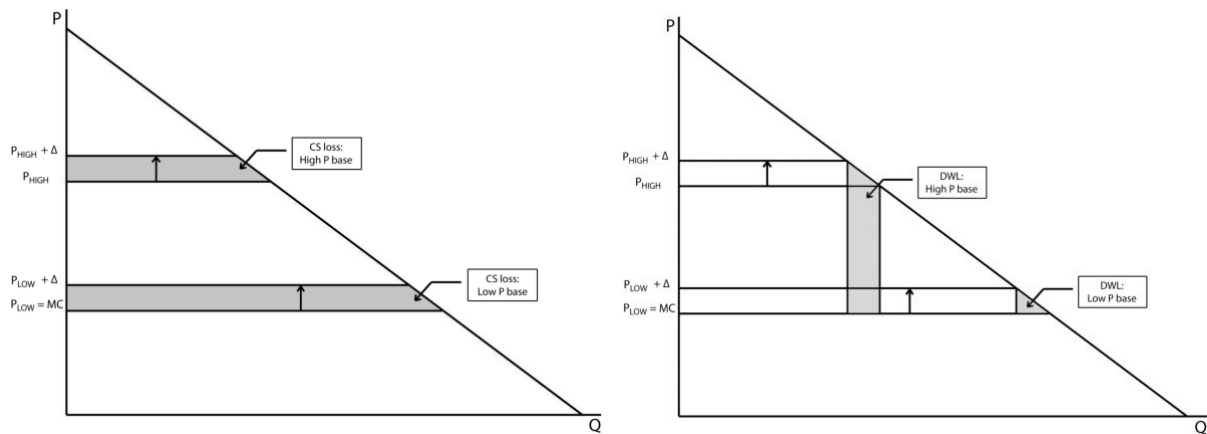
Two main standards that were debated and used in practice internationally are (1) consumer welfare and the (2) total welfare. While the first standard focus on possible harm to the consumer in the form of increased prices, the second measures the total harm or Dead Weight Loss (DWL). At the beginning of this thesis, I explored the two main static effects rising from anticompetitive behaviour: the DWL and the transfer of welfare from the consumer to the producer (Chapter four: Competition effects on economic inequality and poverty). The two welfare standards are connected to these effects, each asking to focus the enforcement substantive-threshold towards one. Many recent critics focused on the blind spots of the consumer welfare standard, which is in use in both US and EU (Wu 2018; Naidu, Posner, and Weyl 2018), such as zero-pricing circumstances (related to platform power), ignoring labour markets, and harm to innovation. Stucke and Ezrachi (2017) argue that the consumer welfare standard has caused competition agencies to look down (at consumers downstream) instead of up (at sellers and providers upstream) when they examine platform-based firm conduct. Others argue that the assault on the consumer welfare standard is misguided; and that the problems associated with the standard are connected to its practical implementation, like the factual judgments on matters as the likelihood of future harm and the likely efficiencies, using the comparison between the US and EU who follow the same welfare standard (Melamed and Petit 2019).

Here lies another opportunity for competition law to move forward towards a better policy for the low and medium consumers and workers. Kaplow (2011) analysed the two welfare standards, observing that theoretically, under the assumptions of the basic micro model, as we move further away from the perfectly competitive price, the marginal loss in consumer surplus decreases. In other words, the loss from the consumer's perspective is more significant close to the competitive price and becomes negligible when the anti-competitive behaviour starts high above the competitive price (way above the competitive price). This is because, for a one-unit increase in price (above the competitive price), the loss in consumer surplus is approximately one times the current quantity. At the competitive price, this quantity is high compared to when the price is significantly elevated, so the marginal loss in consumer surplus is highest (in relative terms) close to the competitive price. The intuition is that the quantity demanded is lower at a higher base price (inflated price), so the price increase applies on a smaller base. The *total* sacrifice in consumer surplus in the inflated price may still be *higher*, but the total loss in consumer surplus rises at a decreasing rate (diminishing marginal loss). The focus of Kaplow's analysis is on the marginal loss.

The opposite move is observed when looking at the DWL (total welfare) aggregation. The marginal DWL is negligible close to the competitive price and becomes larger the further we deviate from the competitive price (Kaplow 2011, 12-16). The reason is that DWL loss is determined by the quantity reduction times the degree to which consumers' valuation for that quantity exceeds the competitive price (equal to marginal cost). When the price is slightly elevated, consumer valuation is very small (suggesting a small increment to deadweight loss). Yet, starting at a significantly higher price (e.g., a

market dominated by a large producer) – and supposing that the decline in quantity due to a similar slight further increase in price is the same – consumers’ average valuations for that quantity greatly exceed the marginal cost, so the increment to the DWL is much greater. Figure 36 presents the insights from Kaplow’s model:

Figure 36: Consumer surplus loss and DWL due to price increase at different base prices



Source: Kaplow 2011. Quantity (Q) is on the horizontal axis and price (P) on the vertical axis. On the left panel, the consumer surplus is lost due to higher prices, and on the right panel, the DWL using the same prices increases bases.

To summarise, the loss in total welfare (DWL) accelerates or rises with the price increase, but the loss starts very small. In his paper, Kaplow rejects the notion that antitrust should be used to advance equity concerns which are better achieved through the tax and transfer system, as was reviewed in section 3.2. The Law and Economics debate). Kaplow analyses the two common standards in competition laws (consumer vs total welfare) on equal terms, noting the implications for policy for each of them.

Under a consumer welfare standard, which is the one adhered to by most developed countries, even modest price increases are harmful to the consumer at a competitive price. So just when we deviate from the competitive equilibrium, the marginal loss for consumers is the greatest. This can imply that competition enforcement should aim to challenge

markets as close as possible to the competitive status quo, when in fact, in many cases, this is where competition authorities will most likely underestimate the competitive harm. Kaplow argues that this is the area of enforcement where the false positive risk is more likely (Kaplow 2011, 16–17). Recalling the US model vs, the EU model preferences on the matter, this is one more reason why a competition enforcement system concerned about false positives (like the US) is more likely to ignore small prices elevations (near the competitive price) affecting consumer surplus. The lesson from Kaplow’s model connects directly to my findings on the US and EU models and the literature on the optimal welfare standard (Melamed and Petit 2019, 758). It could be crucial for both horizontal agreements and mergers enforcement efforts. The typical merger regulation, for example, imposes stricter scrutiny for mergers in highly concentrated markets, where the baseline price is most likely significantly above the competitive price. However, scrutiny should be the toughest under the consumer welfare standard, where the initial price is close to the competitive price, most probably in markets with low concentration. This may seem counterintuitive. But according to Kaplow’s model – the consumers’ marginal loss is the greatest just above the competitive price, so to prevent a transfer from consumers to producers such a transaction should not get an automatic green light. In other words, competition enforcers should start enforcing much closer to the competitive price than they do now.

While this model is based on very simplistic assumptions (from linearity to constant decline in quantity in response to price changes), it does offer an interesting path for future research in the substantive analysis of competition laws. Potential improvements could require some creative legal thinking. Dynamic standards for assessing anticompetitive

harm could offer exciting benefits for protecting consumers and workers. Instead of continuing the debate over the ‘optimal’ legal standards, we could be studying the sensitivity and weakness of each standard and matching them to specific circumstances, creating applicable rules for different types of markets and conducts.

## CHAPTER TWELVE: THESIS CONCLUSIONS

The idea that competitive markets promote equality goes back to early liberal thinkers in the 17th and 18th centuries (Montesquieu, James Stuart Mill, and Adam Smith) for their conduciveness towards greater socio-economic and political equality and freedom (Deutscher 2021). The economic analysis of the effects of competition and the distributional effect of market power are also widely recognised (Fisher and Lande 1983). Nevertheless, most economists have generally eschewed making any further judgments about market power's consequences, arguing that there is no objective way or conceptual apparatus to assess how the 'gains' should be distributed (Williamson 1968). There is also a view that assigning weights to different society members involves 'political' or 'social welfare' judgments on which economists have no expertise (Baumol and Fischer 1986). Some see uneven distributions as a necessary outcome of the competitive process. Emmanuel Saez, whose work on inequality is recognized globally for its importance and merits, was quoted to say: 'Economists belong to the happy class of the winners of these modern times. We are very well paid. We are part of the intellectual elite. For us, the world as it is works well, and I think it influences the way we think about the system. Our economic models make sense for people like us.'<sup>171</sup> While abstracting from distributional issues can aid analytical tractability, arguably, they should still be the focus of systematic economic and legal inquiry.

This thesis provides one of the first attempts to examine the link between competition laws and economic inequality from an empirical viewpoint. In doing so, it

---

<sup>171</sup> <https://promarket.org/emmanuel-saez-saying-inequality-has-not-increased-in-the-us-the-equivalent-of-being-a-climate-change-denier/>.

explores the important normative considerations and focuses on the law and economics argument favouring the exclusive use of taxation to advance equality concerns. I argue that we have witnessed poorly designed or skewed taxation policies over the past decades due to ideology, political structure or just plain incompetence. If inequality trends remain below the boiling point, many governments ‘manage’ the situation rather than act to resolve it – introducing patchwork policies to ease the pressure or promote elixirs such as trickle-down effects to justify feeble action. The current health, economic and political crisis pushed many countries over the breaking point, opening the door for more redistribution – not always in the most efficient way.

Following the normative debates, I have reviewed the theoretical framework that links competition laws, competition and economic inequality. Two driving forces in the micro sense tie competition to inequality: price effects of monopoly power in essential product markets and monopsony effects in labour markets. At the macro level, competition reduces poverty via growth and innovation, while the latter effects on economic inequality are mixed and depend on other economic and institutional factors. On the other hand, I emphasised the effects of market power on the low and middle classes, who witnessed their standard of living stagnate or decline. At the same time, higher-income groups have continued to accumulate income and wealth. The low and middle class play an enormous role in a healthy economy, sustaining consumption, investment in education, health and housing; they also play a key role in supporting social protection for low-income groups through their tax contributions. Societies with a strong middle class have lower crime rates, enjoy higher levels of trust and life satisfaction, and have greater political stability and good governance.

The framework suggested in Part I of the thesis allowed me to test four specific research questions that tie back to the overarching theme: what is the role of competition law in the rise (and potential fall) of economic inequality?

First, I reviewed the US case study understanding the strong links between the rise of markups, the decline of the labour share and the rise of economic inequality. I have also studied how the US antitrust changed alongside these macro changes and descriptively explored their relationships.

Second, following the case study, I tested the hypothesis that the similarity in the text of competition laws, as a proxy for the US antitrust institutions and ideology, could be linked to trends of economic inequality. The main finding from the analysis is that countries that are similar to the US are more likely to exhibit high inequality trends. The positive coefficient between the US antitrust text and economic inequality is robust to several econometric methods and sensitivity tests. The US antitrust model is unique in its institutional framework. However, regulation choices that are essential parts of the antitrust system might be associated with less competition and higher inequality.

Third, I investigated the relationship between the scope of competition law and income and wage inequality by taking advantage of large-scale global datasets covering many countries over a long-time horizon. I found empirical support for a link between competition law and perceived competition intensity which, on standard reasoning, implies that effective competition law regimes should be associated with lower levels of inequality. The descriptive statistics also suggest a correlation between various competition law indices and income and wage inequality metrics. The relationship between competition law

and inequality were somewhat inconclusive, observing a statistically significant relationship in some specifications, but not all.

Fourth, attributing these results to the macro-scale of the analysis and the highly aggregated and heterogeneous data, I explored a smaller dataset of cross-country-industry studying the link between competition law enforcement and the labour share in twelve developed countries. I found a positive link between an effective competition policy and the labour share trend, supporting the hypothesis that a lax or inactive competition policy may have contributed to the decline of the labour share across some developed countries. The main mechanism through which competition policy affects the labour share is its ability to constrain markups: competition policy is negatively correlated to markups, while markups are negatively correlated to labour share. The results suggest that competition policy could be particularly important in mitigating a decline of the labour share in settings characterised by low levels of labour protection and labour bargaining power. These findings further suggest that by permitting higher markups to be sustained in some industries and jurisdictions, weak competition policy may contribute to higher levels of economic inequality, given that labour income is more evenly distributed across households than capital income.

