

THE DRIVERS OF EFFECTIVENESS IN COMPETITION POLICY

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The drivers of effectiveness in competition policy¹

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Abstract

This paper shows which institutional and policy characteristics drive the effectiveness of antitrust policy using cross-country data on the perception of effectiveness of competition policy. It concludes that antitrust cannot be successful in a vacuum. Effective policies are income related and tailored at the EU level in Europe. However, some details of competition policy design have a significant impact on policy results. Effectiveness is driven by having an independent antitrust authority with a final say on prohibitions of competition restraints. It is good to have leniency programs to enforce cartel prohibitions, and particularly to use an economic approach to judge dominance and abusive practices. The legal mandate on merger policy should focus on competition in markets rather than in broader defined public interests.

Keywords: Antitrust; Policy Effectiveness; Political economy.

JEL Codes: D7; L4; O4.

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1. Introduction

There is a growing literature that tests a set of theory findings regarding the impact competition policy on country performance variables such as productivity, growth and price stability (Dutz and Hayri 2000, Przybyla and Roma 2005, Borrell and Tolosa 2007).

However, research is lacking on identifying the distinct features of antitrust which drives the effectiveness of the policy of promoting competition in domestic markets. Voigt (2006) tackle a related question by analyzing the effect of some distinctive objective characteristics of competition policy across countries on total factor productivity⁴. Borrell and Tolosa (2007) and Voigt (2006) also use the available subjective measures of antitrust effectiveness to analyze the impact of effectiveness on productivity. These are survey measures that show what business people think about the effectiveness of antitrust in the country they are working in.

This paper has codified information regarding objective characteristics of antitrust across several countries around the world. It then gets a comprehensive insight into what drives the effectiveness of competition policy from cross-country variation, and also from variations across policy domains. The main objective is to show how differences in design and enforcement of competition policy in each country matters in terms of perceived antitrust effectiveness.

The paper is organized as follows. After this introductory section, section 2 turns to review the literature on antitrust effectiveness. Section 3 describes the data and the empirical strategy, section 4 shows and discusses the results, and section 5 concludes.

⁴ In a previous paper, Feld and Voigt (2003) analyze whether judicial independence affects economic growth for a cross section of 57 countries.

2. Literature review

Competition policy is the core of a set of policies designed to foster product competition in the markets for goods and services. Promoting competition has become an intermediate objective of government policy which is enforced to pursue the ultimate goal of improving economic performance.

Policy-makers claim that having a competition legislation and antitrust institutions that effectively promote and protect competition in the product markets improves welfare. Designing and enforcing antitrust is claimed to render welfare gains. Some different studies have been done in this topic. Areeda (1994) contains an insightful discussion of the interplay of political and judicial factors that influence antitrust. Dutz and Vagliasindi (2000) study the relationship between competition policy and intensity of competition policy, using data from eastern european transition economies based on three main dimensions of enforcement, competition advocacy and institutional effectiveness. By contrast, Crandall and Winston (2003) highlight that little empirical evidence that past interventions of antitrust authorities have provided much direct benefit to consumers and those authorities would be well advised to prosecute only the most egregious anticompetitive violations.

According to Aghion and Schankerman (2004), there are three channels through which competition-enhancing policies, reforms and certain types of physical infrastructure facilitate welfare gains: cost reduction (*restructuring*), market selection of more efficient firms and entry. First, competition changes the incentives for firms to reduce their production cost. Static efficiency gains are realized through the reduction of slack in the use of inputs and improved resource allocation in response to higher competitive pressures (**cost reduction** or *restructuring*). Second, competition moves market shares from high-cost to low-cost firms, and this reduces the industry average production costs (**market selection**

of more efficient incumbent firms). Third, post-entry competition reduces the incentives for new high-cost firms to enter the market, and it encourages entry by low-cost potential entrants (**entry**).

Additionally, competition might render other dynamic gains such as fostering innovation. Dynamic efficiency gains are expected due to higher efforts to innovate and a faster diffusion of innovations and adoption of new technologies; see Aghion and Howitt (1996). These effects can boost productivity over long periods of time, as innovation involves complementarities, positive feedbacks, and the non-rivalry of ideas. And dynamic efficiency matters. There is consistent evidence of high social rates of innovation, far above the private ones, see Jones and Williams (1998).

