

Tomaso Duso
DIW Berlin & DICE Düsseldorf

The Evaluation of Competition Policy Enforcement and Institutions

- Is **competition policy** socially beneficial? Can we measure its effectiveness?
 - Key policy question (EC, DOJ/FTC, UK CC, OECD)
 - Large academic interest: how to measure the social benefits of a **deterrence** system as competition policy (e.g. Baker JEP, 2003 and Werden, JEP 2003)?
 - Sparse but growing heterogeneous **empirical evidence**
- Review some key concepts of the empirical literature on **competition policy effectiveness** and present some selected results
 - **Goals** and appropriate **methodologies**
 - Highlight on the role of **institutions**
 - **Caveat:** Focus on **my own research**

- The first empirical question is **how to measure** competition policy
- The term competition policy refers to
 - **Competition legislation**: set of prohibitions and obligations that firms have to comply with
 - Its **enforcement**: array of tools for policing behavior and punishing violations
- **Institutions** play an important role
 - **Competition policy institutions** –the procedures and rules– might affect its enforcement (Duso et al. JLE 2007, EER 2011, DP 2012)
 - Competition policy & institutions are embedded in and interact with a system of **other institutions** (e.g. legal institutions) (e.g. Buccirosi et al. REStat 2013)

- The second empirical question is **how to measure** effectiveness
- The **goals** of competition policy is to protect (consumers) welfare by
 - Punishing misbehavior → **desistence**
 - Discouraging misbehavior → **deterrence**
- **Effectiveness** can be measured along different dimensions (Duso, Gugler, and Szücs, DP 2012):
 - **Predictability** / legal certainty (ex-ante)
 - **Correctness** of the particular decision(s)
 - **Deterrence** (ex-post)

- Two key concepts are at the basis of any ex-post evaluation
- The **counterfactual (and methodology)**:
 - i. Theoretically derived (simulations),
 - ii. A 'similar market' (diff-in-diff),
 - iii. The stock market (event studies),
 - iv. The opinion of a relevant group of actors (surveys)
- The **level of aggregation**:
 - i. Micro, single-case view
 - ii. Cross-cases, cross-industry analyses
 - iii. More macro approach that looks at the policy impact on various dimensions of economic activity
- Several academic contributions have appeared in the past decade (e.g. Ormosi and Davies, JCLE 2012; Duso, Pros & Cons 2012)

Three Examples from my own Research

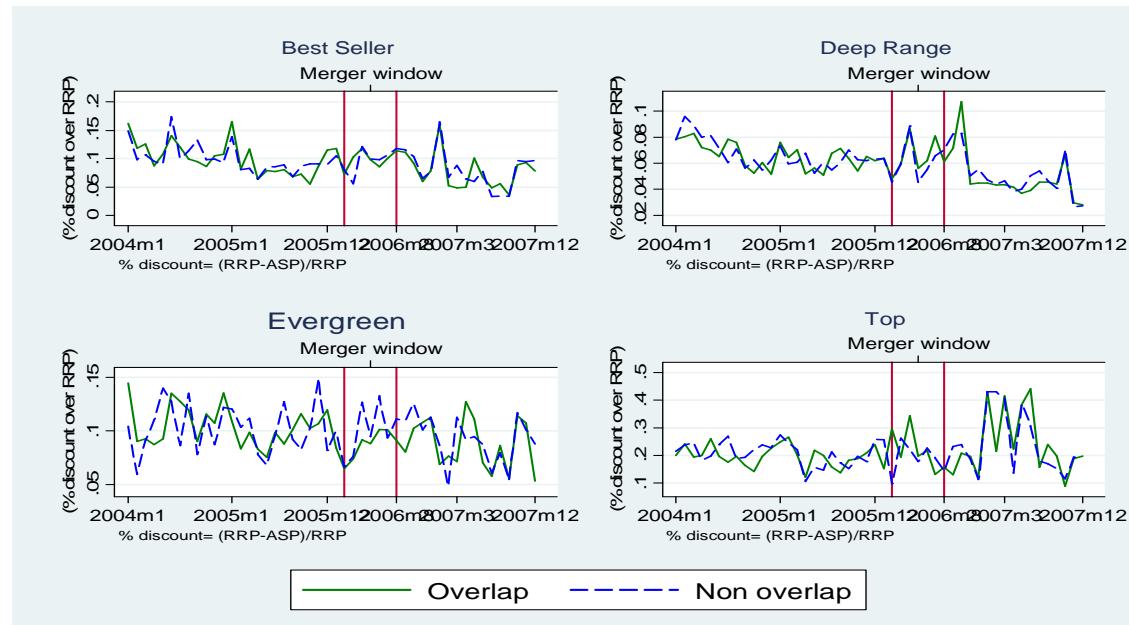
2. Merger Decision's Correctness
3. Merger Policy and Deterrence
4. Impact of Competition Policy on TFP Growth

