

Optimal institutional structure of Competition Authorities under reputation maximization: a model and empirical evidence from the case of Russia¹

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Abstract

This article contributes to the debate on the optimal structure of Competition Authorities (CAs), a debate of particular relevance to designing the structure of CAs in the younger developing country jurisdictions. Specifically, our objective is to contribute to a better understanding of the conditions under which “generalist” (multi-activity) structures, that have been popular in Europe and many other developed and developing countries in recent years, are most appropriate. An important element, which has been ignored in this debate until now, is that this issue should be examined under the (realistic) assumption that CAs are reputation sensitive organizations that are managed by individuals that are motivated by the pursuit of “enforcement success”. This motivation is entirely consistent with the performance criteria under which we find that CAs often operate. We propose a model of a reputation maximizing CA in which reputation is increasing in enforcement success, measured by the number of appealed infringement decisions that are not annulled. Then, a generalist CA will tend to focus on activities in which the probability of decision annulment is low and which have relatively low investigation and litigation costs, though this focus may be detrimental to social welfare (relative to a more balanced portfolio of activities). We use a large data set of appealed infringement decisions made by the Russian CA (FAS) in the years 2008 – 2012 to provide empirical support for the model’s predictions. FAS is a generalist authority subject to performance criteria that imply a strong motivation to maximize reputation through enforcement success. More concretely, we estimate whether the activities or types of investigation on which FAS concentrates are investigations associated with a lower probability of annulment and lower costs and we find strong evidence that this is indeed the case.

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1. Introduction

Competition Authorities (CAs) are government agencies⁵ and as such they will typically enjoy a certain degree of freedom to choose among different possible courses of action in relation to their enforcement activities. While they may be concerned, in making these choices, with how their overall performance impacts on society's welfare, they will also be concerned with the organization's public image or reputation⁶. This is consistent with the widely recognized empirical evidence, which we review below, that in many cases, CAs operate under *performance criteria* that are not related to the effects of enforcement on welfare. Indeed among the CAs reviewed below, including developed and developing countries, for only one⁷ are the performance criteria associated with just welfare effects: in all other cases the criteria are either non-welfarist or are a combination of welfarist and non-welfarist ones. In the model that we propose below we capture this by assuming that CAs maximize their utility, which depends positively on their *public image or reputation*. The latter depends on an authority's *enforcement success*, which can be measured by the number of decisions reached that are not annulled by Courts of Appeal.

Another stylized fact concerning CAs is that in recent decades they are often given multiple responsibilities, in addition to that of enforcing Competition Law. Thus, in many countries, they have tended to become generalist, rather than specialist, institutions pursuing activities related to, for example, consumer protection and unfair practices, sectoral (*ex ante*) regulation of sectors with natural monopoly elements, public procurement and, sometimes, many other functions⁸.

The trend in Europe in recent years is to assign CAs with broader responsibilities in addition to the enforcement of competition law provisions to take advantage of synergies in market and competition analysis. Thus, the UK Competition and Market Authority is responsible for both antitrust enforcement and consumer protection. The Dutch Authority

⁵ With a degree of independence that varies quite a lot between countries – see Jenny (2016), Section 4.

⁶ See for an extensive discussion of these assumptions and of empirical evidence, as well as for a review of related theoretical work, Schinkel, et. al. (2014).

⁷ That of the Dutch Authority (ACM).

⁸ A review of which CAs have, in the last 15 years or so, gone for a more generalist and which for a more specialist structure is given in Jenny (2016).

for Consumers and Markets in addition to antitrust enforcement has responsibilities for competition protection and sector-specific regulation. Among BRICS countries, Russia has taken a similar path. The Russian competition authority, the Federal Antitrust Service (FAS hereafter), enforces competition policies, sector-specific regulation, public and private procurement, and tariff regulation (since 2015). The Chinese government on the other hand, has taken the completely opposite route, by separating even antitrust enforcement between different agencies: thus the Ministry of Commerce (MOFCOM) is responsible for merger approval, while the National Development and Reform Commission (NDRC) for price-related restrictive practices and the State Administration of Industry and Commerce (SAIC) for non-price restrictive practices.

The optimal institutional structure of CAs, in terms of the functions for which they are responsible, has also been the subject of investigation by economists and legal scholars in recent years. Many prominent competition authors have contributed to the debate such as Kovacic et al. (2013), Fox (2012), Fels et.al. (2014), while OECD (2003, 2014) has provided fora for discussion of the experience of a large number of countries and Jenny (2016) provides a very extensive review⁹.

What has not been examined in the existing literature and is our primary objective to examine in the present paper is the *question of whether the performance criteria used to assess CAs and their objectives are consistent with the institutional structure under which they are asked to operate*. That is, a weakness of the existing literature is that it does not rely on an explicit model of CA behavior taking into account utility (reputation) maximizing objectives and hence cannot provide a formal account of CA choices regarding the allocation of resources to different enforcement activities and hence of whether these are socially optimal, i.e. give rise to the socially optimal institutional structure. In this paper, we make the point that for determining the optimal structure of CAs – the structure that maximizes social welfare – one must provide an explicit account of how they will allocate resources to the different enforcement activities for which they are given responsibility, given their objectives and the performance criteria under which they operate. The model we propose to take this point into account, shows that it may be optimal for authorities to be *specialized* to specific activities. The intuition is that

⁹ The debate on institutional design and the review by Jenny (2016) extends to issues of the goals of CAs and of the organization of antitrust institutions more generally. Here our focus is more narrow: we are concerned with the institutional structure purely in terms of whether this is specialist or a generalist one.

performance criteria that do not induce authorities to put emphasis on the welfare impact of their activities, may imply that generalist authorities, that must allocate a given overall budget to diverse enforcement activities, put too much weight on activities than enhance their reputation and public image, even though they are inferior in terms of the welfare gains that they generate. This result has substantial interest, particularly for designing the structure of CAs in the younger developing country jurisdictions, given the tendency, noted above, in recent years, for authorities in Europe and other countries to collect in their portfolio more and more diverse activities.