Although there is a consensus in the literature that competition provides welfare gains, it is less clear cut how the effective enforcement of antitrust law fosters competition in the market place, and whether antitrust policy spurs welfare. There is no common consensus on how antitrust should be designed and enforced, in order to effectively promote competition. There is a large literature on regulatory effectiveness. Recent papers such as Gutiérrez (2003), Stern and Trillas (2003), Levine, Stern and Trillas (2005), Stern and Cubbin (2005) and Cubbin and Stern (2006) discuss theoretically and empirically what drives effectiveness in regulation of telecoms and energy. By contrast, less effort has been devoted to analyse the drivers of antitrust effectiveness.

It is far from settled how to measure the effectiveness of competition policy across countries. There are two main avenues of research. On one hand, some papers such as Dutz and Hayri (2000) and Borrell and Tolosa (2007) rely mostly on subjective indicators that try to assess the effectiveness of competition policy across countries.

Subjective indicators measure the perceived effectiveness of policy using surveys, mostly by business people. There are two measures of perceived effectiveness of

competition policy. The one compiled in the Executive Opinion Survey that it is used by the World Economic Forum (WEF) to construct the Global Competitiveness Report. It asks executives to rank their country according to the following statement: “Antimonopoly policy in your country is 1=*lax and not effective at promoting competition*, 7=*effective and promotes competition*.” The other is the indicator compiled by the International Institute for Management Development (IMD) for producing the World Competitiveness Yearbook. IMD asks “do antitrust laws prevent unfair competition in your country?”

According to Voigt (2006), the before mentioned two subjective measures of perceived competition policy effectiveness are highly correlated (correlation coefficient larger than 80%). All these three papers find additionally a high correlation of competition policy effectiveness and performance measured in terms of growth (Dutz and Hayri 2000), or the level of total factor productivity (Borrell and Tolosa 2007, and Voigt 2006).

Neither the WEF nor the IMD indicator of competition policy effectiveness offer data separating out the effect of national competition policy from the EU competition policy. Therefore, the data offers an indicator of the overall effect of both policies for the EU member states.

On the other hand, synthetic indexes are used to obtain a comprehensive picture of the strength of competition policy based on objective indicators that rank countries with respect a set of characteristics that are assumed to drive antitrust effectiveness (see Serebrisky 2004 or Voigt 2006). The composite indicator comprises information from different aspects of policy, like the absence or presence of certain legal provisions, severity of penalties, resources available to the competition authority or its autonomy.

Rules adjudicating antitrust cases differ strongly across countries and policy domains. In some countries, some restrains of competition such as price fixing agreements, bid rigging or imposing minimum resale prices are *per se* illegal. For example Australia,

Greece, Mexico and the US find price fixing agreements illegal *per se*: conduct is unlawful regardless of competitive effect. Italy also joined in 1990 this group of countries that find price-fixing as *per se* illegal.

By contrast, in most countries competition restraints are judged according to the rule of reason. Even price fixing tends to be adjudicated using the rule of reason on a case by case basis in the European Union and in most European jurisdictions. Conducts are judged lawful or unlawful depending on its actual effect on competition, as proven by the evidence on a case by case basis. As highlighted by Motta (2004), article 81(3) of the Treaty of the European Union states that all agreements among competitors do not fall under a *per se* rule of prohibition. That is, the prohibition of agreements among competitors is inapplicable to any agreement “which contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit.”

On the contrary, Gual *et al* (2005) and Ahlborn, Evans and Padilla (2004) state that Europe tends to use the *per se* illegality rule when adjudicating the use of exclusionary practices such as foreclosure, predatory pricing, price squeezes, fidelity rebates, or tying by dominant firms. Similar cases are judged using the rule of reason on a case by case basis in the US and other jurisdictions.

Differences across countries are not only on adjudicating rules but also on matters such as the degree of independence of antitrust authorities, the use of criminal sanctions, the way plaintiffs can obtain redress before civil courts, the more economic or legal approach to abuse of dominant position cases, and the objectives and enforcement of merger policy.

Nicholson (2004) reviews the different efforts undertaken to quantify antitrust regimes. There have been different efforts to compare in a systematic way competition

rules and institutions across countries. *CUTS international* has reviewed around 100 jurisdictions in the world. *Global Competition Review* publishes reviews of specific legal and enforcement aspects of competition policy in different domains such as cartels, abuses of dominant position and mergers.