Finally, in Part III of the thesis, I reviewed the unique characteristics of competition law as a pre-distribution mechanism for societal change. I have argued that this fundamental aspect of competition laws makes them an efficient and powerful tool to address the current inequality crisis. I reviewed five suggestions for further research and policy implication. Specifically, by setting a new agenda (priorities) for competition enforcers to tackle market power in essential goods and labour markets, many low and

middle-class workers can improve their quality of living and even get out of the vicious poverty cycle. In addition, further studies should focus on the possible ways to advance the substantive analysis of competition law, including a dynamic welfare standard that is sensitive to specific market circumstances and the potential error costs.

The main conclusion of the thesis is optimistic: much more can be done to tackle the effects of market power. Competition law could be utilised as a valuable complementary instrument, which can be applied to reduce economic inequality. It can do so without challenging values of self-interest and personal gain that often undermine direct policies aimed at targeting inequality. Furthermore, it can do so as part of its mandate to protect free-market rivalry.

## APPENDIX

Table A1 includes the countries assigned in the GSC of the main text.

**Table A1.** Countries assigned GSC, US-OECD model

	<b>Ireland</b>	<b>Japan</b>	<b>New Zealand</b>
<b>Austria</b>	-0.03273355 -	-0.57119746	-0.15820010
<b>Belgium</b>	0.05895688	-0.85118320	-0.25407546
<b>Chile</b>	0.12721668	-0.28591711	0.12875189
<b>Czech Republic</b>	0.11226393	-0.08068276	0.07379814
<b>Denmark</b>	0.57922179	0.09942381	0.49716283
<b>Finland</b>	0.12550986	0.60484595	0.25730539
<b>France</b>	-0.06508367	-0.36519834	-0.08348940
<b>Germany</b>	0.07710777	0.54992349	0.45791428
<b>Greece</b>	0.54106061	1.16857744	0.56705292
<b>Hungary</b>	0.25969967	0.66167777	0.69353620
<b>Iceland</b>	-1.31935645	-0.23487641	-1.00152040
<b>Italy</b>	-0.56473970	0.28985479	-0.32894594
<b>Latvia</b>	-0.20351049	0.48131076	-0.07199038
<b>Luxembourg</b>	-0.27119661	-0.06169252	-0.20127155
<b>Netherlands</b>	0.66408522	-0.04802633	0.61054687
<b>Norway</b>	0.29119929	1.06494077	0.43592594
<b>Portugal</b>	-1.12612718	-0.15894413	-0.99876613
<b>Spain</b>	0.67951690	-0.86162433	0.35160667
<b>Sweden</b>	0.06294048	0.10647200	0.07289497
<b>Switzerland</b>	0.51864196	0.11089509	0.48407920
<b>Turkey</b>	-1.00702526	-3.25412792	-2.00464820
<b>United Kingdom</b>	-0.22167526	0.20608683	-0.04849152

**Table A2.** Gini, similarity to section 2 (monopolisation), among countries which resemble the US model

	(1)	(2)	(3)	(4)	(5)	(6)
	log_gini_ mkt	log_gini_ mkt	log_gini_ mkt	log_gini_d isp	log_gini_d isp	log_gini_d isp
resemb_us_monopolisation	0.011	0.031	0.027	0.083**	0.110**	0.114***
	(0.034)	(0.028)	(0.025)	(0.033)	(0.038)	(0.034)
log_lifeexp	-0.220	-0.209	0.054	-0.658	-0.046	0.195
	(0.568)	(0.429)	(0.305)	(0.512)	(0.682)	(0.406)
log_gdp_pc	0.065**	0.016	0.054	0.065*	0.076	0.137*
	(0.029)	(0.076)	(0.057)	(0.033)	(0.116)	(0.073)
log_exp	-0.008	0.017	0.048	-0.027	-0.012	0.019
	(0.051)	(0.051)	(0.030)	(0.047)	(0.055)	(0.040)
log_imp	0.039	-0.017	-0.052	0.038	0.029	0.000
	(0.047)	(0.046)	(0.029)	(0.048)	(0.062)	(0.052)
log_unempl	0.005	0.021	0.017	0.002	0.002	-0.001
	(0.017)	(0.015)	(0.010)	(0.018)	(0.023)	(0.021)
log_inflat	0.004	0.003	0.002	0.003	0.000	-0.001
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)	(0.003)

log_inv	-0.031 (0.035)	-0.020 (0.024)	-0.024 (0.024)	-0.052 (0.035)	-0.061 (0.045)	-0.059 (0.052)
log_gov_exp	-0.002 (0.043)	-0.034 (0.037)	-0.018 (0.033)	-0.066 (0.057)	-0.122 (0.079)	-0.096 (0.065)
D.log_gini_mkt			0.939*** (0.240)			
D.log_gini_disp						0.908*** (0.201)
_cons	-0.487 (2.644)	0.044 (2.551)	-1.493 (1.856)	1.332 (2.180)	-1.271 (3.983)	-3.009 (2.380)
Obs.	152	152	152	152	152	152
R-squared	0.977	0.993	0.995	0.996	0.997	0.998

Standard errors are in parenthesis

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table A3.** Top Income Shares, similarity to section 2 (monopolisation), among countries that resemble the US model

	(1) log_top1	(2) log_top1	(3) log_top1	(4) log_top10	(5) log_top10	(6) log_top10
us_monopolisation	0.556*** (0.146)	0.556*** (0.110)	0.620*** (0.127)	0.369*** (0.061)	0.393*** (0.059)	0.428*** (0.067)
log_lifeexp	-0.122 (2.908)	2.443 (3.686)	4.687 (3.900)	-0.783 (1.034)	-0.809 (1.527)	-0.239 (1.357)
log_gdp_pc	-0.098 (0.209)	0.329 (0.608)	0.409 (0.652)	-0.073 (0.073)	-0.070 (0.259)	-0.123 (0.267)
log_exp	-0.425 (0.278)	-0.323 (0.281)	-0.296 (0.283)	-0.139 (0.096)	-0.117 (0.108)	-0.124 (0.111)
log_imp	0.612 (0.339)	0.651 (0.438)	0.637 (0.465)	0.311** (0.133)	0.325 (0.179)	0.345* (0.186)
log_unempl	0.011 (0.075)	-0.019 (0.096)	-0.023 (0.117)	0.042 (0.038)	0.045 (0.044)	0.039 (0.044)
log_inflat	0.003 (0.017)	-0.013 (0.015)	-0.009 (0.016)	-0.009 (0.006)	-0.012 (0.009)	-0.006 (0.008)
log_inv	-0.435** (0.164)	-0.600 (0.329)	-0.571 (0.356)	-0.090 (0.054)	-0.070 (0.123)	-0.070 (0.123)
log_gov_exp	-1.356** (0.553)	-1.510 (1.025)	-1.526 (1.163)	-0.388 (0.240)	-0.435 (0.425)	-0.489 (0.470)
D.log_top1			0.467*** (0.090)			
D.log_top10						0.511*** (0.061)
_cons	3.584 (13.472)	-11.104 (21.658)	-21.734 (21.330)	3.689 (4.605)	3.739 (9.093)	1.900 (8.012)
Obs.	127	127	127	127	127	127
R-squared	0.968	0.975	0.980	0.979	0.982	0.986

Standard errors are in parenthesis

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table A4.** Gini and Income Share, System-GMM, OECD

	(1)	(2)	(3)	(4)
	log_gini_mkt	log_gini_disp	log_top1	log_top10
resemb_us	0.004 (0.003)	0.003*** (0.001)	0.004 (0.028)	0.003 (0.007)
log_lifexp	-0.052 (0.045)	0.027 (0.062)	-0.257 (0.602)	-0.193 (0.270)
log_gdp_pc	0.003 (0.004)	-0.010** (0.005)	0.017 (0.057)	0.014 (0.020)
log_exp	-0.003 (0.006)	-0.025*** (0.008)	-0.014 (0.099)	-0.031 (0.035)
log_imp	-0.002 (0.007)	0.022** (0.010)	0.066 (0.086)	0.046 (0.032)
log_unempl	0.001 (0.002)	-0.002 (0.003)	0.015 (0.018)	0.002 (0.005)
log_inflat	0.001 (0.001)	0.001 (0.001)	-0.011 (0.007)	-0.005* (0.003)
log_inv	-0.004 (0.005)	-0.017** (0.007)	-0.006 (0.064)	-0.036 (0.025)
log_gov_exp	0.028*** (0.009)	0.009 (0.010)	-0.236*** (0.071)	-0.067** (0.029)
L.log_gini_mkt	0.920*** (0.016)			
L.log_gini_disp		0.930*** (0.012)		
L.log_top1			0.733*** (0.044)	
L.log_top10				0.783*** (0.048)
_cons	0.087 (0.176)	-0.056 (0.237)	0.810 (2.266)	0.704 (1.019)
Obs.	676	676	589	575

Standard errors are in parenthesis

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ **Table A5.** Antitrust Scale, markups US time-series

	<i>Dependent variable:</i>				
	log(markups)				
	(1)	(2)	(3)	(4)	(5)
lag(new_index, 10)	-0.135*** (0.014)	-0.019** (0.009)	-0.017 (0.012)	-0.020* (0.010)	
moving_a10					-0.163** (0.054)
log(lag(markups))		0.862*** (0.056)	0.767*** (0.076)	0.490*** (0.133)	0.453** (0.159)
log(lag(markups, 2))				0.242** (0.114)	0.109 (0.163)
log(inflation)			-0.012** (0.005)	-0.012** (0.005)	-0.018*** (0.004)
log(GDP_PCG)			0.004*** (0.001)	0.004*** (0.001)	0.005*** (0.001)
log(fdi_in)			0.015* (0.007)	0.018** (0.006)	0.031*** (0.007)

log(fdi_out)			-0.006 (0.005)	-0.007 (0.004)	-0.013** (0.005)
log(GC_F)			-0.036 (0.034)	-0.046 (0.034)	-0.211*** (0.050)
log(TPC_GDP)			0.049 (0.070)	0.080 (0.070)	0.214*** (0.058)
Constant	0.345*** (0.006)	0.053*** (0.019)	0.159 (0.131)	0.175 (0.123)	0.611*** (0.163)
Observations	31	31	26	26	23
R <sup>2</sup>	0.722	0.966	0.987	0.988	0.993
Adjusted R <sup>2</sup>	0.712	0.964	0.980	0.982	0.988
Residual Std. Error	0.034 (df = 29)	0.012 (df = 28)	0.008 (df = 17)	0.008 (df = 16)	0.006 (df = 13)
F Statistic	75.153*** (df = 1; 29)	398.396*** (df = 2; 28)	155.583*** (df = 8; 17)	152.117*** (df = 9; 16)	205.002*** (df = 9; 13)

Note: Standard errors are in parenthesis

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Figure A1: ACF US top 1% Income Share