The model's predictions are confirmed by a significant body of indirect (informal) evidence coming from CAs, which has raised concerns about the performance of generalist authorities, pointing out as a serious disadvantage that “easy” enforcement activities (in our context, activities in which the CA can reach quickly many decisions that are not likely to be reversed in appeal courts) would crowd out the “more difficult competition cases”¹⁰ – or, as suggested by Jenny (2016) “the difficulty of agencies having two functions to find a proper balance between them and to prioritize their enforcement activities” explains why some countries (like Japan and Iceland) decided to unbundle previously merged activities.

In this paper, we also provide, we believe for the first time, direct evidence that generalist authorities will tend to concentrate on activities that are more likely to be reputation (but not welfare) enhancing relative to other activities, using the case of the Russian CA, based on a large data set of infringement decisions appealed in the period 2008 – 2012. These decisions can be split in a straightforward way into what can be termed Proper Antitrust (PA) and Not Proper Antitrust (NPA) decisions. Specifically, NPA decisions concern cases where no evidence of *competition restriction* exists and all the hearings are concentrated on whether any “harm” (very widely defined) has been imposed. They include cases initiated against natural monopolies due to some harm imposed on counterparty, usually on a very small group of final customers (or even one of them) without any sign that the alleged harm was caused by anticompetitive behavior. In cases of this type the alleged violation may be a technical mistake in a contract term, or low service quality. Also, they include cases of conflicts on interconnections with subscribers.

¹⁰ Jenny (2016) points to Korea, Australia, Finland, Iceland and Japan. See pages 15 – 17.

In many other jurisdictions NPA cases would be considered as part of the authority's enforcement relating to consumer protection and unfair practices¹¹ following the liberalization of a large number of markets. In Russia, the historical context and institutional development of FAS have resulted in the authority undertaking these NPA investigations under competition law¹². Nevertheless, as we will show these two types of investigations can be considered as completely distinct activities as they are clearly treated differently during the judicial appeal process (as we show below) and as they have different costs. Hence, we expect a reputation sensitive authority to treat them differently showing a preference for the one that is more conducive to enforcement success.

In the empirical part of the analysis we do find that NPA decisions require less resources and bring higher enforcement success for the CA, as they are *less* likely to be annulled by Courts of Appeal. As a result, the CA reallocated efforts and resources towards NPA decisions at the expense of PA decisions. In accordance with the model's predictions this could limit the welfare effects of the CA's enforcement activities.

The paper is structured as follows. Section 2 provides a review of the literature devoted to the choice of activities by public authorities, including CAs, and comparative analysis of performance assessment applied in CAs in developed and developing countries. Section 3 describes the model of a reputation sensitive competition authority, aimed at examining its optimal choice of different activities and providing a comparison of the welfare effects of enforcement under generalist and specialized authority regimes. Section 4 presents empirical evidence in support of the model developed, using data relating to the judicial review of infringement decisions of FAS, an authority that is a good example of a generalist institutional structure. Section 5 concludes.

2. Reputation and performance assessment of competition authorities

2.1. Brief review of background theory

Theoretical papers devoted to the impact of the institutional structure and motivation of CAs on the choice of enforcement efforts and activities are rare. The model

¹¹ We note that issues concerning "Unfair competition has increasingly been a focus of antitrust agencies around the world, a trend that raises difficult questions ...", see J. D. Wright, K W Wong-Ervin, D. H. Ginsburg, B. H. Kobayashi (2017).

¹² Often as exploitative abuses – see also below.

of Harrington (2011) was one of the first to draw attention to the diversion between welfare goals and CA performance criteria in anti-cartel enforcement – where the latter emphasize the number of cartels investigated while the goal of the social planner would be to minimize the rate of cartels formation. The model of Schinkel et al (2015) address exactly the issue of allocation of heterogeneous resource of the authority between different tasks, defined as ‘easy’ and ‘difficult’ ones. The model considers reputation as an important part of the objective function of the competition authority. Reputation is derived from decisions on high-profiled but at the same time difficult tasks that have relatively large impact on the budget. The main take-out is the necessity of the supervisory efforts of governments to focus on the tasks portfolio of CAs.

Our approach draws on these contributions and has similarities to the modeling of the objectives of public prosecutors as the weighted average of social gains from reducing crime and private benefits as, for instance, career considerations (Glaeser et al, 2000; Boylan and Long, 2005). Assuming mixed objectives of prosecutors has been used to explain the choice / selection of cases (Rasmusen et al, 2009) and therefore the implications for deterrence and has contributed to the comparative analysis of different legal rules in the context of various legal systems (Garoupa, 2009).

Among earlier related work, the pioneering work of Kerr (1978) stressed the importance of the way of measuring performance on the outcome of incentive contracting. Inadequate performance measurement is especially detrimental given the high risk that agents might face in achieving the objectives of the principal (Baker, 2002), and in the context of multitasking (Holmstrom, Milgrom, 1991). If the contract with the agent measures performance on an observable task then the agent distorts the efforts towards this task regardless of how much the task contributes to the principal’s utility. There is extensive supporting empirical evidence, including evidence from public authorities (Frey, Jegen, 2001). One-sided performance measurement under multitasking significantly affects the social effects of a policy. The example extensively discussed in the literature is the Job Training Partnership Act (see Heckman et al, 1997, Cragg, 1997, Barrow, 2000, Courty and Marschke, 2004).

Both the model of Schinkel et.al. (2015) and our model can be thought of as describing the implications of multiple tasks with different costs undertaken by utility maximizing organizations within agency theory. The model of the choice between different enforcement activities by a generalist CA developed in this paper, makes

possible, first to obtain a comparison of the welfare effect of competition enforcement under different institutional structures, and second, the empirical testing of the model's predictions.