Competition policy has been introduced across countries in the world very gradually. Canada passed the first antitrust statute in 1889. The US has an antitrust policy that dates back to the Sherman Act of 1890, although according to ABA Section of Antitrust Law (2003), by the time of the adoption of the first federal antitrust law, 13 states had enacted some form of antitrust statute. Kansas enacted in 1889 the first state antitrust law of general application. Even senator Sherman described the federal law he was promoting as supplementary to state antitrust statutes.

Most European countries have antitrust policies only since the mid twentieth century. The EU has antitrust statutes since the Rome Treaty in 1957. Other countries have only adopted an antitrust regime much more recently as part of their convergence towards more market oriented policies (South Eastern Asia and Latin America), or towards regional agreements (such as the countries of Eastern Europe towards the EU), or towards multilateral agreements (such as those embraced by the members of the WTO after the Uruguay Round). Currently, around 100 countries in the world have competition laws. Merger policy was set in the US in 1914, but prior notifications of mergers are only compulsory since 1976. In the EU, merger control with a prior notification system was established by a Council regulation in 1990.

Voigt (2006) has undertaken the most comprehensive quantitative analysis of competition laws. He gathered cross-country information regarding the objectives of competition laws (basis), the legal regimes and economic approach (*per se* rules versus rule of reason), the structure of competition authorities (*de jure* and *de facto* independence). He

constructed indicators regarding these aspects of competition policy, and making some assumptions on how these elements made competition policy effective. He then estimates the effect of those indicators regarding the quality of competition policy on total factor productivity. It turned out that objective indicators of competition policy quality explain differences in total factor productivity, although the impact is not robust to the inclusion of indicators for the general quality of institutions. Voigt (2006) does not show whether the results are robust to changes in the way the indexes of objective measures have been constructed and weighted.

Both subjective and objective measures have strengths and weaknesses. The subjective measures depend strongly on the expectations of the business people surveyed regarding how competition policy turns to be effective. Objective indexes depend strongly on how they are constructed. A higher value of the index can be achieved by optimizing only certain areas, while the really important elements have been replaced by less decisive or incomplete components. This can blur the robustness of the whole policy in the evaluation exercise. Contributing to make more explicit the nature of the relationship between objective indicators of antitrust design and enforcement and subjective measures of effectiveness will help to understand the strength and weaknesses of comparative antitrust analysis across countries.

3. Empirical Strategy and Data

In this paper we will let cross-country data talk about the relationship between perceived effectiveness of antitrust and a set of objective characteristics of competition policy design and enforcement.

We use the variable from World Economic Forum (WEF) named “effectiveness of antitrust policy” as the dependent variable to be explained. This dependent variable is

explained by a rich set of covariates. We have gathered a cross-section data base including 47 countries around the world including not only developed but also developing ones. Table 1 shows the definition of the codified variables. The objective measures of competition effectiveness come from the information published by *CUTS international*, *Global Competition Review*, the *International Competition Network*, the annual reports of the OECD and the national government agencies web pages and statistics.

Almost all the data is for 2004 but depending on the variable analyzed if 2004 data is not available the last available one has been taken (2002 or 2003). Estimates will use the cross-section variation on the data, and therefore as most variables are not expected to vary considerably from one year to another. We can make inferences from the cross-section variance using data around 2004.

All but one covariate of objective characteristics or antitrust design and enforcement are dummies taking values 0 or 1. We have also computed four indexes related to the organizational structure of competition policy (authority independence), the stance of cartel policy (active stance of cartel policy), the approach to dominance law and enforcement (economic approach to dominance law), and the characteristics of merger policy (competition focused merger policy). These four indices combine the information of the detailed characteristics reported in table 1.

Table 2 shows the descriptive statistics of the variables used in our analysis. Antitrust effectiveness ranges from 2.8 to 6.1 in our sample. Table 2 also shows that most competition authorities take decisions on prohibiting and sanctioning restrains (agreements and abuses of dominant position) independently from the government by administrative or judicial bodies. Table 3 shows that only Colombia, Costa Rica and Venezuela have prohibition of competition restrains enforced directly by government. We have also gathered information on whether it is the government or the independent authority who investigate and file the cases. Table 3 shows that it is only in Belgium, France, India, Latvia, Spain and

Malta where the government investigate the cases which are finally adjudicated by whether judicial or administrative independent authorities. The index named “Authority Independence” sums these two dummy variables.