NOTE: Two out of the three examples are based on research projects that we undertook for different competition authorities

- We analyze the merger among two major **book resellers** in the UK Waterstone's and Ottakar's (Aguzzoni et al., 2013)
 - It was cleared by the UK Competition Commission in 2006
- We look at the effect of the merger on books' **prices** at different levels: **local** and **national**
- We use a Difference-in-Difference (DiD) approach
 - Two **similar groups** of markets/firms/prices: one has been 'treated' by the merger, while the other is a control group (1st difference)
 - How they developed **before and after** the merger (2nd difference)
 - The **difference-in-difference** behavior measure the **causal** merger effect

- The book retailing market is characterized by **locally differentiated areas** which are differently affected by the merger
 - We use geographical variation to identify **'treated' overlap areas** where both merging firms were present and 'control' areas (e.g. Hastings AER 2004)
 - We choose **60 stores** (30 Waterstone's and 30 Ottakar's) in **50 areas** (30 overlap and 20 non-overlap areas)
- We also look at the effect of the merger on **national prices**:
 - Competitors as counterfactuals (e.g. Ashenfelter et al. AEJP, 2013) or titles' category subject to intense competition
- Monthly data on volumes and values of a sample of **200 titles** in four groups: top-seller, evergreen, best-seller, deep-range

- No significant price increase in the overlapping areas



Source: Aguzzoni, Argentesi, Ciari, Duso, Tognoni (2013)

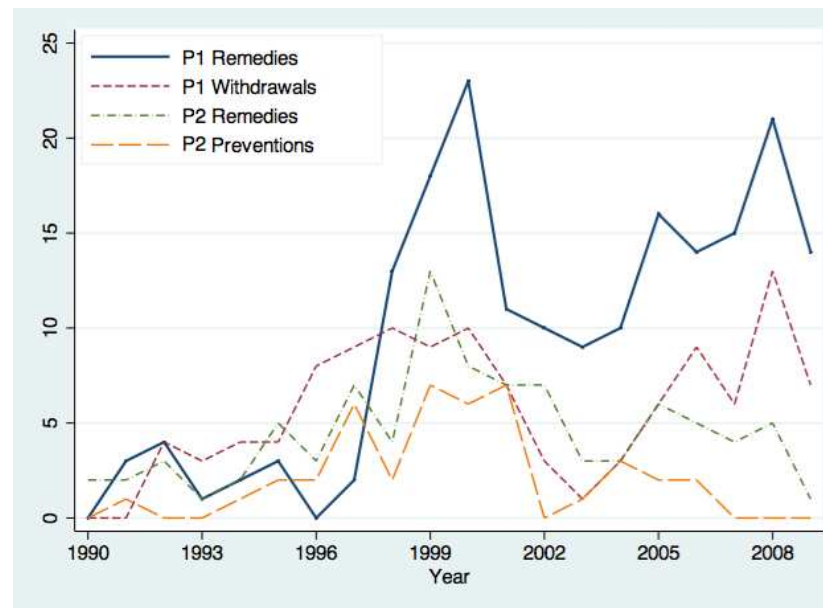
- But **price convergence** among merging parties
- No significant effect of the merger on national prices (compared to competitors or to the most 'competitive' segment)