2.2. Performance criteria and institutional structure: international comparisons of competition authorities

Both the institutional structure and the performance assessment criteria used in CAs throughout the world exhibit substantial divergence. Most CAs in the world bear additional responsibilities, other than those related to investigations of restrictions of competition, such as enforcement of the rules on unfair business practice, consumer protection, control over procurement and state aid, etc. Of course, when considering and comparing the institutional structure of CAs, an important dimension that has to be considered is the different *level of autonomy* of subdivisions within a generalist authority. If within CAs different responsibilities are allocated between different units / divisions, *and* these units are subjects of separate budgeting and performance assessment, then institutional structures might be considered as 'specialized' even under diverse responsibilities. Below, when referring to a generalist structure we will be thinking of one in which all divisions face the same performance criteria and in which the overall budget is allocated centrally subject to certain constraints – the latter guaranteeing a certain but not complete degree of freedom in the way divisions allocate resources.

Table 1 summarizes different indicators of the institutional structure and performance assessment of a number of CAs from developed and developing countries. Classification of CAs according to performance assessment separates them into two large groups. The first group is that of authorities (in US and Europe) that focus on, or at least include in their performance assessment, the welfare effects of enforcement. In the second group the focus is on a number of non-welfarist approaches for assessing performance of competition enforcement. Non-welfarist performance criteria include:

- output indicators (e.g. number of investigations or number of decisions). Very different agencies, including Australian Competition and Consumer Commission (ACCC), Directorate General for Competition (DG Comp), and South African Competition Commission (CCSA), apply this type of indicator;

- enforcement success measured by the percent of cases favorably resolved in the Courts of Appeal (US Department of Justice, ACCC, CCSA, CMA, FAS);
- cost-efficiency activities in terms of maximum period of merger or case investigation, or in terms of merger approvals through simplified procedures (US FTC, CMA, ACCC, CCSA, CADE).
- external experts estimates in the form of ‘stakeholders’ assessment’ or ‘ranking in international ratings’ (CADE, FAS).

Table 1. Institutional structure and performance assessment in CAs

	Policy portfolio diversification				Performance assessment				
	Responsibilities other than antitrust and merger analysis	Share of competition staff, %	Separate units for different responsibilities	Separate budgeting and performance assessment for different units	Welfare effects	Output-type	Enforcement success	Cost efficiency	Public / expert opinion
US Antitrust Division Department of Justice	No	100	Non applicable	Non applicable			Yes		
US Federal Trade Commission	Yes	47	Yes	Yes	Yes	Yes		Yes	Yes
EU Directorate General for Competition	Yes	100	Yes	Yes	Yes	Yes			Yes
UK Competition and Market Authority	Yes	40	Yes	n/a	Yes	Yes	Yes	Yes	
Dutch Authority for Consumers and Markets	Yes	34	No	No	Yes				
Australian Competition and Consumer Commission	Yes	44	Yes	Yes		Yes	Yes	Yes	
South African Competition Commission	No	70	Non applicable	Non applicable		Yes	Yes	Yes	
Brazilian CADE (Conselho Administrativo de Defesa Econômica)	No	41	Non applicable	Non applicable		Yes		Yes	Yes
Russian Federal Antitrust Service (FAS)	Yes	70	No ¹	No			Yes		Yes

Sources: authors' analysis of the strategic documents of CAs and (for information in column 2) *Global Competition Review 2015* (data of 2014).

¹ The Russian Federal Antitrust Service consists of the Central Office, responsible for enforcement against conduct that affects nation-wide markets, and regional subdivisions responsible for enforcement within regional markets. Within the Central Office there is some degree of separation of units responsible for different policy activities, but there is no such separation on the level of regional subdivisions.

Performance assessment criteria directly affect the CA's 'reputation' or 'utility' (Shinkel et al. (2015) and our model below) and influence the incentives of the authority's staff. In terms of agency theory, they influence the allocation of efforts across different activities. Under a given budget constraint, assessments based on welfare effects induce the competition authority to allocate resources towards investigations where larger markets are affected by harder competition restrictions. All other performance measures may create distortive effects. Output-type performance measurement may lead to inefficient resource allocation (Kovacic et al, 2011, Kovacic, Hollman, 2016). Other things being equal, cost-efficiency indicators may induce CAs to select the activities with

lowest cost. ‘Stakeholders’ assessment’ can divert enforcement activities in favor of consolidated interest groups. Among all the performance criteria, enforcement success is probably the one with the most ambiguous implications. On the one hand, higher enforcement success, can be seen as indicative of a decrease of false convictions and false acquittals (Type I and Type II enforcement errors), and of beneficial deterrence effects (Becker, 1968). However, under heterogeneous enforcement activities of generalist authorities, motivation on enforcement success may divert the efforts of the competition authorities in favor of “easy” or of low-cost activities with high probability of success under appeal, at the expense of other activities, and as the model developed below predicts this may well not be consistent with welfare maximization. Enforcement success, as a performance indicator, is less likely to create significant distortions if:

(1) the enforcement activities are specified narrowly (example is the Antitrust Division of US DOJ), as in specialist authorities or those in which different responsibilities are assigned to distinct autonomous sub-units;

(2) the authority’s success in enforcement is based on the adversarial procedure (US DOJ, CMA, CCSA);

(3) there is competition in enforcement, for instance, between public and private enforcement in US.

In developing countries there are often generalist authorities applying an inquisitorial procedure of investigations and decisions (an administrative model of competition enforcement), and the authorities are unable to rely on a strong historical tradition of competition enforcement. Further, these authorities operate under absent or underdeveloped private enforcement. Then distortions are likely to occur. The model presented below formalizes these arguments and the empirical analysis tests the predictions of the model using the data on the structure of enforcement by FAS in Russia. We show that enforcement success as a performance indicator can explain the allocation of resources between different types of investigations by a reputation sensitive CA.