The index called the “Active stance of cartel policy” is the sum of the five antitrust characteristics that help to enforce cartel policy. As highlighted by the literature on enforcement of antitrust -- Polinsky and Shavell (1989), Klapow and Shavel (1994), Berges-Sennou *et al* (2002), Barros (2003), Demougin and Fluet (2004) and Borrell (2007) -- defining cartels as *per se* illegal have a stronger deterrence effect than defining them illegal under the rule of reason. Having a system of civil sanctions by which firms have to pay damages to those injured by competition restrains, and having criminal penalties also spurs deterrence. Having guidelines of enforcement is also supposed to improve effectiveness of antitrust, as the leniency programs by which firms and executives may report misbehaviors to antitrust authorities obtaining complete or partial redemption of the past sanctions. Table 2 shows that the mean of this index is just 1.64 out of 5. Table 3 shows the distribution of cartel policy design in this domain.

By contrast, defining abuses of dominant position as *per se* illegal is increasingly contested. Gal (2003) and Borrell (2007) highlight that in large, integrated and mature markets it is better to judge abusive practices by dominant firms using a rule of reason approach. As markets around the world are becoming increasingly integrated, we would generally expect the rule of reason, and a more economic approach to abuses of dominant position, to become more and more effective. This is also what Gual et al (2005) and Ahlborn, Evans and Padilla (2004) suggest in the case for Europe.

The index named “Economic approach in dominance law” is a composite measure of three covariates.⁵ It sums the one that codifies the legal standard for judging abuses of dominant position and whether dominance is defined using a fixed market share. These are

⁵ It is obtained as follows: $-\text{dompos} - \text{thresdom} + (\text{levthresd}/100)$

expected to have a negative effect on antitrust effectiveness. By contrast, it subtracts in percentage from the market share threshold that defines dominance. Enforcement is expected to get better as the market share that defines dominance gets larger, as the market share definition bind is less tight. Table 4 shows the distribution of market shares that define dominance in different countries: it ranges from 20% in Brazil (tight constrain, practices by firms that are just slightly dominant are investigated) to 70% in the US (a lax constrain, only practices of very dominant firms are investigated). Table 2 shows that the index of “Economic approach in dominance law” has a mean of -0.74, and that it ranges from -1.75 to 0.

Finally, the index named “Competition focused merger policy” sums three covariates: whether the government has a final say on merger policy or the antitrust authority is the one making decisions in this policy domain; whether the legal mandate of merger policy is a focus mandate to protect competition, or a broad mandate to pursue the public interest in general; and, whether merger guidelines have been published or not. Table 2 shows that this index has a mean of 2.11 out of 3. Table 3 shows that there are a large number of countries in which governments have a last say on mergers such as the largest European economies such as France, Germany, Italy or Spain, smaller antitrust effective countries such as Finland and New Zealand, and others such as Argentina, India and Taiwan. There is however a rather small group of countries in which the legal mandate in merger law is to protect competition: Argentina, Poland, Portugal and Taiwan. And 29 out of 47 countries have merger guidelines (62%).

We identify and quantify the drivers of effectiveness in two steps. First, regressing effectiveness on the broad indexes describing the characteristics of antitrust enforcement before mentioned by OLS and Instrumental Variables techniques,

$$\log(\text{effectiveness}) = \beta_0 + \beta_1 \text{Auth.Independ.} + \beta_2 \text{Act. Stance} + \beta_3 \text{Dominance Law} + \beta_4 \text{Merger Policy} + \beta_5 \text{Log(GDP)} + \beta_6 \text{EU15(dummy)} + \beta_7 \text{EnlargEU(dummy)} + \beta_8 \text{Bulgaria-Rumania (dummy)}$$

(1)

Secondly, we have estimated how individual aspects of institutional design have an impact on effectiveness using same econometrical techniques. We evaluate the stand alone effect of each institutional characteristic on antitrust effectiveness:

$$\log(\text{effectiveness}) = \beta_0 + \beta_1 \text{Independence} + \beta_2 \text{Gov.Prosec.} + \beta_3 \text{Cartel Perse} + \beta_4 \text{Cartel guide} + \beta_5 \text{Criminal sanctions} + \beta_6 \text{Damages} + \beta_7 \text{Leniency} + \beta_8 \text{Dominance Perse} + \beta_9 \text{Dom. share} + \beta_{10} \text{Dom. threshold} + \beta_{11} \text{Gov. mergers} + \beta_{12} \text{Comp. mergers} + \beta_{13} \text{Log(GDP)} + \beta_{14} \text{EU15(dummy)} + \beta_{15} \text{EnlargEU(dummy)} + \beta_{16} \text{Bulgaria-Rumania (dummy)}$$

(2)

The estimates using the broad policy indices should be more precise than the ones using the detailed policy characteristics because the latter leaves less degree of freedom in the estimation and may be more correlated than the former. The former show the effect of broad policy shifts; while the latter show what particular characteristics matter most.