- Well designed DiD is the **most appealing** approach for retrospective policy evaluations of **single** (merger) decisions
 - Heavily used in many other policy fields and recently also in merger evaluation (Angrist and Pischke, JEP 2010, Ashenfelter et al., AEJP 2012)
- Very **natural**, simple, ('a-theoretical'), data-driven approach
- The definition of the **counterfactual** is crucial (e.g. Whinston and Nevo, JEP 2010)
- It is **data intensive**
- It **cannot be used to study the entire policy** over a period of time (but see meta-analysis as in Kwocka, AB 2013)

3

Merger Policy and Deterrence

- Optimal merger policy also involves **deterrence**
 - Actions, which in isolation would be welfare detrimental, might be **optimally taken to deter** future anticompetitive mergers (e.g. Sørgard, JIndE 2010; Nocke and Whinston, JPE 2011)
- We look at how **past merger decisions** affects merger behavior



Source: Clougherty, Duso, Lee, Seldeslachts (2013)

- Duso, Gugler, Szücs, (DP 2012) analyze 347 mergers and look at the probability of a particular merger to be **anti-competitive, welfare-neutral, or pro-competitive**
 - We use event studies to define a **competitiveness indicator** and an multinomial probit model
 - Past **prohibitions** deter anti-competitive mergers (pre-reform)
 - Withdrawals and **phase 1 remedies** deter anti-competitive mergers (post-reform)
 - **No over-deterrence** due to policy enforcement
- Clougherty, Duso, Lee, and Seldeslachts, (2013) use the full population and look at how **past decisions** affects the **proclivity of mergers** at the industry level (e.g. Clougherty and Seldeslachts, JLE0, 2013)
 - **Dynamic panel model** to account for the merger wave(s)
 - Withdrawals and **phase 1 remedies deter** but only after 2004

4

Impact of Competition Policy on TFP Growth

- The aim of competition policy is to protect social welfare by **detering anti-competitive** behavior (Buccirossi et al. REStat, 2013)
- The **causal link** we postulate (e.g. Aghion and Schenkerman, EJ 2004; Aghion et al., REStat 2009):
 - Competition Policy → Competition → Efficiency
- We look at the **direct link** between competition policy and efficiency to identify and estimate the causal effect of the policy (e.g. Pavnick, RES 2002; Nicoletti and Scarpetta, EP 2003)
 - We create **indexes of the quality of competition policy** (project supported by DG EcFin)
 - As a measure of efficiency we choose **TFP (and LP) growth**