3. A Model

3.1. Main assumption and model set-up

Assume a CA that has been assigned the role of enforcing and advocating for two activities, $k = 1, 2$, for example, competition law enforcement and consumer protection including protection from unfair business practices. The utility function from engaging in activity k is taken to be given by:

$$U_k = U_k(R_k(S_k)), \partial U_k / \partial R_k, \partial R_k / \partial S_k > 0, k = 1, 2 \quad (1)$$

Thus, utility depends on the CA's reputation $R_k = R(S_k)$ where S_k measures "enforcement success" in activity k ¹³. We assume that enforcement success depends on the number of decisions reached on cases opened that are not subsequently reversed (or annulled) in Courts of Appeal. Specifically:

$$S_k = D_k(1 - \Phi_k), k = 1, 2 \quad (2)$$

where

$$\Phi_k, 0 < \Phi_k < 1 \quad (3)$$

is the probability that a decision in activity k is expected to be appealed and annulled in a Court of Appeals.

We simplify in order to facilitate comparisons between activities by assuming that the reputation function is given by:

$$R_k = f(D_k)S_k = f(D_k)D_k(1 - \Phi_k) \quad (4)$$

and that

$$f(D_k) = \left(\frac{1}{\alpha} D_k^{\alpha-1}\right), 0 < \alpha < 1 \quad (5)$$

so we can finally write the utility function (taking into account of (4) and (5) and assuming that utility is simply proportional to reputation) as:

$$U_k = \left(\frac{1}{\alpha} D_k^\alpha\right) (1 - \Phi_k), k = 1, 2 \quad (6)$$

This implies that utility is increasing in the number of decisions but at a diminishing rate (diminishing marginal utility with respect to decisions), i.e:

$$\frac{\partial U_k}{\partial D_k} > 0, \frac{\partial^2 U_k}{\partial D_k^2} < 0 \quad (7)$$

¹³ A more general utility function is used in Katsoulacos (2017), in which utility depends on both reputational concerns and welfare impact concerns of enforcement. Utility function (1) can be thought of as most appropriate for cases where CAs do not operate under welfarist performance criteria. We consider this as a suitable modeling choice here given our primary objective which, as noted above, is to examine the question of whether non-welfarist performance criteria (often used to assess CAs) and, hence, non-welfarist CA objectives, especially in developing countries, are consistent with the CAs' institutional structure.

and that, from (6), utility is decreasing in the probability of annulment by Courts of Appeals.

Let the marginal cost of investigating cases and reaching decisions in activity k be $c_k, k=1,2$

Clearly the *optimal unconstrained* number of decisions \widehat{D}_k in activity k will be given by

$$\frac{\partial U_k}{\partial \widehat{D}_k} = (\widehat{D}_k)^{\alpha-1} (1 - \Phi_k) = c_k, k=1,2 \quad (8)$$

(8) is shown in Diagram 1 (where we also show the influence of budget constraints that we discuss further below). Without budget constraints the optimal decisions D_k^* are given

by $D_k^* = \widehat{D}_k$.

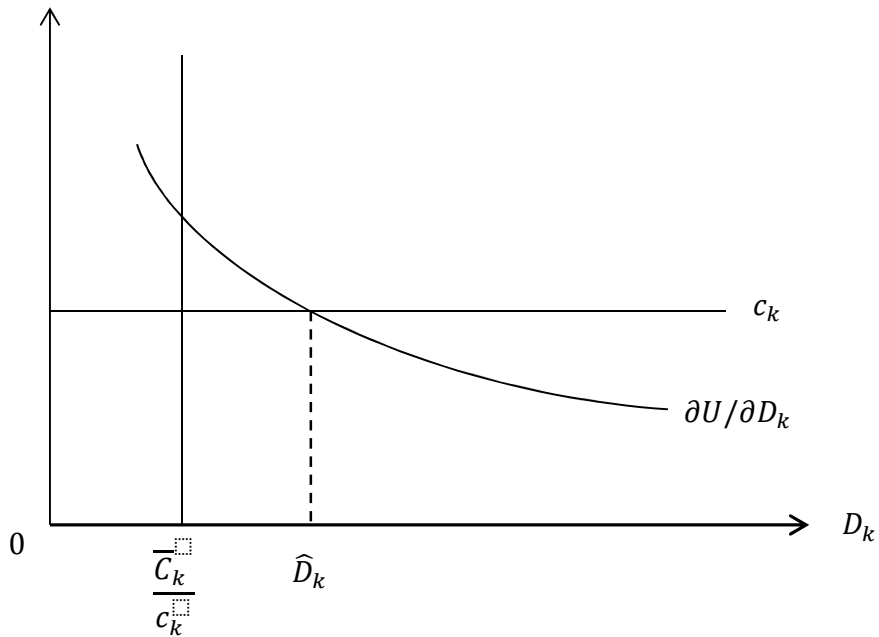


Diagram 1

So we have:

Proposition 1:

Assume that $c_k, k=1,2$ are the same across activities. Then:

$$\frac{\partial \widehat{D}_k}{\partial \Phi_k} < 0 \text{ or } \widehat{D}_k \geq \widehat{D}_j \text{ if } \Phi_k \leq \Phi_j, j \neq k$$

that is, the greater the probability of annulment of decisions (and hence the lower the enforcement success) in activity k the smaller, *ceteris paribus*, the optimal number of decisions in this activity.

Proof: Follows directly from (8), given (7).

It should be noted here that it will often be the case that the marginal cost of decisions with a higher probability of annulment will be higher because they will tend to be more complex decisions requiring additional economic and legal resources¹⁴. This of course will strengthen the conclusion just mentioned since an increase in the marginal cost of decisions in activity j will, *ceteris paribus*, reduce the number of decisions in this activity. To complement this point we also note that activities in which decisions face a low probability of annulment are those in which decisions are based on well established general presumptions and, therefore, which have the lowest cost of investigation.

Finally, we note that here we abstract from the widely recognized and debated possibility that there may be *cost-reducing synergies* from merging different functions into a CA (see for example, Jenny, 2016). The main reason is that their implication in our model is quite obvious and do not affect the qualitative nature of our conclusions: of course, strong synergies will make it less likely that specialist authorities will be welfare superior.