4. Results

Tables 5 and 6 show the results of the regression analysis. Table 5 shows the impact of the broad indexes of antitrust design and enforcement in different policy domains on effectiveness: independence, cartel policy, dominance policy and merger policy. Table 6 details the impact of each one of the codified covariates of antitrust design and enforcement on effectiveness. In both tables we show the impact of the policy covariates on effectiveness without controls (column 1), controlling for the effect of EU antitrust (column 2), controlling for per capita GDP (column 3), and controlling for both EU antitrust and per capita GDP (column 4).

As outlined before, when per capita GDP is included in the regression as a control we run the regression using instrumental variable techniques. The last available per capita

GDP for all the countries is that of 2003. We instrument it using the per capita GDP of 1994 and its square. We estimate the IV regression using a cumulative updated GMM routine which computes standard errors robust to heteroscedastic disturbance matrix. We report the Hansen J overidentification test which shows that the instruments are valid. We have also computed tests that show that instruments are strong.

Comparing the estimates of the regressions that include per capita GDP using OLS and IV techniques shows that OLS estimates are slightly upward biased. That is, OLS estimates not only picks the causal positive selection effect of per capita GDP on antitrust effectiveness, but also the simultaneous positive policy effect of antitrust effectiveness on per capita GDP as it was already shown in Borrell and Tolosa (2007).

Table 5 shows that even controlling for per capita GDP and the effect of EU country membership, the design of antitrust policy matters. Particularly, how dominance policy is designed and enforced make a difference. Countries that embrace an economic approach in investigating alleged abuses dominant positions by firms have a more effective antitrust policy. This way of enforcing dominance policy has a statistically significant impact on policy. Additionally, having a more competition focused merger policy is good for antitrust effectiveness. This effect is however statistically weaker than the previous. It is statistically significant only at 10%.

Having an active stance on cartel policy has also a positive effect on antitrust effectiveness. However, the significance of cartel policy is not robust to including the per capita GDP control. This result suggests that having an active stance on cartel policy is highly correlated to per capita GDP.

What it appears that not driving antitrust effectiveness is the authority independence index. This index combines independence in deciding on cartel and dominance cases, and in investigating the cases. We will see below that it is not clear cut whether having

investigation powers on the competition authority or on the government makes any difference.

Table 6 shows the inference of the impact of all the covariates on antitrust effectiveness. It allows to detail which are the main drivers of the results previously outlined, although the large number of covariates make our inference weaker because collinearly make increase our standard errors and make our estimates less precise.

Table 6 shows how authority independence drives antitrust effectiveness. Even controlling for per capita GDP and EU membership and the rest of covariates, authority independence on cartel and dominance cases makes antitrust more effective. On average, the three countries of our sample lacking an independent authority have worse competition policy (Colombia, Costa Rica and Venezuela). By contrast, having the power of investigation within the government is not making competition policy less effective conditional on having an independent authority calling the shots.

Although we have previously seen that an active stance on cartel policy was not having a robust impact on effectiveness, leniency programs stand out as having an individual impact on effectiveness. Those countries that have recently implemented innovative leniency programs are the ones that have a more effective antitrust policy. Interestingly, appears that it is not important whether cartels are prohibited using the rule of reason or the *per se* illegality rule. This result suggests that there is not a legal rule that fits all countries as also Borrell (2007) highlights.

Table 6 also shows the details of why the approach to dominance policy is important for antitrust effectiveness. Countries that enforce dominance policy using a *per se* illegality rule have significantly worse antitrust effectiveness (around 9%). Countries that set a fixed market share to define dominant position have also worse competition policy effectiveness (around 16%). However, as the market share that defines dominant position gets larger, antitrust effectiveness improves.

Finally, in merger policy what appears to be important is to have a competition oriented legal mandate rather than who (government/agency) decides on mergers.