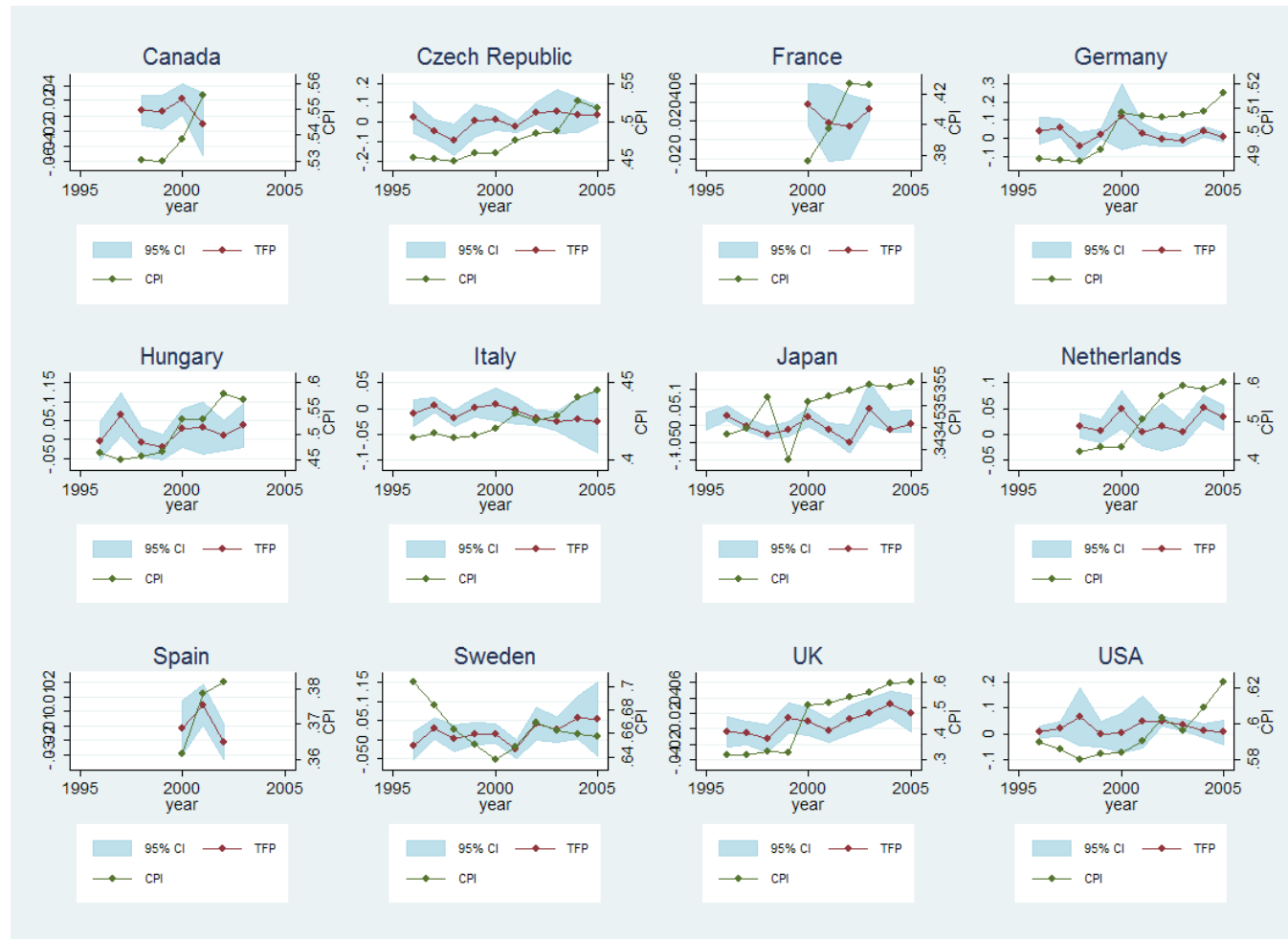
4

Overall Impact of Competition Policy on TFP Growth

- We submitted a set of **tailored questionnaires** to the CAs in **13 jurisdictions** and integrated them with information from the OECD country studies and from the CAs' own websites
- We obtained various information on **six policy variables** identified as determinants of deterrence, separately for each type of possible competition law infringement (**hard-core cartels, abuses, other infringements**) and for **mergers** over the years from **1995 to 2005**
- Each piece of information at each step of the aggregation process was assigned a **score/weight** on a scale of 0-1 against a benchmark of generally agreed best practice
- We tested the sensitivity of this weighting scheme to alternative ones using 1) **equal weights**, 2) 1,000 sets of **random weights**, and 3) **factor analysis**

4

Overall Impact of Competition Policy on TFP Growth



Source: Buccirossi, Ciari, Duso, Spagnolo, Vitale (REStat 2013)

4

Overall Impact of Competition Policy on TFP Growth

- Competition policy has a **positive impact on TFP** and LP growth, which is statistically significant at the 1% level
 - The impact is **economically significant**: e.g. the actual improvement of the CPI in the UK in 2001-2002, is responsible for 22.1% of the increase of TFP growth in that year (in “food products” 0.7% out of 5.2%)
- The **institutional dimension** of the policy (more than its enforcement) and the antitrust policy (more than the merger control) seem to have a stronger impact