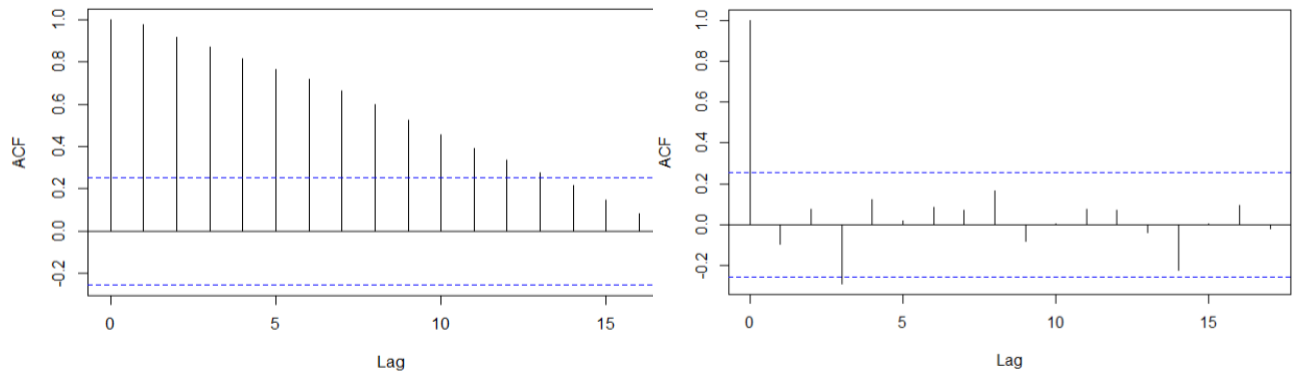


Table A6. Conditional effects on 1% income share, FD, US

	Dependent variable:									
	FD top1									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
FD markups	0.143** (0.053)	0.123*** (0.046)	0.135*** (0.048)	0.135*** (0.049)	0.144** (0.065)	0.132** (0.059)	0.129* (0.067)	0.162*** (0.053)	0.166*** (0.054)	0.145** (0.054)
FD inflation	0.001* (0.001)	0.001 (0.0005)	-0.001 (0.001)	-0.001 (0.001)	0.0005 (0.001)	0.002 (0.002)	0.002 (0.002)	0.001** (0.001)	0.0004 (0.001)	0.001 (0.001)
FD GOV_EXP		-0.006*** (0.002)	-0.004** (0.002)	-0.004** (0.002)	-0.005** (0.002)	-0.005* (0.003)	-0.005 (0.004)	-0.001 (0.004)	-0.001 (0.004)	
FD tax_revenue										0.004** (0.001)
FD MTrade %gdp			0.003*** (0.001)	0.003*** (0.001)	0.002* (0.001)	0.001 (0.001)	0.001 (0.001)			0.001 (0.001)
FD openness								-0.002 (0.002)		

FD IMP %gdp									0.003 (0.002)	
FD EXP %gdp									0.0001 (0.002)	
FD Life_EXP			-0.0001 (0.003)	0.008 (0.006)	0.005 (0.007)	0.005 (0.007)	0.007 (0.004)	0.007 (0.004)	0.007 (0.004)	0.005 (0.003)
FD GDP_PCG				0.0003 (0.0004)	0.001 (0.001)	0.001 (0.001)	0.001 (0.0004)	0.0005 (0.0005)	0.001*	0.001
FD TPC_GDP				0.007 (0.013)						
FD Labour_unionP					-0.0003 (0.003)	-0.001 (0.004)				
FD GC_F						-0.0002 (0.002)	0.00004 (0.002)	0.0001 (0.002)	-0.0003 (0.001)	
Observations	50	50	50	50	29	27	27	40	40	38
R <sup>2</sup>	0.170	0.326	0.435	0.435	0.654	0.720	0.720	0.497	0.534	0.596
Adjusted R <sup>2</sup>	0.134	0.282	0.385	0.371	0.539	0.617	0.596	0.386	0.414	0.502
Residual Std. Error	0.006 (df = 47)	0.005 (df = 46)	0.005 (df = 45)	0.005 (df = 44)	0.005 (df = 21)	0.004 (df = 19)	0.005 (df = 18)	0.005 (df = 32)	0.005 (df = 31)	0.004 (df = 30)
F Statistic	4.801** (df = 2; 47)	7.414*** (df = 3; 46)	8.657*** (df = 4; 45)	6.772*** (df = 5; 44)	5.679*** (df = 7; 21)	6.981*** (df = 7; 19)	5.792*** (df = 8; 18)	4.509*** (df = 7; 32)	4.439*** (df = 8; 31)	6.329*** (df = 7; 30)

Note: table includes robust standard errors (HC1)

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

**Table A7. 2SLS US Time-Series**

	Dependent variable:						
	FD top1						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FD markups	0.072 (0.267)	0.312* (0.183)	0.382* (0.199)	0.399* (0.203)	0.386* (0.214)	-0.117 (0.709)	-0.092 (0.606)
FD inflation	0.001 (0.001)	0.002* (0.001)	0.0004 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.004)	0.001 (0.003)
FD GOV_EXP		-0.004 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.001 (0.003)	-0.005 (0.005)	-0.010 (0.013)
FD MTrade %gdp			0.003** (0.001)	0.003** (0.001)	0.002* (0.001)	0.001 (0.002)	0.001 (0.002)
FD Life_EXP				0.011 (0.007)	0.011 (0.007)	-0.0005 (0.018)	-0.001 (0.017)
FD GDP_PCG					0.0003 (0.001)	0.002 (0.003)	0.002 (0.003)
FD unionP						-0.003 (0.010)	-0.005 (0.013)
FD GC_F							-0.003 (0.008)
Observations	40	40	40	40	40	27	27
R <sup>2</sup>	0.176	0.159	0.073	0.131	0.177	0.439	0.536

Adjusted R <sup>2</sup>	0.131	0.089	-0.033	0.004	0.027	0.232	0.330
Residual Std. Error	0.006 (df = 37)	0.006 (df = 36)	0.006 (df = 35)	0.006 (df = 34)	0.006 (df = 33)	0.006 (df = 19)	0.006 (df = 18)

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

**Table A8.** Description of the 22 ISIC industries

ISIC Code	Description
1	Agriculture, hunting and forestry and fishing
2	Mining and quarrying
3	Manufacture of food products and beverages Manufacture of tobacco products
4	Manufacture of textiles Manufacture of wearing apparel; dressing and dyeing of fur Tanning and dressing of leather, manufacture of luggage, handbags, saddlery, harness, and footwear
5	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
6	Manufacture of paper and paper products Publishing, printing and reproduction of recorded media
7	Manufacture of coke, refined petroleum products and nuclear fuel
8	Manufacture of chemicals and chemical products
9	Manufacture of rubber and plastics products
10	Manufacture of other non-metallic mineral products
11	Manufacture of basic metals Manufacture of fabricated metal products, except machinery and equipment
12	Manufacture of furniture; manufacturing n.e.c.
13	Manufacture of office, accounting and computing machinery Manufacture of electrical machinery and apparatus n.e.c. Manufacture of radio, television and communication equipment and apparatus Manufacture of medical, precision and optical instruments, watches and clocks
14	Manufacture of motor vehicles, trailers and semi-trailers Manufacture of other transport equipment
15	Manufacture of furniture; manufacturing n.e.c.; Recycling
16	Electricity, gas, steam and hot water supply Collection, purification and distribution of water
17	Construction
18	Hotels and restaurants
19	Land transport; transport via pipelines; water transport; Air transport Supporting and auxiliary transport activities; activities of travel agencies
20	Post and telecommunications
21	Financial intermediation, except insurance and pension funding Insurance and pension funding, except compulsory social security Activities auxiliary to financial intermediation
22	Renting of machinery and equipment without operator and of personal and household goods Computer and related activities Research and development Other business activities

## BIBLIOGRAPHY

Aaron, Henry J., and George M. Von Furstenberg. 1971. "The Inefficiency of Transfers in Kind: The Case of Housing Assistance." *Economic Inquiry* 9(2): 184.

Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. 2010. "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program." *Journal of the American statistical Association* 105(490): 493–505.

Abadie, Alberto, and Javier Gardeazabal. 2003. "The Economic Costs of Conflict: A Case Study of the Basque Country." *American economic review* 93(1): 113–32.

Acemoglu, Daron. 2003. "Labor-and Capital-augmenting Technical Change." *Journal of the European Economic Association* 1(1): 1–37.

Acemoglu, Daron, Georgy Egorov, and Konstantin Sonin. 2020. "Institutional Change and Institutional Persistence." *University of Chicago, Becker Friedman Institute for Economics Working Paper* (2020–127).

Affeldt, Pauline, Tomaso Duso, Klaus Gugler, and Joanna Piechucka. 2021. "Market Concentration in Europe: Evidence from Antitrust Markets."

Aghion, Philippe et al. 1998. *Endogenous Growth Theory*. MIT press.

———. 2005. "Competition and Innovation: An Inverted-U Relationship." *The quarterly journal of economics* 120(2): 701–28.

———. 2019. "Innovation and Top Income Inequality." *The Review of Economic Studies* 86(1): 1–45.

Aghion, Philippe, Stefan Bechtold, Lea Cassar, and Holger Herz. 2018. "The Causal Effects of Competition on Innovation: Experimental Evidence." *The Journal of Law, Economics, and Organization* 34(2): 162–95.

Aghion, Philippe, Reda Cherif, and Fuad Hasanov. 2021. *Competition, Innovation, and Inclusive Growth*. International Monetary Fund.

Aghion, Philippe, and Steven Durlauf. 2005. *Handbook of Economic Growth*. Elsevier.

Aghion, Philippe, and Rachel Griffith. 2008. *Competition and Growth: Reconciling Theory and Evidence*. MIT press.

Aghion, Philippe, and Peter Howitt. 1990. *A Model of Growth through Creative Destruction*. National Bureau of Economic Research.

Ahlborn, Christian, and David S. Evans. 2009. "The Microsoft Judgment and Its Implications for Competition Policy towards Dominant Firms in Europe." *Antitrust Law Journal* 75(3): 887–932.

Ahn, Sanghoon. 2002. "Competition, Innovation and Productivity Growth: A Review of Theory and Evidence." *SSRN Electronic Journal*. <http://www.ssrn.com/abstract=318059> (January 2, 2019).

Akman, Pinar. 2012. *The Concept of Abuse in EU Competition Law: Law and Economic Approaches*. Bloomsbury Publishing.

Alesina, Alberro, and Roberto Perotti. 1994. "The Political Economy of Growth: A Critical Survey of the Recent Literature." *The World Bank Economic Review* 8(3): 351–71.

Alvaredo, Facundo et al. 2016. "The World Wealth and Income Database." *Website: <http://www.wid.world2>*: 11–75.

Alvaredo, Facundo, Anthony B Atkinson, Thomas Piketty, and Emmanuel Saez. 2013. "The Top 1 Percent in International and Historical Perspective." *Journal of Economic perspectives* 27(3): 3–20.

Amato, Giuliano. 1997. *Antitrust and the Bounds of Power: The Dilemma of Liberal Democracy in the History of the Market*. Hart Publishing.

Amodio, Francesco et al. 2020. *2020 Product Market Competition and the Labour Market: Evidence from South Africa*. 3rd ed. UNU-WIDER. <https://www.wider.unu.edu/node/237027> (April 8, 2020).

Appelbaum, Binyamin. 2019. "The Economists' Hour: How the False Prophets of Free Markets Fractured Our Society."

Ardanaz, Martin, and Carlos Scartascini. 2013. "Inequality and Personal Income Taxation: The Origins and Effects of Legislative Malapportionment." *Comparative Political Studies* 46(12): 1636–63.

Areeda, Phillip, and Donald F. Turner. 1975. "Predatory Pricing and Related Practices under Section 2 of the Sherman Act." *J. Reprints Antitrust L. & Econ.* 6: 219.

Argent, Jonathan, and Tania Begazo. 2015. *Competition in Kenyan Markets and Its Impact on Income and Poverty: A Case Study on Sugar and Maize*. The World Bank.

Arnold, Jens, Giuseppe Nicoletti, and Stefano Scarpetta. 2011. "Regulation, Resource Reallocation and Productivity Growth." *Nordic Economic Policy Review* 2: 61–94.

Arpaia, Alfonso, Esther Pérez, and Karl Pichelmann. 2009. "Understanding Labour Income Share Dynamics in Europe."