5. Concluding remarks

Although antitrust statutes have been enacted worldwide, antitrust law design and implementation differs substantially across countries. It is an open question as to the type of institution and as to which policy practices drive sounder enforcement. The aim of this paper is to shed light on whether some of the distinctive characteristics related to the way antitrust is enforced generally spur policy effectiveness. In order to do so, we have coded qualitative information on objective features of competition policy from several countries around the world. Next we offer a comprehensive insight into what drives the effectiveness of competition policy, from cross country variations in antitrust design and implementation in various policy areas.

Although there is a large literature on regulatory effectiveness (Gutiérrez, 2003; Stern and Trillas, 2003; Levine, Stern and Trillas, 2005; Stern and Cubbin, 2005; and Cubbin and Stern, 2006), less effort has been devoted to analyse the drivers of antitrust effectiveness. Most papers on competition policy effectiveness have been focused on subjective indicators that try to assess the effectiveness of competition policy across countries, in terms of their respective growth and productivity (Dutz and Hayri, 2000; and Borrell and Tolosa, 2007).

Effectiveness of antitrust policy varies strongly across countries. This paper concludes that antitrust cannot be effective in a vacuum. Competition policy effectiveness is driven by per capita GDP and EU membership. It also shows how European Eastern countries are finding particularly difficult to enforce effective antitrust.

Conditional on income and EU membership, there are ways to make antitrust more effective. Particularly, authority independence on taking decisions on prohibiting cartels and abuses of dominant positions seem a prerequisite to sound antitrust. However, it is not so important whether it is an independent agency or the government who conducts antitrust investigations. And, more importantly, it makes antitrust more effective to engage in innovative policies such as leniency, to investigate dominance using an economic approach that avoid *per se* illegality rules and underscores market shares in the investigations, and to have a competition focused merger policy.

Future research agenda will be directed to the following two extensions: first, we will consider a panel data approach which might let us evaluate how institutional changes across time may be having an impact on antitrust effectiveness; and, secondly, we will study more closely the relationship between competition policy effectiveness and development.

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Table 1. Data description

Name	Acronym	Source	Description
Antitrust effectiveness	effectiv	WEF	Anti-monopoly policy in your country, 1 = is lax and not effective at promoting competition, 7 = effectively promotes competition.
Independence on antitrust decisions	indcart	Authors	1= There is an independent competition authority deciding on antitrust cases (cartel and abuse of dominant position); 0 = Otherwise.
Government prosecution	mininst	Authors	1= a body of the executive files and investigates complains; 0 = The independent authority files and investigate antitrust cases.
Cartel per se illegal	cartperse	Authors	1= Agreements among firms are deemed <i>per se</i> illegal ; 0= Agreements are adjudicated using the <i>rule of reason</i> .
Published guidelines for cartel enforcement	cartelguide	Authors	1= There is a guide on anti-cartel enforcement; 0= Otherwise.
Criminal sanctions	penalcart	Authors	1 = Cartels are criminal felonies; 0 = Otherwise.
Punitive damages	danoscart	Authors	1= It is possible to claim punitive damages (treble damages) before the judiciary; 0 = Otherwise.
Leniency programs	leniency	Authors	1= There is a leniency program in your country; 0 = Otherwise.
Dominance abuses per se illegal	dompos	Authors	1= Dominance abuses are deemed <i>per se</i> illegal; 0 = Dominance abuses are adjudicated using the <i>rule of reason</i> .
Dominance defined by market share	thresdom	GCR	1= There is an explicit market share threshold for defining dominant positions in the investigation procedures; 0= Otherwise.
Dominance threshold (0 or 20 to 70%)	levthresd	GCR	1= If it exists, market share threshold for defining a dominant position; 0 = Otherwise.
Published guidelines for merger enforcement	mergerguide	Authors	1= There is a guide on merger enforcement; 0= Otherwise.
Government has the last say on mergers	findemerg	Authors	1= Government takes the decision on authorising mergers; 0 = The competition authority takes the decision on authorising mergers.
Protecting competition in merger law	objectimerg	Authors	1= Legal mandate for merger control is protecting competition; 0 = It is protecting the public interest in general.
Per capita GDP	cgdp	Penn Tables	GDP (current US dollars), 2003