4

Overall Impact of Competition Policy on TFP Growth

In several steps, we provide evidence of the **causal nature** of this link

1. We use IV approach

- political variables (governments' ideological position towards competition, e.g. Duso and Röller EL, 2003, Duso PC, 2005)
- policy in neighboring countries (Hausmann, 1997)

2. We explore the **interactions** between **legal institutions** and competition policy. CPI has a significantly **larger** impact in countries with better legal institutions

- with low cost for the enforcement of contracts (Doing Business),
- with high rule of law (Fraser)

3. CPI has a much **stronger impact in the manufacturing** sectors

- Sector specific regulations in services industries (e.g. electricity, gas, water, communication, financial intermediation) may make them to a lesser extent subject to the ex-post antitrust scrutiny

- Different methods can be used to answer different questions: single decision vs. whole policy vs. macroeconomic effects
- The convergence of different results based on different methods and data can give confidence of their reliability
- Institutions matters
- There is room for improvements
- There still is much to do
 - Relationship between different areas of competition policy
 - The interplay between competition authorities and courts (and possibly other institutions) is fundamental
 - Relationship and convergence among the decisions of different agencies is an increasingly important issue in a globalized world

- Clougherty, Joseph, Tomaso Duso, Miyu Lee, and Jo Seldeslachts, 2013, "Deterrence in EU Merger Policy," mimeo.
- Aguzzoni, Luca, Elena Argentesi, Lorenzo Ciari, Tomaso Duso, and Massimo Tognoni, 2013, "Ex-post Merger Evaluation in the UK Retail Market for Books," mimeo.
- Duso, Tomaso, Klaus Gugler, and Florian Szücs, 2012, "An Empirical Assessment of the 2004 EU Merger Policy Reform," DICE Discussion Paper No 58.
- Buccirosi, Paolo, Lorenzo Ciari, Tomaso Duso, Giancarlo Spagnolo, and Cristiana Vitale, 2012, "Competition Policy and Productivity Growth: An Empirical Assessment," *The Review of Economics and Statistics*, forthcoming.
- Duso, Tomaso, 2012, "A Decade of Ex-post Merger Policy Evaluations: A Progress Report," in Dan Sjöblom Ed., *More Pros and Cons of Merger Control*, Stockholm: Swedish Competition Authority.
- Duso, Tomaso, Klaus Gugler, and Burcin Yurtoglu, 2011, "How Effective is European Merger Control?," *European Economic Review*, 2011, 55, 7, 980–1006.
- Duso, Tomaso, Damien Neven, and Lars-Hendrik Röller, 2007, "The Political Economy of European Merger Control: Evidence Using Stock Market Data," *The Journal of Law and Economics*, 2007, 50, 3, 455–489.

Thank you for your attention.



**DIW Berlin — Deutsches Institut
für Wirtschaftsforschung e.V.**
Mohrenstraße 58, 10117 Berlin
www.diw.de

Tomaso Duso
tduso@diw.de

- Duso, et al. (JLE 2007, EER 2011, DP 2012) evaluate the **entire EU merger policy** and use different samples of mergers scrutinized by DG Comp between **1990 – 2007**
- The largest sample contains **355 mergers**: (almost) all phase 2 cases plus a random sample of phase 1 cases
- We use **event studies** to evaluate EU merger control. Framework based on two main steps
 - **Theoretical assumptions**: A merger is consumer welfare reducing if competitors' profits increase after the merger (Farrell and Shapiro, AER 1990)
 - **Empirical measurement**: Stock-market event studies measure the effect of mergers and merger control decisions (e.g. Eckbo, JFE, 1983)
- A merger is **prevalently anti-competitive** if rivals profits increase after the merger → when **rivals' CAARs are large** (enough)

A

Merger Policy and Errors

- We compare the actual decision to the stock market's prediction

	Phase 1		Phase 2			Tot.
	6.1.b clear	6.1.b remedies	8.1. clear	8.2. remedies	8.3. prohibition	
Anti-competitive (Rivals' CAARs>0)	85	33	17	35	9	179
Pro-competitive (Rivals' CAARs<0)	92	30	12	38	4	176
Total	177	63	29	73	13	355