3.2. Optimal decisions under budget constraints

In practice CAs face, often quite severe, budget constraints. We now take these into account distinguishing between specialist and generalist authorities.

Optimal decisions by specialist authorities

Let the cost of investigating cases and reaching decisions in activity k be:

$$C_k = c_k D_k \leq \bar{C}_k \quad (9)$$

¹⁴ This is certainly the case for the two broad class of activities we examine empirically below for FAS – Proper Antitrust (PA) and Non – Proper Antitrust (NPA) cases.

where \bar{C}_k is the budget of an authority specializing in activity k. Thus, for as long as, when the decisions are at the maximum allowed by the authority's budget, i.e. when

$$D_{k,s}^{\max} = \frac{\bar{C}_k}{c_k} \quad (10)$$

we have that

$$\frac{\partial U_k}{\partial D_{k,s}} > c_k, \forall D_{k,s} \leq D_{k,s}^{\max}, k = 1, 2 \quad (11)$$

where subscript "s" refers to a "specialist" authority, the budget constraint will be binding and the authority's (constrained) optimal decisions will be given by (10).

Generally, optimal decisions by specialist authorities will be given by:

$$D_{k,s}^* = \min(D_{k,s}^{\max}, \hat{D}_{k,s}), k = 1, 2 \quad (12)$$

where $\hat{D}_{k,s}$ is given by the solution of (8). If, as in Diagram 1 the optimal number of decisions is budget constrained and if this is true for both activities then:

$$D_{1,s}^* = (\bar{C}_1 / c_1) \text{ and } D_{2,s}^* = (\bar{C}_2 / c_2) \quad (13)$$

Optimal decisions by generalist authorities

When the activities $k = 1, 2$ are under one generalist authority, assume that the authority's total budget is the same as the sum of the budgets of the specialist authorities, that is, its budget is:

$$\bar{C} = \bar{C}_1 + \bar{C}_2 \quad (14)$$

Also assume that, by law¹⁵ the authority is constrained to undertake each period *at least* a certain minimum number of decisions per activity. These are assumed to be less than the optimal number of specialist CAs, that is they are:

$$0 < \underline{D}_1 < D_{1,s}^* \text{ and } 0 < \underline{D}_2 < D_{2,s}^* \quad (15).$$

Also assume that:

$$\bar{C}_1 > c_1 \underline{D}_1 \text{ and } \bar{C}_2 > c_2 \underline{D}_2 \quad (15')$$

¹⁵ E.g. because of deadlines imposed by law that require the CA to reach decisions within a certain period once a case is filed. Alternatively, we can plausibly think of $c_k \underline{D}_k$ as the budget over which the division k in the CA is given direct responsibility (so the assumption is that each division has some but not complete autonomy in the way the overall budget is divided).

Now, let the marginal net reputation benefit to the authority of increasing decisions in the two activities satisfy, for all D:

$$(D_1)^{\alpha-1}(1-\Phi_1)-c_1 > (D_2)^{\alpha-1}(1-\Phi_2)-c_2 \quad (16)$$

(16) implies that:

$$\widehat{D}_1 > \widehat{D}_2 \quad (17)$$

As noted above, this would, for example, be the case if activity 1 concerns very straightforward regulatory matters for which reversals in Appeal Courts are very seldom and so $\Phi_1 < \Phi_2$, and for which $c_2 > c_1$, i.e. activity 1 absorbs on average less resources than activity 2 per decision.

If (16) and so (17) hold, then the CA will maximize its utility by going for the maximum possible decisions of activity 1, given the constraints imposed by (14), (15) and (15'). That is, assuming that the budget constraints are binding:

$$D_{1,g}^{\max} = \frac{\bar{C} - c_2 D_2}{c_1} \text{ and} \quad (18)$$

$$D_{1,g}^* = \min(\widehat{D}_1, D_{1,g}^{\max})$$

while

$$D_{2,g}^* = \left\{ \begin{array}{l} D_2 \text{ if } \widehat{D}_1 > D_{1,g}^{\max} \\ \frac{\bar{C} - c_1 \widehat{D}_1}{c_2} \text{ if } \widehat{D}_1 < D_{1,g}^{\max} \end{array} \right\} \quad (18')$$

where subscript g indicates “generalist” authority.

Comparing a generalist CA to specialist CAs we find that:

Proposition 2: A generalist CA will always increase the number of decisions of the reputation enhancing activity and decrease the number of decisions of the other activity, relative to budget constrained specialist CAs. That is:

$$D_{1,g}^* > D_{1,s}^* \text{ and } D_{2,g}^* < D_{2,s}^*$$

Proof: Given the constraints (14), (15), (15') and (17) the result follows by comparing (18) and (18') to (13). Specifically, both

$$\widehat{D}_1 \text{ and } D_{1,g}^{\max}$$

exceed $D_{1,s}^*$ as given by (13) and hence $D_{1,g}^* > D_{1,s}^*$. Further, $D_{2,g}^* < D_{2,s}^*$ since $\underline{D}_2 < D_{2,s}^*$ given (15) and $\frac{\bar{C} - c_1 \hat{D}_1}{c_2} < D_{2,s}^*$ given $c_1 \hat{D}_1 > \bar{C}_1$ (where the latter inequality holds as we assume that specialist CAs are budget constrained).

3.3. Welfare comparisons

Note that the welfare generated by each specialist authority's activities will be given by:

$$W_{k,s} = [(1 - \Phi_k) \bar{w}_k - c_k] D_{k,s}, \quad k = 1, 2 \quad (19)$$

where the number of decisions in the two activities are given by (13) and:

\bar{w}_k = the average (consumer) welfare gain of decisions from activity k.