Table 2. Descriptive Statistics

	Obs	Mean	Std. Dev.	Min	Max
Antitrust effectiveness	47	4.66	0.89	2.8	6.1
Independence on antitrust decisions	47	0.94	0.25	0	1
Government prosecution	47	0.13	0.34	0	1
Cartel per se illegal	47	0.34	0.48	0	1
Published guidelines for cartel enforcement	47	0.23	0.43	0	1
Criminal sanctions	47	0.36	0.49	0	1
Punitive damages	47	0.23	0.43	0	1
Leniency programs	47	0.47	0.50	0	1
Dominance abuses per se illegal	47	0.32	0.47	0	1
Dominance defined by market share	47	0.70	0.46	0	1
Dominance threshold (0 or 20 to 70%)	47	28.36	21.15	0	70
Published merger guidelines	47	0.62	0.49	0	1
Government has the last say on mergers	47	0.43	0.50	0	1
Protecting competition in merger law	47	0.91	0.28	0	1
Authority Independence	47	0.81	0.40	0	1
Active stance in cartel policy	47	1.64	1.24	0	5
Economic approach in dominance law	47	-0.74	0.56	-1.75	0
Competition focussed merger policy	47	2.11	0.87	0	3
Per capita GDP	47	19,164.81	9,111.38	3,212.53	37,313.33
EU-15	47	0.30	0.46	0	1
EU-Enlargement 2004	47	0.21	0.41	0	1
Bulgaria & Rumania	47	0.04	0.20	0	1

Table 3. Comparative competition policy design

Variable	Value	Countries for which the variable takes the value shown
Independence of antitrust decisions	0	Colombia, Costa Rica, Venezuela
Government prosecution	1	Belgium, France , India, Latvia, Spain, Malta
Cartel per se illegal	1	<u>Australia</u> , Austria , Chile, Costa Rica, Slovenia, France, Greece, Hungary, Italy, Korea , Latvia, Mexico, Rumania , South Africa, <u>USA</u> , Venezuela.
Published guidelines for cartel enforcement	1	<u>Canada</u> , Greece, Netherlands, Ireland , Japan, Korea, Malta, New Zealand, Sweden, United Kingdom, USA .
Criminal sanctions	1	<u>Canada</u> , Czech Republic, Estonia, France , India, Ireland, Island , Israel, <u>Japan, Korea, Mexico, Norway</u> , Slovak Republic, Slovenia , Taiwan, United Kingdom, USA .
Punitive damages	1	<u>Canada</u> , Croatia, Czech Republic, Hungary , <u>New Zealand, Norway, Slovak Republic, Slovenia</u> , Taiwan, <u>USA</u> .
Leniency programs	1	<u>Canada, Cyprus, Czech Republic, Finland, France, Netherlands, Hungary, Ireland, Korea, New Zealand, Norway, Poland, Rumania, South Africa, Slovak Republic, Sweden, United Kingdom, USA</u> .
Dominance abuses per se illegal	1	Costa Rica, Croatia, Czech Republic, Denmark, France, Greece, Hungary , India, Ireland, Italy, Latvia, Mexico, Rumania , South Africa, Venezuela.
Dominance defined by market share	0	<u>Australia, Belgium</u> , Chile, Cyprus , Colombia, Costa Rica, Finland Japan, Kenya, <u>Luxemburg, Mexico, New Zealand, Portugal, Rumania, Spain</u> , Venezuela.
Published merger guidelines	1	<u>Australia, Austria, Belgium</u> , Brazil, <u>Canada, Czech Republic, Finland, Germany, Greece, Ireland, Japan, Korea, Latvia, Lithuania, Malta, Netherlands, New Zealand, Norway, Poland, Rumania, South Africa, Slovak Republic, Spain, Sweden, Switzerland, Taiwan, United Kingdom, USA</u> , Venezuela.
Protecting competition in merger law	0	Argentina, Poland, Portugal , Taiwan.
Government has the last say on mergers	1	Argentina, Belgium, Cyprus , Colombia, Costa Rica, Finland, France, Germany, Greece , India, Israel, Italy, Malta, Norway <u>New Zealand, Poland, Portugal, Rumania, Spain</u> , Taiwan.

OCDE countries underlined, and **EU** countries bolded.