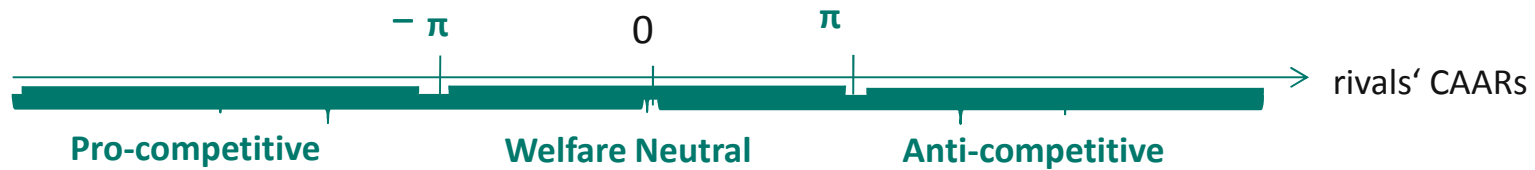
Source: Duso, Gugler, Szücs (2012)

Possible Type II errors

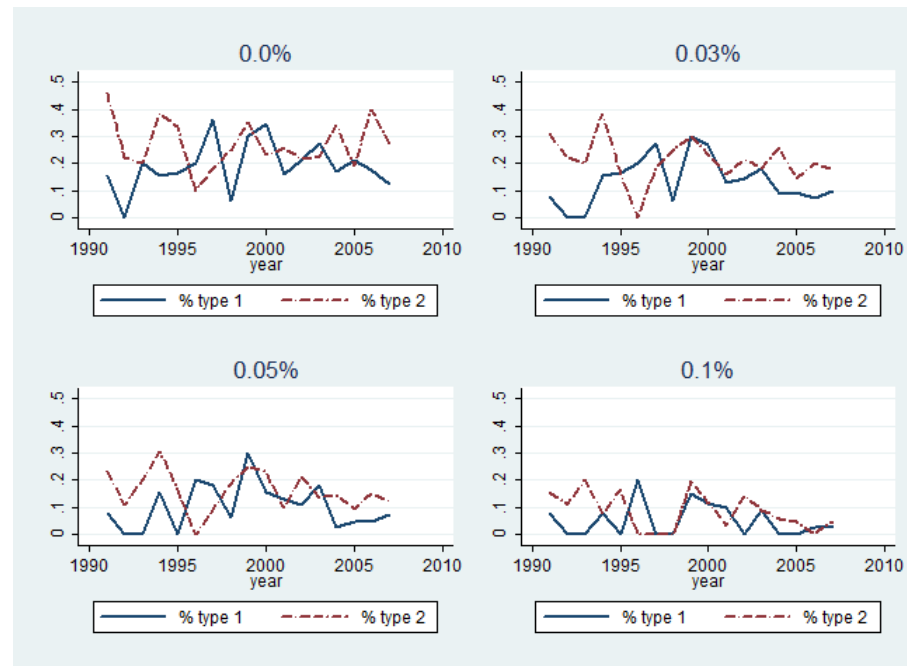
Possible Type I errors

A

Merger Policy and Errors



We then compare the actual decisions to the stock market's prediction and define type 1 and type 2 errors



Source: Duso, Gugler, Szücs (2012)

- Descriptive:
 - The frequency of **type I errors** is significantly **reduced** after the merger reform in 2004
 - Even more so for largely pro-competitive mergers
 - No clear time patten for type II errors
- Estimate proclivity of type I and type II errors as a function of observables: systematic sources of errors/discrepancies?
 - Type I errors are more likely in **phase 1** (institutions?), when the market is **narrowly defined** and when **barrier to entry are assessed to be high**. They are less likely if an **US firm** is involved (politics?)
 - Type II errors are less likely in phase 2 and more likely when US firms are involved. Some form of firms' **influence** (likelihood is significantly higher the higher the merger's profitability)?