In the case of a generalist authority welfare generated by each activity will be:

$$W_{k,g} = [(1 - \Phi_k) \bar{w}_k - c_k] D_{k,g}, \quad k = 1, 2 \quad (19')$$

So, if, given (18):

$$D_{1,g}^* = D_{1,g}^{\max} = \frac{\bar{C} - c_2 \underline{D}_2}{c_1}$$

so from (18'),

$$D_{2,g}^* = \underline{D}_2$$

then:

$$W_{1,g}^* = [(1 - \Phi_1) \bar{w}_1 - c_1] D_{1,g}^{\max} \quad (20)$$

$$W_{2,g}^* = [(1 - \Phi_2) \bar{w}_2 - c_2] \underline{D}_2 \quad (21)$$

So we have:

Proposition 3: A sufficient condition for welfare under a budget constrained specialist institutional structure to exceed welfare under a generalist institutional structure, i.e. for

$$W_s^* = W_{1,s}^* + W_{2,s}^* > W_g^* = W_{1,g}^* + W_{2,g}^* \quad (22)$$

is that:

$$\frac{(1 - \Phi_2) \bar{w}_2}{c_2} > \frac{(1 - \Phi_1) \bar{w}_1}{c_1} \quad (23)$$

Proof: From (22), welfare under a specialist structure will be higher if:

$$[(1 - \Phi_1)\bar{w}_1 - c_1]D_{1,s}^* + [(1 - \Phi_2)\bar{w}_2 - c_2]D_{2,s}^* > [(1 - \Phi_1)\bar{w}_1 - c_1]D_{1,g}^* + [(1 - \Phi_2)\bar{w}_2 - c_2]D_{2,g}^* \quad (24)$$

or if:

$$[(1 - \Phi_2)\bar{w}_2 - c_2](D_{2,s}^* - D_{2,g}^*) > [(1 - \Phi_1)\bar{w}_1 - c_1](D_{1,g}^* - D_{1,s}^*) \quad (25)$$

Or, given

$$D_{1,g}^* = D_{1,g}^{\max} = \frac{\bar{C} - c_2 \underline{D}_2}{c_1}$$

$$D_{2,g}^* = \underline{D}_2$$

if

$$[(1 - \Phi_2)\bar{w}_2 - c_2](D_{2,s}^* - \underline{D}_2) > [(1 - \Phi_1)\bar{w}_1 - c_1]\left(\frac{\bar{C} - c_2 \underline{D}_2}{c_1} - D_{1,s}^*\right) \quad (26)$$

which given (13) will hold if (23) holds.

Note that in the case where, instead, from (18):

$$D_{1,g}^* = \hat{D}_1 \text{ so } D_{2,g}^* = \frac{\bar{C} - c_1 \hat{D}_1}{c_2}$$

substituting in (24) we can see that again (23) is a sufficient condition for (22) to hold.

(23) is intuitively appealing: it says that the welfare gain per decision that is not annulled in Courts of Appeal, relative to its cost, must be higher for decisions in activity 2 than for decisions in activity 1. If this holds then, according to Proposition 3, an institutional structure with specialist CAs is welfare superior to one with a generalist CA.

Note that (23) may well hold though (16) also holds. This will certainly be so if there is a substantial enough difference between \bar{w}_2 and \bar{w}_1 in favor of activity 2 given the value of the other parameters.

Corollary of Proposition 3:

If (16) and so (17) hold, according to Proposition 2, a reputation maximizing CA will allocate the resources at its disposal, given the budget and law constraints that it faces, concentrating to activity 1. However, if (23) also holds this will be welfare reducing. Under these circumstances, it is better to organize CAs as specialist authorities.

4. Empirical analysis of the enforcement activities of the Federal Antitrust Service of the Russian Federation

4.1. Russian competition enforcement at a glance

The Russian CA is among the most ‘generalist’ in the world. National competition law covers not only anticompetitive conducts but also unfair competition issues, state aid provisions and actions of public authority that restrain competition. FAS is also responsible for competition in public procurement, tariff regulation and legislation on advertising. In addition, rules on abuse of dominance and agreements include provision against so-called ‘exploitative abuse’ (Vickers, 2008). Therefore, there is substantial heterogeneity among enforcement activities. In the Central Office, there is a certain level of specialization among units: for example, there is a separate unit responsible for investigations and enforcement against cartels. Within regional subdivisions, typically all the staff responsible for enforcement of the law ‘On protection of competition’ is in the same department. Investigatory and adjudicatory powers of competition authority are not separated in Russia: FAS investigates and makes decisions itself.

The scale of enforcement is large. From 2007 to 2014 the annual number of investigations on articles 10 and 11 of the law ‘On protection of competition’ increased from 2 to 5 thousand. About 40% of investigations resulted in infringement decisions which are subject to judicial review. Companies submit claims to annul infringement decisions of regional subdivisions to the relevant court of first instance. The Moscow commercial court of first instance decides on the claims to annul infringement decisions made by FAS Central Office. Access to judicial review of any administrative decision in Russia is easy, from the court of the first instance to the highest court (at the time under consideration this was the Supreme Commercial Court of the Russian Federation).

Enforcement success – measured by the share of infringement decisions that stay in force after judicial review - is a very important performance indicator for FAS. It is explicitly set among performance criteria for the head of the service, in Central Office and in regional subdivisions. There are other performance criteria that are derived from enforcement success: for instance, share of decided sanctions actually enforced, among all sanctions decided (for head of FAS), share of infringement decisions with follow-up

corrections of market conduct (for all levels of FAS), share of decisions on penalties reversed (for regional subdivisions). During the last ten years FAS reports indicators suggesting increasing enforcement success. The importance of enforcement success as the main performance indicator for FAS makes the model presented in the previous section particularly suitable for the study of CL enforcement in Russia. According to the model we expect that a generalist CA like FAS will tend to concentrate on enforcement activities that generate the highest enforcement success. This is exactly what the empirical evidence presented below shows. According to the model's predictions this may well distort and limit the welfare effects of FAS enforcement activities.