Arrow, Kenneth Joseph. 1972. "Economic Welfare and the Allocation of Resources for Invention." In *Readings in Industrial Economics*, Springer, 219–36.

Assous, Michael, and Amitava Krishna Dutt. 2013. "Growth and Income Distribution with the Dynamics of Power in Labour and Goods Markets." *Cambridge Journal of Economics* 37(6): 1407–30.

Athey, Susan et al. 2018. "Matrix Completion Methods for Causal Panel Data Models." *arXiv:1710.10251 [econ, math, stat]*. <http://arxiv.org/abs/1710.10251> (March 7, 2020).

Auclert, Adrien, and Matthew Rognlie. 2018. *Inequality and Aggregate Demand*. National Bureau of Economic Research.

Auerbach, Alan J., and James R. Hines Jr. 2002. "Taxation and Economic Efficiency." In *Handbook of Public Economics*, Elsevier, 1347–1421.

Autor, David et al. 2020. "The Fall of the Labor Share and the Rise of Superstar Firms\*." *The Quarterly Journal of Economics* 135(2): 645–709.

Ayal, Adi. 2014. *Fairness in Antitrust: Protecting the Strong from the Weak*. Bloomsbury Publishing.

Azar, José A, Ioana Marinescu, Marshall I Steinbaum, and Bledi Taska. 2018. *Concentration in US Labor Markets: Evidence from Online Vacancy Data*. National Bureau of Economic Research.

Azar, José, Martin C. Schmalz, and Isabel Tecu. 2018. “Anticompetitive Effects of Common Ownership.” *The Journal of Finance* 73(4): 1513–65.

Azmat, Ghazala, Alan Manning, and John Van Reenen. 2012. “Privatization and the Decline of Labour’s Share: International Evidence from Network Industries.” *Economica* 79(315): 470–92.

Bailey, David, and Laura Elizabeth John. 2018. *Bellamy & Child: European Union Law of Competition*. Oxford University Press.

Bajgar, Matej et al. 2019. “Industry Concentration in Europe and North America.”

Baker, Jonathan B. 2007. “Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation.” *Antitrust Law Journal* 74(3): 575.

Baker, Jonathan B., and Steven C. Salop. 2015. “Antitrust, Competition Policy, and Inequality.” *Geo. LJ Online* 104: 1.

Ballard, Charles L., John B. Shoven, and John Whalley. 1985. “General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States.” *The American Economic Review* 75(1): 128–38.

Bankman, Joseph, and David Weisbach. 2007. “Consumption Taxation Is Still Superior to Income Taxation.” *Stan. L. Rev.* 60: 789.

Barkai, Simcha. 2016. “Declining Labor and Capital Shares.” *Stigler Center for the Study of the Economy and the State New Working Paper Series* 2.

Barro, Robert J. 2008. *Inequality and Growth Revisited*. ADB Working paper series on regional economic integration.

Bassanini, Andrea, and Thomas Manfredi. 2012. “Capital’s Grabbing Hand? A Cross-Country/Cross-Industry Analysis of the Decline of the Labour Share.”

Basu, Susanto. 2019. "Are Price-Cost Markups Rising in the United States? A Discussion of the Evidence." *Journal of Economic Perspectives* 33(3): 3–22.

Baum, C. F. 2013. "IV and IV-GMM." *Boston College*. Source: <http://www.ner.edu.au/data/documents/IVandGMM.pdf>.

Baumol, William J, and Dietrich Fischer. 1986. *Superfairness: Applications and Theory*. MIT Press.

Bazot, Guillaume. 2017. "Financial Consumption and the Cost of Finance: Measuring Financial Efficiency in Europe (1950–2007)." *Journal of the European Economic Association* 16(1): 123–60.

Becker, Gary S. 1968. "Crime and Punishment: An Economic Approach." In *The Economic Dimensions of Crime*, Springer, 13–68.

Behrens, Peter. 2018. "The Ordoliberal Concept of 'Abuse' of a Dominant Position and Its Impact on Article 102 TFEU." In *Abusive Practices in Competition Law*, Edward Elgar Publishing.

Bell, Brian, Pawel Bukowski, and Stephen Machin. 2018. "Rent Sharing and Inclusive Growth."

Benabou, Roland. 1996. "Inequality and Growth." *NBER macroeconomics annual* 11: 11–74.

Bengtsson, Erik, and Daniel Waldenström. 2018. "Capital Shares and Income Inequality: Evidence from the Long Run." *The Journal of Economic History* 78(3): 712–43.

Benmelech, Efraim, Nittai Bergman, and Hyunseob Kim. 2018. *Strong Employers and Weak Employees: How Does Employer Concentration Affect Wages?* Cambridge, MA: National Bureau of Economic Research. <http://www.nber.org/papers/w24307.pdf> (November 9, 2018).

Bergholt, Drago, Francesco Furlanetto, and Nicolo Faccioli. 2019. "The Decline of the Labor Share: New Empirical Evidence.""

Bergstrom, Theodore C. 1999. "Systems of Benevolent Utility Functions." *Journal of Public Economic Theory* 1(1): 71–100.

Bivens, Josh, Elise Gould, E Mishel, and HEIDI Shierholz. 2014, 2020. Economic Policy Institute, State of Working America Data Library, "Raising America's Pay." *Economic Policy Institute Briefing Paper* 378.

Blair, Roger D, and D Daniel Sokol. 2015. 2 *The Oxford Handbook of International Antitrust Economics*. Oxford University Press, USA.

Blundell, Richard, Stephen Bond, and Frank Windmeijer. 2001. *Estimation in Dynamic Panel Data Models: Improving on the Performance of the Standard GMM Estimator*. Emerald Group Publishing Limited.

Borge, Lars-Erik, and Jørn Rattsø. 2004. "Income Distribution and Tax Structure: Empirical Test of the Meltzer–Richard Hypothesis." *European Economic Review* 48(4): 805–26.

Bork, Robert H. 1966. "Legislative Intent and the Policy of the Sherman Act." *The Journal of Law and Economics* 9: 7–48.

Bork, Robert H. 1978. 79 *The Antitrust Paradox: A Policy at War with Itself*. Basic books New York.

Bovis, Christopher H, and Charles M Clarke. 2015. "Private Enforcement of EU Competition Law." *Liverpool Law Review* 36(1): 49–71.

Bradford, Anu, Adam Chilton, Katerina Linos, and Alexander Weaver. 2019. "The Global Dominance of European Competition Law Over American Antitrust Law." *Journal of Empirical Legal Studies* 16(4): 731–66.

Bradford, Anu, and Adam S Chilton. 2018. "Competition Law Around the World from 1889 to 2010: The Competition Law Index." *Journal of Competition Law & Economics* 14(3): 393–432.

———. 2019. "Trade Openness and Antitrust Law." *The Journal of Law and Economics* 62(1): 29–65.

Bradford, Anu, Adam S. Chilton, and Filippo Maria Lancieri. 2020. "The Chicago School's Limited Influence on International Antitrust." *The University of Chicago Law Review* 87(2): 297–330.

Bresnahan, Timothy F. 1989. "Empirical Studies of Industries with Market Power." *Handbook of industrial organization* 2: 1011–57.

- Broder, Douglas F. 2012. *US Antitrust Law and Enforcement: A Practice Introduction*. Oxford University Press, USA.
- Brozen, Yale. "Competition, Efficiency and Antitrust"(1969)." *J. World Trade L.* 3: 65.
- Buccirossi, Paolo et al. 2013. "Competition Policy and Productivity Growth: An Empirical Assessment." *Review of Economics and Statistics* 95(4): 1324–36.
- Buttigieg, Eugène. 2009. *40 Competition Law: Safeguarding the Consumer Interest: A Comparative Analysis of US Antitrust Law and EC Competition Law*. Kluwer Law International BV.
- Cai, Hongbin, Yuyu Chen, and Li-An Zhou. 2010. "Income and Consumption Inequality in Urban China: 1992–2003." *Economic Development and Cultural Change* 58(3): 385–413.
- Campante, Filipe R. 2011. "Redistribution in a Model of Voting and Campaign Contributions." *Journal of Public Economics* 95(7–8): 646–56.
- Cannon, Christopher, Kelly Goldsmith, and Caroline Roux. 2019. "A Self-regulatory Model of Resource Scarcity." *Journal of Consumer Psychology* 29(1): 104–27.
- Card, David. 1996. "The Effect of Unions on the Structure of Wages: A Longitudinal Analysis." *Econometrica: Journal of the Econometric Society*: 957–79.
- Card, David, Ana Rute Cardoso, Joerg Heining, and Patrick Kline. 2018. "Firms and Labor Market Inequality: Evidence and Some Theory." *Journal of Labor Economics* 36(S1): S13–70.
- Carlton, Dennis W. 2007. "Does Antitrust Need to Be Modernized?" *Journal of Economic Perspectives* 21(3): 155–76.
- Carlton, Dennis W., Jeffrey M. Perloff, and Klaas T. van't Veld. 1990. *Modern Industrial Organization*. Scott, Foresman/Little, Brown Higher Education Glenview, IL.
- Causa, Orsetta, Alain De Serres, and Nicolas Ruiz. 2015. "Can Pro-Growth Policies Lift All Boats?: An Analysis Based on Household Disposable Income." *OECD Journal: Economic Studies* 2015(1): 227–68.
- Cavalleri, Maria Chiara et al. 2019. "Concentration, Market Power and Dynamism in the Euro Area."

Cette, Gilbert, Lorraine Koehl, and Thomas Philippon. 2019. *Labor Shares in Some Advanced Economies*. National Bureau of Economic Research.

Chen, Shaohua, and Martin Ravallion. 2012. “Absolute Poverty Measures for the Developing World, 1981–2008.” *Measuring the real size of the world economy*: 531–52.

Cheng, Thomas K. 2020. *Competition Law in Developing Countries*. Oxford University Press.

Chong, Alberto, and Mark Gradstein. 2007. “Inequality and Institutions.” *The Review of Economics and Statistics* 89(3): 454–65.

Ciminelli, Gabriele, Romain Duval, and Davide Furceri. 2018. “Employment Protection Deregulation and Labor Shares in Advanced Economies.” *Review of Economics and Statistics*: 1–44.

Cohen, Wesley M. 2010. “Fifty Years of Empirical Studies of Innovative Activity and Performance.” In *Handbook of the Economics of Innovation*, Elsevier, 129–213.

Comanor, William S., and Robert H. Smiley. 1975. “Monopoly and the Distribution of Wealth.” *The Quarterly Journal of Economics* 89(2): 177.

Cooter, Robert D. 1988. “Punitive Damages for Deterrence: When and How Much.” *Ala. L. Rev.* 40: 1143.

Covarrubias, Matias, Germán Gutiérrez, and Thomas Philippon. 2019. *From Good to Bad Concentration? US Industries over the Past 30 Years*. National Bureau of Economic Research.

Crane, Daniel A. 2007. “Technocracy and Antitrust.” *Tex. L. Rev.* 86: 1159.

———. 2010. “Optimizing Private Antitrust Enforcement.” *Vand. L. Rev.* 63: 673.

———. 2011. “The Institutional Structure of Antitrust Enforcement.”

Creedy, John, and Robert Dixon. 2000. “Relative Welfare Losses and Imperfect Competition in New Zealand.” *New Zealand Economic Papers* 34(2): 269–86.

da Cruz Vilaça, José Luís. 2018. “The Intensity of Judicial Review in Complex Economic Matters—Recent Competition Law Judgments of the Court of Justice of the EU.” *Journal of Antitrust Enforcement* 6(2): 173–88.

Cunha, Jesse M., Giacomo De Giorgi, and Seema Jayachandran. 2019. “The Price Effects of Cash versus In-Kind Transfers.” *The Review of Economic Studies* 86(1): 240–81.