Table 4. Dominance threshold by country

Country	Dominance threshold (%)
Brazil	20
India	25
Austria	30
<u>Hungary</u>	30
Germany	33
Bulgaria	35
<u>Canada</u>	35
Croatia	40
Czech Republic	40
Denmark	40
Estonia	40
Greece	40
<u>Italy</u>	40
Latvia	40
Lithuania	40
Malta	40
Poland	40
Slovak Republic	40
Slovenia	40
Sweden	40
<u>Switzerland</u>	40
United Kingdom	40
South Africa	45
France	50
Israel	50
<u>Korea</u>	50
Netherlands	50
Norway	50
Taiwan	50
Turkey	50
Ireland	60
<u>USA</u>	70

Table 5. Broad policy design

	log(effectiveness)			
	(1) OLS	(2) OLS	(3) IV	(4) IV
Intercept	-0.53 *** (6.07)	-0.57 *** (7.43)	-2.97 *** (5.66)	-2.20 *** (4.11)
Authority Independence	0.03 (0.46)	0.05 (0.88)	0.02 (0.26)	0.04 (0.81)
Active stance in cartel policy	0.05 ** (2.18)	0.05 *** (2.93)	0.02 (0.94)	0.03 (1.57)
Economic approach in dominance law	0.13 *** (2.72)	0.13 *** (2.86)	0.08 ** (2.04)	0.09 *** (2.34)
Competition focussed merger policy	0.04 (1.23)	0.04 (1.5)	0.04 (1.59)	0.04 * (1.87)
Log per capita GDP			0.25 *** (4.85)	0.17 *** (3.12)
EU-15		0.17 *** (3.55)		0.07 * (1.69)
EU-Enlargement 2004		-0.08 (1.36)		-0.08 * (1.81)
Bulgaria & Rumania		-0.22 *** (4.24)		-0.12 * (1.67)
R ²	0.32	0.61	0.53	0.64
F test		F(7,39)=60.69	F(5,41)=6.95***	F(8,38)=16.29***
Hansen Over-id J test			Chi(1)=0.85	Chi(1)=0.89

t statistics robust to heterocedasticity in parenthesis. *, **, *** for 10%, 5%, and 1% significance level

Table 6. Detailed policy designed

	log(effectiveness)							
	(1) OLS		(2) OLS		(3) IV		(4) IV	
Intercept	-0.84	(5.54)	-0.83 ***	(7.72)	-3.00 ***	(5.77)	-2.02 ***	(5.04)
Independence on antitrust decisions	0.25 ***	(2.96)	0.25 ***	(3.45)	0.06	(0.95)	0.17 ***	(2.57)
Government prosecution	-0.01	(0.21)	-0.01	(0.26)	-0.04	(0.74)	-0.01	(0.14)
Cartel per se	0.02	(0.31)	0.03	(0.58)	0.01	(0.34)	0.02	(0.41)
Cartel guide	0.04	(0.9)	-0.02	(0.43)	-0.04	(1.10)	-0.04	(1.57)
Criminal sanctions	0.06	(1.11)	0.06	(1.10)	0.05	(1.07)	0.05	(1.25)
Punitive damages	-0.05	(0.68)	-0.01	(0.12)	-0.09 *	(1.74)	-0.05	(0.77)
Leniency programs	0.09	(1.54)	0.09 *	(1.89)	0.08 **	(2.06)	0.09 ***	(2.65)
Per se dominance abuses rules	-0.13 *	(1.73)	-0.14 **	(2.23)	-0.07 *	(1.66)	-0.09 **	(2.10)
Dominance defined by market share	-0.24 **	(2.56)	-0.21 **	(2.64)	-0.16 *	(1.79)	-0.16 **	(2.10)
Dominance threshold (0 or 20 to 70%)	0.01 **	(2.55)	0.004 **	(2.19)	0.00	(1.43)	0.003 *	(1.93)
Government has the last say on mergers	0.06	(1.11)	0.02	(0.54)	0.001	(0.02)	0.01	(0.22)
Protecting competition in merger law	0.17	(1.36)	0.18 **	(2.05)	0.11	(1.23)	0.14 **	(2.06)
Log per capita GDP					0.25 ***	(4.10)	0.14 ***	(2.98)
EU-15			0.11 **	(2.04)			0.03	(0.87)
EU-Enlargement 2004			-0.12 *	(1.95)			-0.12 ***	(2.65)
Bulgaria & Rumania			-0.28 ***	(5.03)			-0.21 ***	(3.53)
R ²	0.52		0.74		0.63		0.77	
F test	F(12,34)=8.44***		F(15,31)=27.90***		F(13, 33)=12.12***		F(16,30)=18.37***	
Hansen Overid J test					Chi-sq(1)=0.81		Chi-sq(1)=0.49	

t statistics robust to heterocedasticity in parenthesis. *, **, *** for 10%, 5%, and 1% significance level

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