4.2. Dataset description

In order to test hypotheses on the choice of enforcement activities by a generalist authority we use specifically a collected dataset of the claims to commercial courts of the Russian Federation to annul the infringement decisions of the Federal Antitrust Service and its' regional subdivisions on the articles 10 and 11, which correspond to articles 102 and 101 TFEU respectively. The dataset covers the period 2008-2012. The choice of the first year of observation is not arbitrary. In 2006 a new law 'On protection of competition' was adopted in Russia. In 2007 a new penalty system with higher level of monetary fines was established. Coverage of data starts at the beginning of appeal claims according to the new law and penalty system. At the same time, after three years FAS adjusted fixed cap monetary penalties (in contrast to turnover penalties) for those violations that do not affect competition. This decision separates overall period into two sub-periods: before and after the change in the penalty system.

During 2008-2012 more than 10 thousand infringement decisions on violation of the competition law in the form of abuse of dominance or anticompetitive agreements were made by FAS. Claims to annul represent roughly one-third of all the FAS decisions. About 40% of the claims were finally satisfied after judicial review. Observations in our dataset are claims to annul infringement decisions. The dataset contains 3931 observations.

4.3. Proper and non-proper enforcement activities

In-depth analysis of FAS infringement decisions allows us to classify all investigations into two groups. FAS extensively made investigations and decisions on cases where alleged violator only imposes (sometimes negligible) harm on customers without the evidence of competition restrictions. FAS applied legislation of abuse of dominance according to the principle of strict liability of dominant company for every harm imposed on counterparties. We call the investigations where there is no evidence on competition restriction, and there is no causal relationship between dominance and harm imposed *non-proper antitrust decisions (NPAs)* in contrast to *proper antitrust decisions (PA)*. Non-proper antitrust decisions consist of three main groups: decisions against natural monopolies on the complaints of final customers, decisions on interconnection with sub-subscribers (for instance, sub-subscribers in electricity distribution), and ‘miscellaneous’ decisions where harm is the only evidence on violation (see Katsoulacos et al, 2016).

We classify NPA and PA in the sample using expert assessment of the content of decision and conduct in question but not any formal criteria. There is strong correlation between characteristics of conduct as NPA and low monetary penalties. Overall, NPAs represent more than $\frac{3}{4}$ of the appeals submitted, and the share of NPAs increases over time. To clarify further the specific competition enforcement structure, note that while legislation against ‘exploitative’, in contrast to ‘exclusionary’, conduct of dominant company is not specific to the Russian competition legislation (Vickers, 2008), the specific feature of Russian competition enforcement is that “dominant” companies, are considered in some circumstances strictly Per Se liable for the harm imposed on a counterparty without the need/requirement to take account of the evidence that would normally be required (e.g. in EU) in order to reach an infringement decision on “exploitative” conduct, by both the CA and the Courts.

Table 2 compares NPA to PA cases in terms of CA enforcement success and cost of litigation measured by time spent. The large scale of enforcement gives us reason to assume that the CA takes the statistically significant difference of the two types of investigations into account. As seen in Table 2, the NPA appealed infringement decisions are 82,85% of the total sample. As will be argued below, this is likely to be an underestimate of the percentage of NPA decisions in the overall (appealed plus non-appealed) sample of infringement decisions of FAS. Also as seen in Table 2, there is a 16,58% increase in the enforcement success characterising NPA relative to PA appealed

decisions. Further, the latter's overall length of time from registration of claim to final decision is shorter and this, plus the much greater simplicity in the assessment of NPA decisions, suggest that their marginal cost is lower.

Table 2 also shows other factors that may influence enforcement success, specifically the level of penalties. The higher level of penalties on PA infringements imply enhanced incentives to violators to appeal and to invest in order to reverse these decisions.

Table 2. Proper and non-proper antitrust decisions in the claims for annulment of FAS infringement decisions: 2008-2012

	Percent in the overall sample	Share of decisions with monetary penalties	Monetary penalty if applied, in thousandsRU R, mean, st. err. in parentheses	Enforcement success (fraction of infringement decisions not annulled), percent	Time from registration of claim to final decision (in months, st. err. in parentheses)
<i>Non-proper antitrust (NPA) decisions</i>	82.85	11,82	4.60 (0.90)	61.93	9.78 (0.10)
<i>Proper antitrust (PA) decisions</i>	17.15	14,24	109.80 (57.90)	53.12	12.04 (0.28)
<i>Prob. difference=0</i>		Prob. (Pearson chi2) = 0.081	Prob. (t-stat) < 0.001	Prob. (Pearson chi2) < 0.001	Prob. (t-stat) < 0.001

With relevant indicator of statistical significance. We use Person chi-2 for binary variables and t-statistics for continuous variables.

In order to test further the impact of the content of a decision under judicial review on the expected enforcement success and cost of litigation, in the next section we undertake regression analysis.

4.4. Empirical analysis strategy

4.4.1. Hypotheses

In order to confirm the prediction on the structure of enforcement that follows from the model we test hypotheses on the relation of proper antitrust and non-proper antitrust decisions to (i) the probability of non-annulment and (ii) to the duration of court proceedings (and hence, indirectly, to the cost of decisions), which constitute our two *dependent variables*, that correspond to Proposition 1 in the model above:

H1. *Decisions on proper antitrust cases have lower enforcement success (higher probability of annulment under judicial review) than decisions on non-proper antitrust cases.*

H2. *Decisions on proper antitrust cases require larger amount of resources of CA than decision on non-proper antitrust cases.*

PA cases are more complex cases that require a greater amount of economic analysis and evidence and hence they are more costly to pursue than NPA cases. Here, we also consider as an indicator of resources used the *time spent on litigation*. In Russian commercial courts are overloaded (with more than 1.5 millions claims annually) but this coexists with almost no backlog records. Judges are strongly motivated to consider the claims within the time schedule set by procedural regulations (relatively low deviation in the time of litigation indirectly point to this fact). Essentially, the only serious reason to extend the time period of litigation is presentation of additional evidence in the courts and assessment of this evidence by the parties. Therefore cases with longer time of litigation are those where parties provide and cross-examine larger amounts of additional new evidence.