Dao, Mai Chi, Mitali Das, Zsoka Koczan, and Weicheng Lian. “Understanding the Downward Trend in Labor Income Shares.”

David, H. 2018. “Trade and Labor Markets: Lessons from China’s Rise.” *IZA World of Labor*.

Davis, Joshua P, and Robert H Lande. 2012. “Toward an Empirical and Theoretical Assessment of Private Antitrust Enforcement.” *Seattle UL Rev.* 36: 1269.

De Loecker, Jan, and Jan Eeckhout. 2017a. *The Rise of Market Power and the Macroeconomic Implications*. National Bureau of Economic Research.

———. 2017b. *The Rise of Market Power and the Macroeconomic Implications*. National Bureau of Economic Research.

———. 2018. *Global Market Power*. National Bureau of Economic Research.

De Loecker, Jan, Jan Eeckhout, and Gabriel Unger. 2020. “The Rise of Market Power and the Macroeconomic Implications\*.” *The Quarterly Journal of Economics* 135(2): 561–644.

De Loecker, Jan, Catherine Fuss, and Johannes Van Biesebroeck. 2018. *Markup and Price Dynamics: Linking Micro to Macro*. NBB Working Paper.

Delis, Manthos D., Iftekhar Hasan, and Pantelis Kazakis. 2014. “Bank Regulations and Income Inequality: Empirical Evidence.” *Review of Finance* 18(5): 1811–46.

Dharmapala, Dhammika, and James R. Hines. 2009. “Which Countries Become Tax Havens?” *Journal of Public Economics* 93(9–10): 1058–68.

Dibadj, Reza. 2004. “Saving Antitrust.” *U. Colo. L. Rev.* 75: 745.

Dierx, Adriaan et al. 2017. “6. Distributional Macroeconomic Effects of the European Union Competition Policy: A General Equilibrium Analysis.” *A Step Ahead: Competition Policy for Shared Prosperity and Inclusive Growth*. *Banco Mundial y OCDE*: 155–85.

Diez, Federico J., Jiayue Fan, and Carolina Villegas-Sánchez. “Global Declining Competition.”

Disney, Richard, Jonathan Haskel, and Ylva Heden. 2003. "Restructuring and Productivity Growth in UK Manufacturing." *The Economic Journal* 113(489): 666–94.

Doern, G Bruce, and Stephen Wilks. 1996. *Comparative Competition Policy: National Institutions in a Global Market*. Oxford University Press.

Dohmen, Thomas, Armin Falk, David Huffman, and Uwe Sunde. 2010. "Are Risk Aversion and Impatience Related to Cognitive Ability?" *American Economic Review* 100(3): 1238–60.

van Dorn, Aaron, Rebecca E. Cooney, and Miriam L. Sabin. 2020. "COVID-19 Exacerbating Inequalities in the US." *Lancet (London, England)* 395(10232): 1243.

Dunne, Niamh. 2020. "Fairness and the Challenge of Making Markets Work Better." *The Modern Law Review*: 1468-2230.12579.

Dutz, Mark A., and Aydin Hayri. 1999. *Does More Intense Competition Lead to Higher Growth?* The World Bank. <http://elibrary.worldbank.org/doi/book/10.1596/1813-9450-2320> (January 2, 2019).

Dutz, Mark A, and Maria Vagliasindi. 2000. "Competition Policy Implementation in Transition Economies: An Empirical Assessment." *European Economic Review* 44(4–6): 762–72.

Dworkin, Ronald. 1981a. "What Is Equality? Part 1: Equality of Welfare." *Philosophy & public affairs*: 185–246.

———. 1981b. "What Is Equality? Part 2: Equality of Resources." *Philosophy & public affairs*: 283–345.

Eccles, Marriner Stoddard. 1951. "Beckoning Frontiers."

Elhauge, Einer. 2019. "How Horizontal Shareholding Harms Our Economy-And Why Antitrust Law Can Fix It." *Available at SSRN 3293822*.

Elias Deutscher. 2021. "Competition and Equality – A Republican Account." *forthcoming, copy with autor*.

Ennis, Sean F, Pedro Gonzaga, and Chris Pike. 2019. "Inequality: A Hidden Cost of Market Power." *Oxford Review of Economic Policy* 35(3): 518–49.

- Ezrachi, Ariel. 2017. "Sponge." *Journal of Antitrust Enforcement* 5(1): 49–75.
- . 2018. "EU Competition Law Goals and the Digital Economy." *SSRN Electronic Journal*. <https://www.ssrn.com/abstract=3191766> (March 7, 2020).
- Ezrachi, Ariel, and Maria Ioannidou. 2012. "Public Compensation as a Complementary Mechanism to Damages Actions: From Policy Justifications to Formal Implementation." *Journal of European Competition Law & Practice* 3(6).
- Ezrachi, Ariel, Amit Zac, Christopher Decker, and Carola Casti. 2021. "The Effects of Competition Law on Inequality—Incidental by-Product or a Path for Societal Change?." *Available at SSRN*.
- Faccio, Mara, and Luigi Zingales. 2017. *Political Determinants of Competition in the Mobile Telecommunication Industry*. National Bureau of Economic Research.
- Farber, Henry S, Daniel Herbst, Ilyana Kuziemko, and Suresh Naidu. 2018. *Unions and Inequality over the Twentieth Century: New Evidence from Survey Data*. National Bureau of Economic Research.
- Faull, Jonathan, Ali Nikpay, and Deirdre Taylor, eds. 2014. *Faull & Nikpay: The EU Law of Competition*. Third edition. Oxford, United Kingdom: Oxford University Press.
- Feinberg, Robert M, and Kara M Reynolds. 2010. "The Determinants of State-Level Antitrust Activity." *Review of Industrial Organization* 37(3): 179–96.
- Feldstein, M. (1995). The effect of marginal tax rates on taxable income: a panel study of the 1986 Tax Reform Act. *Journal of Political Economy*, 103(3), 551-572.
- Felice, Flavio, and Massimiliano Vatiello. 2015. "Ordo and European Competition Law", A Research Annual (Research in the History of Economic Thought and Methodology, Volume 32)."
- Félix, Sónia, and Pedro Portugal. 2016. "Labor Market Imperfections and the Firm's Wage Setting Policy."
- Fennell, Lee Anne, and Richard H. McAdams. 2015. "The Distributive Deficit in Law and Economics." *Minn. L. Rev.* 100: 1051.

Fernbach, Philip M., Christina Kan, and John G. Lynch Jr. 2015. "Squeezed: Coping with Constraint through Efficiency and Prioritization." *Journal of Consumer Research* 41(5): 1204–27.

Ferreira, Francisco HG. 2010. *Distributions in Motion: Economic Growth, Inequality, and Poverty Dynamics*. The World Bank.

Ferrer-i-Carbonell, Ada, and Xavier Ramos. 2014. "INEQUALITY AND HAPPINESS: INEQUALITY AND HAPPINESS." *Journal of Economic Surveys* 28(5): 1016–27.

First, Harry. 1995. "Antitrust Enforcement in Japan." *Antitrust LJ* 64: 137.

Fisher, Alan A, and Robert H Lande. 1983. "Efficiency Considerations in Merger Enforcement." *Calif. L. Rev.* 71: 1580.

Fosu, Augustin Kwasi. 2017. "Growth, Inequality, and Poverty Reduction in Developing Countries: Recent Global Evidence." *Research in Economics* 71(2): 306–36.

Fox, Eleanor M. 1997. "US and EU Competition Law: A Comparison." *Global competition policy*: 339–54.

Fox, Eleanor M. 2000. "Equality, Discrimination, and Competition Law: Lessons from and for South Africa and Indonesia." *Harv. Int'l. LJ* 41: 579.

Fox, Eleanor M. 2006. "Economic Development, Poverty and Antitrust: The Other Path." *Sw. JL & Trade Am* 13: 211.

Fox, Eleanor M, and Lawrence A Sullivan. 1987. "Antitrust--Retrospective and Prospective: Where Are We Coming from--Where Are We Going." *NYUL Rev.* 62: 936.

Fry, James D. 2000. "Struggling to Teethe: Japan's Antitrust Enforcement Regime." *Law & Pol'y Int'l Bus.* 32: 825.

Fullbrook, Edward. 2004. *A Guide to What's Wrong with Economics*. Anthem Press.

Furman, Jason, and Peter Orszag. 2015. "A Firm-Level Perspective on the Role of Rents in the Rise in Inequality." *Presentation at "A Just Society" Centennial Event in Honor of Joseph Stiglitz Columbia University* 16.

Gal, Michal. 2019. "The Social Contract at the Basis of Competition Law." *Reconciling Efficiency and Equity: A Global Challenge for Competition Policy* (Gerard and Ilanos eds., Cambridge University Press).

Gal, Michal S. 2004. "Monopoly Pricing as an Antitrust Offense in the US and the EC: Two Systems of Belief about Monopoly?" *The Antitrust Bulletin* 49(1–2): 343–84.

Gal, Michal S., and Eleanor M. Fox. 2015. "Drafting Competition Law for Developing Jurisdictions: Learning from Experience." In *The Economic Characteristics of Developing Jurisdictions*, Edward Elgar Publishing.

Galbraith, James K. 2009. "Inequality, Unemployment and Growth: New Measures for Old Controversies." *The Journal of Economic Inequality* 7(2): 189–206.

———. 2015. *The UTIP Global Inequality Datasets: 1963-2008*. WIDER Working Paper.

Ganglmair, Bernhard, Alexander Kann, and Ilona Tsanko. 2020. *Markups for Consumers*. ZEW Discussion Papers.

Gans, Joshua, Andrew Leigh, Martin Schmalz, and Adam Triggs. 2019. "Inequality and Market Concentration, When Shareholding Is More Skewed than Consumption." *Oxford Review of Economic Policy* 35(3): 550–63.

Geradin, Damien, Anne Layne-Farrar, and Nicolas Petit. 2012. *EU Competition Law and Economics*. OUP Oxford.

Geradin, Damien, and Nicolas Petit. 2010. "Judicial Review in European Union Competition Law: A Quantitative and Qualitative Assessment."

Geradin, Damien, and Katarzyna Sadrak. 2017. "The EU Competition Law Fining System: A Quantitative Review of the Commission Decisions between 2000 and 2017."

Gerber, David J. 1998. *Law and Competition in Twentieth Century Europe: Protecting Prometheus*. oxford university Press.

Gerber, David J. 2006. "Competition Law Chapter in the Oxford Handbook of Comparative Law." *SSRN Electronic Journal*. <http://www.ssrn.com/abstract=871710> (October 25, 2020).

Gerbrandy, Anna. 2019. "Rethinking Competition Law within the European Economic Constitution." *JCMS: Journal of Common Market Studies* 57(1): 127–42.

Ghosal, Vivek. 2011. "Regime Shift in Antitrust Laws, Economics, and Enforcement." *Journal of Competition Law and Economics* 7(4): 733–74.

Gifford, Daniel J, and Robert T Kudrle. 2015. *The Atlantic Divide in Antitrust: An Examination of US and EU Competition Policy*. University of Chicago Press.

Gilbert, Mark. 2017. *European Integration*. Rowman & Littlefield Publishers.

Gilo, David. 2000. "The Anticompetitive Effect of Passive Investment." *Michigan Law Review* 99(1): 1–47.

Gimpelson, Vladimir, and Daniel Treisman. 2018. "Misperceiving Inequality." *Economics & Politics* 30(1): 27–54.

Gobillon, Laurent, and Thierry Magnac. 2016. "Regional Policy Evaluation: Interactive Fixed Effects and Synthetic Controls." *Review of Economics and Statistics* 98(3): 535–51.

Gollin, Douglas. 2002. "Getting Income Shares Right." *Journal of political Economy* 110(2): 458–74.

Grullon, Gustavo, Yelena Larkin, and Roni Michaely. 2019. "Are US Industries Becoming More Concentrated?" *Review of Finance* 23(4): 697–743.

Guidi, Mattia. 2016. *Competition Policy Enforcement in EU Member States*. Springer.

Gutiérrez, Germán, and Thomas Philippon. 2018. *How EU Markets Became More Competitive than US Markets: A Study of Institutional Drift*. National Bureau of Economic Research.

———. "How European Markets Became Free: A Study of Institutional Drift."

Gutiérrez, Germán, and Sophie Piton. 2020. "Revisiting the Global Decline of the (Non-Housing) Labor Share." *American Economic Review: Insights* 2(3): 321–38.

Gutmann, Jerg, and Stefan Voigt. 2014. "Lending a Hand to the Invisible Hand? Assessing the Effects of Newly Enacted Competition Laws." *Assessing the Effects of Newly Enacted Competition Laws* (February 8, 2014).

Hall, Peter A, and David Soskice. 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. OUP Oxford.

Han, Minsoo. 2014. "Rising Income Inequality and Competition: Evidence."

Han, Minsoo, and Ju Hyun Pyun. 2020. "Markups and Income Inequality: Causal Links, 1975-2011." *Journal of Comparative Economics*: S0147596720300834.

Harberger, Arnold C. 1995. "Monopoly and Resource Allocation." In *Essential Readings in Economics*, Springer, 77–90.

Hartmann, Dominik et al. 2017. "Linking Economic Complexity, Institutions, and Income Inequality." *World Development* 93: 75–93.

Hausman, Jerry, and Ephraim Leibtag. 2007. "Consumer Benefits from Increased Competition in Shopping Outlets: Measuring the Effect of Wal-Mart." *Journal of Applied Econometrics* 22(7): 1157–77.

Hay, Donald A., and Derek J. Morris. 1991. *Industrial Economics and Organization: Theory and Evidence*. Oxford University Press, USA.

Hayek, Friedrich A. 2007. "The Road to Serfdom: The Definitive Edition." *Edited by Bruce Caldwell*. London.

Heckman, James J. 1997. "The Intellectual Roots of the Law and Economics Movement." *Law and History Review* 15(2): 327–32.

Hines, James R. 1999. "Three Sides of Harberger Triangles." *Journal of Economic Perspectives* 13(2): 167–88.

Hines Jr, James R., and Eric M. Rice. 1994. "Fiscal Paradise: Foreign Tax Havens and American Business." *The Quarterly Journal of Economics* 109(1): 149–82.

Hoeller, Peter, Isabelle Joumard, and Isabell Koske. 2014. *Income Inequality in OECD Countries: What Are the Drivers and Policy Options?* World Scientific.

Hollanders, David. 2015. "The Great Divide: Unequal Societies and What We Can Do about Them. By Joseph E. STIGLITZ." *International Labour Review* 154(3): 415–16.

Hopkin, Jonathan. 2020. *Anti-System Politics: The Crisis of Market Liberalism in Rich Democracies*. Oxford University Press.

Hovenkamp, Herbert J. 2005. "Federal Antitrust Policy: The Law of Competition and Its Practice."

Hubmer, Joachim, Per Krusell, and Anthony A. Smith Jr. 2016. *The Historical Evolution of the Wealth Distribution: A Quantitative-Theoretic Investigation*. National Bureau of Economic Research.

Huggett, Mark, Gustavo Ventura, and Amir Yaron. 2011. "Sources of Lifetime Inequality." *American Economic Review* 101(7): 2923–54.

Hulten, Charles R., Edwin R. Dean, and Michael Harper. 2007. *63 New Developments in Productivity Analysis*. University of Chicago Press.

Hylland, Aanund, and Richard Zeckhauser. 1981. "Distributional Objectives Should Affect Taxes but Not Program Choice or Design." In *Measurement in Public Choice*, Springer, 123–43.

Hylton, Keith N. 2003. *Antitrust Law: Economic Theory and Common Law Evolution*. Cambridge University Press.

———. 2012. "Antitrust Enforcement Regimes: Fundamental Differences."

Hylton, Keith N, and Fei Deng. 2007. "Antitrust around the World: An Empirical Analysis of the Scope of Competition Laws and Their Effects." *Antitrust LJ* 74: 271.

Inchauste, Gabriela et al. 2014. *Understanding Changes in Poverty*. The World Bank.

Jacobson, Margaret, and Filippo Occhino. 2012. "Labor's Declining Share of Income and Rising Inequality." *Economic Commentary* (2012–13).

Jaeger, David A., Theodore J. Joyce, and Robert Kaestner. 2020. "A Cautionary Tale of Evaluating Identifying Assumptions: Did Reality TV Really Cause a Decline in Teenage Childbearing?" *Journal of Business & Economic Statistics* 38(2): 317–26.

Jaimovich, Nir, and Henry E. Siu. 2012. "Job Polarization and Jobless Recoveries." *Review of Economics and Statistics*: 1–19.

Januszewski, Silke I, Jens Köke, and Joachim K Winter. 2002. "Product Market Competition, Corporate Governance and Firm Performance: An Empirical Analysis for Germany." *Research in Economics* 56(3): 299–332.

Jauch, Sebastian, and Sebastian Watzka. 2016. "Financial Development and Income Inequality: A Panel Data Approach." *Empirical Economics* 51(1): 291–314.

Jones, Alison. 2016. "Private Enforcement of EU Competition Law: A Comparison with, and Lessons from, the US."

Jong-sung, You, and Sanjeev Khagram. 2005. "A Comparative Study of Inequality and Corruption." *American Sociological Review* 70(1): 136–57.

Joseph, A. 1942. "Schumpeter, Capitalism, Socialism, and Democracy." *Nueva York*.

Joyce, Robert, and Xiaowei Xu. 2019. "Inequalities in the Twenty-First Century: Introducing the IFS Deaton Review. May 2019."

Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler. 1986. "Fairness as a Constraint on Profit Seeking: Entitlements in the Market." *The American economic review*: 728–41.

Kantorowicz-Reznichenko, Elena. 2015. "Day-Fines: Should the Rich Pay More?" *Review of Law & Economics* 11(3): 481–501.

Kaplan, Greg, and Piotr Zoch. 2020. *Markups, Labor Market Inequality and the Nature of Work*. National Bureau of Economic Research.

Kaplow, Louis. 2011. "On the Choice of Welfare Standards in Competition Law." *Harvard Law and Economics Discussion Paper* (693).

- Kaplow, Louis, and Steven Shavell. 1994. "Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income." *The Journal of Legal Studies* 23(2): 667–81.
- . 2000. "Should Legal Rules Favor the Poor? Clarifying the Role of Legal Rules and the Income Tax in Redistributing Income." *The Journal of Legal Studies* 29(2): 821–35.
- Karabarbounis, Loukas, and Brent Neiman. 2013. "The Global Decline of the Labor Share." *The Quarterly journal of economics* 129(1): 61–103.
- Khan, Lina M, and Sandeep Vaheesan. 2017. "Market Power and Inequality: The Antitrust Counterrevolution and Its Discontents." *Harv. L. & Pol'y Rev.* 11: 235.
- Klein, Philip A. 2006. *Economics Confronts the Economy*. Edward Elgar Publishing.
- Klerman, Daniel M., Paul G. Mahoney, Holger Spamann, and Mark I. Weinstein. 2011. "Legal Origin or Colonial History?" *Journal of Legal Analysis* 3(2): 379–409.
- Klosko, George. 1987. "The Principle of Fairness and Political Obligation." *Ethics* 97(2): 353–62.
- Kovacic, William E. 2003. "The Modern Evolution of US Competition Policy Enforcement Norms." *Antitrust LJ* 71: 377.
- Kovacic, William E, Hugh M Hollman, and Patricia Grant. 2011. "How Does Your Competition Agency Measure Up?" *European Competition Journal* 7(1): 25–45.
- Kristal, Tali. 2010. "Good Times, Bad Times: Postwar Labor's Share of National Income in Capitalist Democracies." *American Sociological Review* 75(5): 729–63.
- Krueger, Alan, and Orley Ashenfelter. 2018. *Theory and Evidence on Employer Collusion in the Franchise Sector*. Cambridge, MA: National Bureau of Economic Research. <http://www.nber.org/papers/w24831.pdf> (November 9, 2018).
- Krueger, Dirk, and Fabrizio Perri. 2006. "Does Income Inequality Lead to Consumption Inequality? Evidence and Theory." *The Review of Economic Studies* 73(1): 163–93.

Kuhn, Moritz, and José-Victor Rios-Rull. 2016. "2013 Update on the US Earnings, Income, and Wealth Distributional Facts: A View from Macroeconomics." *Federal Reserve Bank of Minneapolis Quarterly Review* 37(1): 2–73.

Kurz, Mordecai. 2017. "On the Formation of Capital and Wealth." *Stanford Institute for Economic Policy Research (SIEPR) Working Paper*.

Lande, Robert H. 1982. "Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged." *Hastings Lj* 34: 65.

———. 1988. "The Rise and (Coming) Fall of Efficiency as the Ruler of Antitrust." *Antitrust Bull.* 33: 429.

———. 1993. "Chicago Takes It on the Chin: Imperfect Information Could Play a Crucial Role in the Post-Kodak World." *Antitrust Lj* 62: 193.

Lande, Robert H, and Joshua P Davis. 2007. "Benefits from Private Antitrust Enforcement: An Analysis of Forty Cases." *USFL Rev.* 42: 879.

Landes, William M. 1983. "Optimal Sanctions for Antitrust Violations." *The University of Chicago Law Review* 50(2): 652.

Law, David S. 2016. "Constitutional Archetypes." *Tex. L. Rev.* 95: 153.

Law, David S., and Mila Versteeg. 2012. "The Declining Influence of the United States Constitution." *NYUL Rev.* 87: 762.

Lawson, Tony. 1997. "Economics and Reality."

Levy, Nicholas, and Vassilena Karadakova. "The EC's Increasing Reliance on Internal Documents under the EU Merger Regulation: Issues and Implications"(2018) 39 (1)." *European Competition Law Review* 12.

Lianos, Ioannis. 2018. "The Poverty of Competition Law. The Long Story." *Center for Law, Economics and Society, UCL. Research Paper Series* (2).

- . 2020. “Competition Law as a Form of Social Regulation.” *The Antitrust Bulletin* 65(1): 3–86.
- Lianos, Ioannis, and Christos Genakos. 2012. “Econometric Evidence in EU Competition Law: An Empirical and Theoretical Analysis.” *CLES Research Paper series* 6: 12.
- Limbaugh, Rush H. 1953. “Historic Origins of Anti-Trust Legislation.” *Mo. L. Rev.* 18: 215.
- Lipsius, Ben. 2018. “Labor Market Concentration Does Not Explain the Falling Labor Share.” Available at SSRN 3279007.
- Ma, Tay-Cheng. 2011. “The Effect of Competition Law Enforcement on Economic Growth.” *Journal of Competition Law and Economics* 7(2): 301–34.
- Majumdar, Sumit K., Rabih Moussawi, and Ulku Yaylacicegi. 2019. “Mergers and Wages in Digital Networks: A Public Interest Perspective.” *Journal of Industry, Competition and Trade* 19(4): 583–615.
- Mani, Anandi, Sendhil Mullainathan, Eldar Shafir, and Jiaying Zhao. 2013. “Poverty Impedes Cognitive Function.” *science* 341(6149): 976–80.
- Marco Colino, Sandra. 2018. “The Antitrust F Word: Fairness Considerations in Competition Law.” *Journal of Business Law, Forthcoming*.
- Marinescu, Ioana Elena, and Herbert Hovenkamp. 2018. “Anticompetitive Mergers in Labor Markets.” *SSRN Electronic Journal*. <https://www.ssrn.com/abstract=3124483> (November 9, 2018).
- Marsden, Philip. 2009. “Checks and Balances: EU Competition Law and the Rule of Law.” *Competition L. Int’l* 5: 24.
- Martin, Andrew D, and Kevin M Quinn. 2002. “Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the US Supreme Court, 1953–1999.” *Political analysis* 10(2): 134–53.
- Martinez Licetti, Martha, Georgiana Pop, Sara Nyman, and Tania Priscilla Begazo Gomez, eds. 2017. *A Step Ahead: Competition Policy for Shared Prosperity and Inclusive Growth*. The World Bank. <http://elibrary.worldbank.org/doi/book/10.1596/978-1-4648-0945-3> (January 2, 2019).

Mason, Edward S. 1939. "Price and Production Policies of Large-Scale Enterprise." *The American economic review* 29(1): 61–74.

Matakos, Konstantinos, and Dimitrios Xefteris. 2017. "Divide and Rule: Redistribution in a Model with Differentiated Candidates." *Economic Theory* 63(4): 867–902.

Mathilde Pak and Cyrille Schwellnus. 2019. 1541 *Labour Share Developments over the Past Two Decades: The Role of Public Policies*. . OECD Economics Department Working Papers. [https://www.oecd-ilibrary.org/economics/labour-share-developments-over-the-past-two-decades\\_b21e518b-en](https://www.oecd-ilibrary.org/economics/labour-share-developments-over-the-past-two-decades_b21e518b-en) (January 10, 2021).

Maurice Stucke and Ariel Ezrachi. 2020. *Competition Overdose: How Free Market Mythology Transformed Us from Citizen Kings to Market Servants*.

May, James. 1987. "Antitrust Practice and Procedure in the Formative Era: The Constitutional and Conceptual Reach of State Antitrust Law, 1880-1918." *University of Pennsylvania Law Review* 135(3): 495–593.

———. 1989. "Antitrust in the Formative Era: Political and Economic Theory in Constitutional and Antitrust Analysis, 1880-1918." *Ohio St. LJ* 50: 257.

McGowan, Lee, and Stephen Wilks. 1995. "The First Supranational Policy in the European Union: Competition Policy." *European Journal of Political Research* 28(2): 141–69.

Melamed, A. Douglas, and Nicolas Petit. 2019. "The Misguided Assault on the Consumer Welfare Standard in the Age of Platform Markets." *Review of Industrial Organization* 54(4): 741–74.

Meltzer, Allan H., and Scott F. Richard. 1981. "A Rational Theory of the Size of Government." *Journal of political Economy* 89(5): 914–27.

Mirrlees, James A., and Stuart Adam. 2010. *Dimensions of Tax Design: The Mirrlees Review*. Oxford University Press.

Mishel, Lawrence, and Ross Eisenbrey. 2015. "How to Raise Wages: Policies That Work and Policies That Don't Inequality, Opportunity, and the Law of the Workplace Symposium." *Stetson Law Review* 45: 43–68.

Moll, Benjamin, Lukasz Rachel, and Pascual Restrepo. 2019. "Uneven Growth: Automation's Impact on Income and Wealth Inequality." *Manuscript, Princeton University*.

Moreno-Ternerero, Juan D., and John E. Roemer. 2008. "The Veil of Ignorance Violates Priority." *Economics & Philosophy* 24(2): 233–57.

Motta, Massimo. 2004. *Competition Policy: Theory and Practice*. Cambridge University Press.

Muris, Timothy J. 1979. "The Efficiency Defense under Section 7 of the Clayton Act." *Case W. Res. L. Rev.* 30: 381.

Naidu, Suresh, Eric A Posner, and Glen Weyl. 2018. "Antitrust Remedies for Labor Market Power." *Harv. L. Rev.* 132: 536.

Ngai, L. Rachel, and Christopher A. Pissarides. 2007. "Structural Change in a Multisector Model of Growth." *American economic review* 97(1): 429–43.

Nicholson, Michael W. 2008. "An Antitrust Law Index for Empirical Analysis of International Competition Policy." *Journal of Competition Law and Economics* 4(4): 1009–29.

Nickell, Stephen J. 1996. "Competition and Corporate Performance." *Journal of political economy* 104(4): 724–46.

Nicodème, Gaëtan. 2007. "Corporate Tax Competition and Coordination in the European Union: What Do We Know? Where Do We Stand?" *International taxation handbook*: 171–208.

Nolan, Brian, Matteo Richiardi, and Luis Valenzuela. 2018. "The Drivers of Inequality in Rich Countries."

Nowag, Julian. 2016. "The UBER-Cartel? UBER between Labour and Competition Law." *SSRN Electronic Journal*. <https://www.ssrn.com/abstract=2826652> (July 22, 2021).

Nozick, Robert. 1974. *Anarchy, State, and Utopia*. New York: Basic Books.

Okun, Arthur M. 1975. "Equality and Efficiency: The Big Tradeoff, the Brookings Institution." *Washington, DC*.

Ormerod, Paul. 1997. *The Death of Economics*. : John Wiley & Sons.

Ormosi, Peter L. 2011. "How Big Is a Tip of the Iceberg? A Parsimonious Way to Estimate Cartel Detection Rate."

Ott, Claus, and H. B. Schäfer. 2004. *The Economic Analysis of Civil Law*. Cheltenham, UK: Edward Elgar Publishing.

Palma, José Gabriel. 2011. "Homogeneous Middles vs. Heterogeneous Tails, and the End of the 'Inverted-U': It's All about the Share of the Rich." *development and Change* 42(1): 87–153.

Papaioannou, Elias, and Gregorios Siourounis. 2008. "Democratisation and Growth." *The Economic Journal* 118(532): 1520–51.

Petit, Nicolas. 2017. "Significant Impediment to Industry Innovation: A Novel Theory of Harm in EU Merger Control?" *Available at SSRN 2911597*.

Peyer, Sebastian. 2016. "Compensation and the Damages Directive." *European Competition Journal* 12(1): 87–112.

Philippe, Aghion, Philippe Aghion, and Jeffrey G. Williamson. 1998. *Growth, Inequality, and Globalization: Theory, History, and Policy*. Cambridge University Press.

Philippon, Thomas. 2015. "Has the US Finance Industry Become Less Efficient? On the Theory and Measurement of Financial Intermediation." *American Economic Review* 105(4): 1408–38.

———. 2019. *The Great Reversal: How America Gave up on Free Markets*. Harvard University Press.

Pickett, Kate, and Richard Wilkinson. 2010. *The Spirit Level: Why Equality Is Better for Everyone*. Penguin UK.

Piketty, Thomas. 2001. "Income Inequality in France 1901-98."

———. 2015. "About *Capital in the Twenty-First Century*." *American Economic Review* 105(5): 48–53.

Piketty, Thomas, and Arthur Goldhammer. 2014. *Capital in the Twenty-First Century*. Cambridge Massachusetts: The Belknap Press of Harvard University Press.

- Piketty, Thomas, and Emmanuel Saez. 2003. "Income Inequality in the United States, 1913–1998." *The Quarterly Journal of Economics* 118(1): 1–41.
- Piketty, Thomas, and Gabriel Zucman. 2014. "Capital Is Back: Wealth-Income Ratios in Rich Countries 1700–2010." *The Quarterly Journal of Economics* 129(3): 1255–1310.
- Polinsky, A. Mitchell. 1986. *Detrebling versus Decoupling Antitrust Damages: Lessons from the Theory of Enforcement*. National Bureau of Economic Research.
- Polinsky, A. Mitchell, and Daniel L. Rubinfeld. 1988. "The Welfare Implications of Costly Litigation for the Level of Liability." *The Journal of Legal Studies* 17(1): 151–64.
- Pollock, Earl E. 1977. "Antitrust, the Supreme Court, and the Spirit of '76." *Nw. UL Rev.* 72: 631.
- Posner, Richard A. 1979. "The Chicago School of Antitrust Analysis." *University of Pennsylvania Law Review* 127(4): 925–48.
- . 1982. "Economics, Politics, and the Reading of Statutes and the Constitution." *The University of Chicago Law Review* 49(2): 263–91.
- Posner, Richard A. 2014. *Economic Analysis of Law*. Wolters kluwer law & business.
- Quinn, Dennis P., and Robert Y. Shapiro. 1991. "Business Political Power: The Case of Taxation." *American Political Science Review* 85(3): 851–74.
- Rachlinski, Jeffrey J., Sheri Lynn Johnson, Andrew J. Wistrich, and Chris Guthrie. 2008. "Does Unconscious Racial Bias Affect Trial Judges?" *Notre Dame L. Rev.* 84: 1195.
- Ramos, Xavier, and Dirk Van de Gaer. 2016. "Approaches to Inequality of Opportunity: Principles, Measures and Evidence." *Journal of Economic Surveys* 30(5): 855–83.
- Ramsey, David. 2012. *Antitrust and the Supreme Court*. LFB Scholarly Pub.
- Ramseyer, J. Mark. 1984. "Costs of the Consensual Myth: Antitrust Enforcement and Institutional Barriers to Litigation in Japan." *Yale LJ* 94: 604.
- Ratto, Marco, Werner Roeger, and Jan in't Veld. 2009. "QUEST III: An Estimated Open-Economy DSGE Model of the Euro Area with Fiscal and Monetary Policy." *economic Modelling* 26(1): 222–33.

- Ravallion, Martin. 2001. "Growth, Inequality and Poverty: Looking beyond Averages." *World development* 29(11): 1803–15.
- Rawls, John. 2009. *A Theory of Justice*. Harvard university press.
- Reimann, Mathias, and Reinhard Zimmermann. 2019. *The Oxford Handbook of Comparative Law*. Oxford University Press.
- Richter, Brian Kelleher, Krislert Samphantharak, and Jeffrey F. Timmons. 2009. "Lobbying and Taxes." *American Journal of Political Science* 53(4): 893–909.
- Rinz, Kevin. 2018. "Labor Market Concentration, Earnings Inequality, and Earnings Mobility." *Center for Administrative Records Research and Applications Working Paper* 10.
- Rodríguez-Castelán, Carlos. 2015. *The Poverty Effects of Market Concentration*. The World Bank. <http://elibrary.worldbank.org/doi/book/10.1596/1813-9450-7515> (January 2, 2019).
- Roemer, John E. 2011. "Equality: Its Justification, Nature, and Domain." *The Oxford Handbook of Economic Inequality*. <http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199606061.001.0001/oxfordhb-9780199606061-e-2> (December 14, 2018).
- Rognlie, Matthew. 2016. "Deciphering the Fall and Rise in the Net Capital Share: Accumulation or Scarcity?" *Brookings papers on economic activity* 2015(1): 1–69.
- Roine, Jesper, Jonas Vlachos, and Daniel Waldenström. 2009. "The Long-Run Determinants of Inequality: What Can We Learn from Top Income Data?" *Journal of Public Economics* 93(7–8): 974–88.
- Roodman, David. 2006. "How to Do Xtabond2." In *North American Stata Users' Group Meetings 2006*, Stata Users Group.
- . 2009. "A Note on the Theme of Too Many Instruments." *Oxford Bulletin of Economics and Statistics* 71(1): 135–58.
- Rose, Jonathan. 1994. "State Antitrust Enforcement, Mergers, and Politics." *Wayne L. Rev.* 41: 71.

Roser, Max, and Jesus Crespo Cuaresma. 2016. "Why Is Income Inequality Increasing in the Developed World?" *Review of Income and Wealth* 62(1): 1–27.

Ross, Thomas W. 1998. "Introduction: The Evolution of Competition Law in Canada." *Review of Industrial Organization*: 1–23.

Roth, Alvin E. 1982. "The Economics of Matching: Stability and Incentives." *Mathematics of operations research* 7(4): 617–28.

Rowthorn, Robert. 1995. "Capital Formation and Unemployment." *Oxford review of economic policy* 11(1): 26–39.

Russo, Francesco, Maarten Pieter Schinkel, Andrea Günster, and Martin Carree. 2010. *European Commission Decisions on Competition: Economic Perspectives on Landmark Antitrust and Merger Cases*. Cambridge University Press.

Sachs, Jeffrey D. 2006. *The End of Poverty: Economic Possibilities for Our Time*. Penguin.

Saez, Emmanuel. 2017. "Income and Wealth Inequality: Evidence and Policy Implications." *Contemporary Economic Policy* 35(1): 7–25.

Salamon, Lester M., and John J. Siegfried. 1977. "Economic Power and Political Influence: The Impact of Industry Structure on Public Policy." *American Political Science Review* 71(3): 1026–43.

Salop, Steven C, and Lawrence J White. 1985. "Economic Analysis of Private Antitrust Litigation." *Geo. LJ* 74: 1001.

Salverda, Wiemer, Brian Nolan, and Timothy M Smeeding. 2009. *The Oxford Handbook of Economic Inequality*. Oxford University Press.

Sanchirico, Chris William. 2000a. "Deconstructing the New Efficiency Rationale." *Cornell L. Rev.* 86: 1003.

———. 2000b. "Taxes versus Legal Rules as Instruments for Equity: A More Equitable View." *The Journal of Legal Studies* 29(2): 797–820.

———. 2017. “Optimal Redistributive Instruments in Law and Economics.” In *The Oxford Handbook of Law and Economics*.

Schinkel, Maarten Pieter. 2021. “On Distributive Justice by Antitrust: The Robin Hood Cartel.” *SSRN Electronic Journal*. <https://www.ssrn.com/abstract=3869561> (June 25, 2021).

Schinkel, Maarten Pieter, Martin Carree, and Andrea Günster. 2004. “European Antitrust Policy: An Empirical Analysis of Commission Decisions and Their Appeal Histories, 1964-2001.” In Citeseer.

Schmalensee, Richard. 1981. “Another Look at Market Power.” *Harv. L. Rev.* 95: 1789.

Schreyer, Paul, and María Belén Zinni. 2020. “Productivity Measurement, R&D Assets, and Mark-Ups in OECD Countries.” *Review of Income and Wealth*: roiw.12492.

Schwartz, Louis B. 1978. “Justice and Other Non-Economic Goals of Antitrust.” *U. Pa. L. Rev.* 127: 1076.

Scott Morton, Fiona, and Herbert Hovenkamp. 2017. “Horizontal Shareholding and Antitrust Policy.” *Yale LJ* 127: 2026.

Sen, Amartya. 1980. “Equality of What?” *The Tanner lecture on human values* 1: 197–220.

Shah, A. K., S. Mullainathan, and E. Shafir. 2012. “Some Consequences of Having Too Little.” *Science* 338(6107): 682–85.

Shapiro, Carl. 2018. “Antitrust in a Time of Populism.” *International Journal of Industrial Organization* 61: 714–48.

Shavell, Steven. 1981. “A Note of Efficiency vs. Distributional Equity in Legal Rulemaking: Should Distributional Equity Matter given Optimal Income Taxation?” *The American Economic Review* 71(2): 414–18.

———. 2003. *Economic Analysis of Accident Law*. Cambridge, MA: National Bureau of Economic Research. <http://www.nber.org/papers/w9694.pdf> (November 15, 2020).

Slemrod, Joel. 2000. *Does Atlas Shrug?: The Economic Consequences of Taxing the Rich*. Harvard University Press.

Snow, Marcellus S. 2002. "Competition as a Discovery Procedure." *The quarterly journal of austrian economics* 5(3): 9–23.

Sokol, D Daniel, Daniel A Crane, and Ariel Ezrachi. 2014. *Global Antitrust Compliance Handbook*. Oxford University Press New York.

Solow, Robert M. 1957. "Technical Change and the Aggregate Production Function." *The review of Economics and Statistics*: 312–20.

Solt, Frederick. 2009. "Standardizing the World Income Inequality Database." *Social Science Quarterly* 90(2): 231–42.

———. 2020. "Measuring Income Inequality across Countries and over Time: The Standardized World Income Inequality Database." *Social Science Quarterly* 101(3): 1183–99.

Song, Jae et al. 2019. "Firming up Inequality." *The Quarterly journal of economics* 134(1): 1–50.

Stansbury, Anna, and Lawrence H. Summers. 2020. "Declining Worker Power and American Economic Performance." *Brookings Papers on Economic Activity*.

Starr, Evan, J. J. Prescott, and Norman Bishara. 2018. *Noncompetes in the U.S. Labor Force*. Rochester, NY: Social Science Research Network. SSRN Scholarly Paper. <https://papers.ssrn.com/abstract=2625714> (January 2, 2019).

Starr, Evan, James J Prescott, and Norman Bishara. 2019. "Noncompetes in the US Labor Force." *U of Michigan Law & Econ Research Paper* (18–013).

Stigler, G. J. 2006. "Competition, The New Palgrave Dictionary of Economics." In Abstract.

Stigler, George J. 1957. "Perfect Competition, Historically Contemplated, 65 J." *Pol. Econ* 1.

———. 1970. "Director's Law of Public Income Redistribution." *The Journal of Law and Economics* 13(1): 1–10.

Stigler, George J. 1985. "The Origin of the Sherman Act." *The Journal of Legal Studies* 14(1): 1–12.

Stiglitz, Joseph E. 2012. *The Price of Inequality: How Today's Divided Society Endangers Our Future*. WW Norton & Company.

Stiglitz, Joseph E. 2017. "Towards a Broader View of Competition Policy." *Competition Policy for the New Era: Insights from the BRIC Countries*: 4–21.

Stucke, Maurice E., and Ariel Ezrachi. 2017. "Looking Up in the Data-Driven Economy." *SSRN Electronic Journal*. <http://www.ssrn.com/abstract=2975510> (July 6, 2021).

Stylianou, Konstantinos, and Marios Iacovides. 2020. "The Goals of EU Competition Law - A Comprehensive Empirical Investigation." *SSRN Electronic Journal*. <https://www.ssrn.com/abstract=3735795> (June 20, 2021).

Summers, Lawrence H. 2015. "Demand Side Secular Stagnation." *American Economic Review* 105(5): 60–65.

Syverson, Chad. 2004a. "Market Structure and Productivity: A Concrete Example." *Journal of Political Economy* 112(6): 1181–1222.

———. 2004b. "Product Substitutability and Productivity Dispersion." *Review of Economics and Statistics* 86(2): 534–50.

Torsten, Persson, and Guido Tabellini. 1994. "Is Inequality Harmful for Growth."

Trabandt, Mathias, and Harald Uhlig. 2009. *How Far Are We from the Slippery Slope? The Laffer Curve Revisited*. National Bureau of Economic Research.

Traina, James. 2018. "Is Aggregate Market Power Increasing? Production Trends Using Financial Statements." *Production Trends Using Financial Statements (February 8, 2018)*.

Uguccioni, James, Andrew Sharpe, and Alexander Murray. 2016. *Labour Productivity and the Distribution of Real Earnings in Canada, 1976 to 2014*. Centre for the Study of Living Standards.

United States Government Accountability Office. 2020. "Millions of Full-Time Workers Rely on Federal Health Care and Food Assistance Programs." <https://www.gao.gov/assets/gao-21-45.pdf>.

- Urzúa, Carlos M. 2013. "Distributive and Regional Effects of Monopoly Power." *Economía Mexicana. Nueva Época* 22(2): 279–95.
- Van Bael & Bellis (Firm). 2010. "Competition Law of the European Community."
- Van den Bergh, Roger J. 2017. *Comparative Competition Law and Economics*. Edward Elgar Publishing.
- Van Reenen, John. 2018. "Increasing Differences between Firms: Market Power and the Macro-Economy."
- Verme, Paolo. 2011. "LIFE SATISFACTION AND INCOME INEQUALITY." *Review of Income and Wealth* 57(1): 111–27.
- Vesterdorf, Bo. 2015. "Theories of Self-Preferencing and Duty to Deal—Two Sides of the Same Coin?" *Competition Law & Policy Debate* 1(1): 4–9.
- Vickers, John. 1995. "Concepts of Competition." *Oxford Economic Papers*: 1–23.
- Voigt, Stefan. 2009. "The Effects of Competition Policy on Development – Cross-Country Evidence Using Four New Indicators." *Journal of Development Studies* 45(8): 1225–48.
- Waked, Dina I. 2020. "Antitrust as Public Interest Law: Redistribution, Equity, and Social Justice." *The Antitrust Bulletin* 65(1): 87–101.
- Walker, Jack L. 1969. "The Diffusion of Innovations among the American States." *American political science review* 63(3): 880–99.
- Waller, Spencer Weber. 2014. "Progressive Voices in Competition Law." *Libre Competencia y la Sociedad Buena. Perspectivas Actuales en el Derecho de la Competencia, Fernando Araya (ed.), Universidad Alberto Hurtado, (2014 Forthcoming)*.
- Webber, Douglas A. 2015. "Firm Market Power and the Earnings Distribution." *Labour Economics* 35: 123–34.
- Weche, John P., and Achim Wambach. 2021. "The Fall and Rise of Market Power in Europe." *Jahrbücher für Nationalökonomie und Statistik*.

- Weisbach, David A. 2003. "Should Legal Rules Be Used to Redistribute Income?" *The University of Chicago Law Review* 70(1): 439.
- Weisbach, David A., and Joseph Bankman. 2011. "A Critical Look at A Critical Look-Reply to Sanchirico." *Tax Law Review* 64.
- Whish, Richard, and David Bailey. 2015. *Competition Law*. Oxford University Press, USA.
- Williamson, Oliver E. 1968. "Economies as an Antitrust Defense: The Welfare Tradeoffs." *The American Economic Review* 58(1): 18–36.
- Wils, Wouter PJ. 2003. "Should Private Antitrust Enforcement Be Encouraged in Europe." *World Competition* 26: 473.
- Wilson, John Douglas. 1999. "Theories of Tax Competition." *National tax journal*: 269–304.
- Winer, Stanley L. 2016. "The Political Economy of Taxation: Power, Structure, Redistribution."
- Wood, B Dan, and James E Anderson. 1993. "The Politics of US Antitrust Regulation." *American Journal of Political Science*: 1–39.
- Wu, Tim. 2018. "After Consumer Welfare, Now What? The 'Protection of Competition' Standard in Practice." *The Journal of the Competition Policy International*.
- Xu, Yiqing. 2017. "Generalized Synthetic Control Method: Causal Inference with Interactive Fixed Effects Models." *Political Analysis* 25(1): 57–76.
- Yang, Meong-Cho. 2009. "Competition Law and Policy of the Republic of Korea." *The Antitrust Bulletin* 54(3): 621–50.
- Zac, Amit. 2020. "Competition Law and Economic Inequality: A Comparative Analysis of Text Similarity Using General Synthetic Control Method." *SSRN Electronic Journal*. <https://www.ssrn.com/abstract=3703633> (June 8, 2021).
- Zac, Amit, Carola Casti, Chris Decker, and Ariel Ezrachi. 2020. "COMPETITION LAW AND INCOME INEQUALITY: A PANEL DATA ECONOMETRIC APPROACH." *Available at SSRN*.

Zac, Amit, Carola Casti, Christopher Decker, and Ariel Ezrachi. 2021. "Competition Policy and the Decline of the Labour Share." *Available at SSRN 3824115*.

Zeira, Joseph, and Michele Battisti. 2018. "Inequality and Public Policy."

Zodrow, George R., and Peter Mieszkowski. 1986. "Pigou, Tiebout, Property Taxation, and the Underprovision of Local Public Goods." *Journal of urban economics* 19(3): 356–70.

Zweigert, Konrad, and Hein Kötz. 1992. *Introduction to Comparative Law*. Oxford University Press, USA.