4.4.2. Variables and descriptive statistics

Table 3 below describes all the dependent and independent variables and provides some useful statistics. The dependent variables were described above.

Our primary *independent variable* of interest is PA, a dummy variable that equals one when a decision is a proper antitrust one and zero otherwise. Following Huschelrath, and Smuda, 2014, Smuda et al, 2015, Carree et al, 2010, we consider control variables that may impact both probability of enforcement success and duration of court proceeding. The *control variables* can be classified into three groups. *Competition authority – related determinants* are expected to influence quality¹⁶ of antitrust investigation and standards of proof applied. In particular, the experience of the CA is likely to lower the probability of annulment of its decisions in Courts of Appeal. *Sanctions – related determinants* according to empirical evidence presented in the papers mentioned above do influence the appeal process and may impact the probability of appeal success. Severity of sanctions affects probability of annulment in a number of

¹⁶ By quality here we essentially mean “enforcement success”, i.e. the probability that decisions are not annulled.

ways. Thus, higher penalties increase incentives by alleged violators to disprove that infringement has taken place before an Appeals Court, thus increasing the probability of annulment. Also, the evidentiary standards required by Courts are likely to be higher for decisions with larger monetary penalties or additional conduct remedies again increasing the probability of annulment. *Violator – related determinants* are considered as variables that reflect efforts which violators are ready to make in order to protect their interests. Specifically, we expect that the probability of annulment will be higher for larger violators because they are able to spend more resources to defend their conduct under litigation. Also, we expect that the probability of annulment will be lower in the case of repeat offenders because judges are more suspicious towards repeat offenders.

We also use information on court proceedings (whether the case was considered in more than one court, whether the case was sued to highest court) when checking for the robustness of the results. In addition, we check the impact of sub-periods distinguished by the uniformity and non-uniformity of sanctions against PA and NPA violations. Specifically, during the period from end of 2011 onwards fixed penalty caps were introduced for just NPA decisions, while before the end of 2011 turnover penalties were applied, as for PA infringement decisions.

Finally, we expect that control variables may affect the duration of litigation. Thus, larger company size and higher fines are likely to increase efforts by violators to reverse the CA's decisions under appeal proceedings. Hence, these efforts are expected to increase the duration of the judicial review.

Table 3. Variables in the data set

Variable name	Description	Obs.	Mean	St. dev.	Min	Max
<i>Dependent variables</i>						
Success	=1 if infringement decision stay in force after all instances, =0 otherwise	3931	0.60		0	1
Duration	duration of litigation, in months	3931	10.16	6.18	1	57
<i>Content of a decision</i>						
PA	=1 if the case is a proper antitrust one, =0 otherwise	3931	0.17		0	1
<i>Competition authority – related determinants (X1)</i>						
Law period 2012	=1 for cases initiated after the change of Russian antitrust legislation in the end of 2011, =0 otherwise	3931	0.21		0	1
CA experience	logarithm of the number of antitrust cases decided in the region in the past	3931	3.37	1.22	0.69	5.67
<i>Sanctions – related determinants (X2)</i>						
Fine	=1 if monetary fine is mentioned in the decision, =0 otherwise	3931	0.12		0	1
Size of the fine	logarithm of the fine size in thousands of rubles, =0 otherwise	3884	0.69	2.11	0	18.37
Conduct remedies	=1 if conduct remedies are mentioned in the decision, =0 otherwise	3931	0.31		0	1
<i>Violator – related determinants (X3)</i>						
Size of violator	=1 if the alleged violator is one of 400 largest companies in Russia, =0 otherwise	3931	0.16		0	1
Repeat offender	=1 if the company is a repeat offender	3931	0.43		0	1
<i>Other variables</i>						
Several instances (appeals in more than one court)	=1 if the case was considered in more than one court instances (decision of the first instance court was appealed) , =0 otherwise	3931	0.82		0	1
Highest court appeal	=1 is the case was sued to highest instance court, =0 otherwise	3931	0.22		0	1

4.4.3. Model Approach

The baseline regression model for testing H1 has the following specification:

$$P(\text{success} = 1|\text{claim}, x) = F_1(\alpha_0 + \alpha_1 PA + \alpha_2' X1 + \alpha_3' X2 + \alpha_4' X3) \quad (4.1)$$

where $P(\text{success} = 1|\text{claim}, x)$ indicates the probability that infringement decisions are not annulled under the condition that a violator filed a claim in court to annul an infringement decision; x denotes the set of explanatory variables including PA and three parameter vectors $X1$, $X2$ and $X3$.

Since the dependent variable *success* is binary we use Probit model for binary response. Maximum likelihood method is used to obtain estimates of the parameters of the regression equation. Hypothesis H1 will be confirmed if $\hat{\alpha}_1 < 0$ and is statistically significant.

In order to test the hypothesis H2, we estimate the OLS regression model:

$$E(\text{duration}|\text{claim}, x) = F_2(\beta_0 + \beta_1 PA + \beta_2' X1 + \beta_3' X2 + \beta_4' X3) \quad (4.2)$$

where $E(\text{duration}|\text{claim}, x)$ indicates the mean of duration of litigation under condition that a violator filed a claim in court to annul an infringement decision. Confirmation of the hypothesis H2 requires statistically significant $\hat{\beta}_1 > 0$.

4.4.4. Determinants of enforcement success

In this section we focus on the determinants of enforcement success. Results of the estimation of the regression model (4.1) are reported in Table 4.

Table 4. Estimation results for enforcement success¹⁷

Dependent variable: enforcement success (fraction of infringement decisions not annulled).	Baseline Probit Regressions			Robustness checks			
	Model 1	Model 2	Model 3	Sub-sample 1	Sub-sample 2	Sub-sample 3	Sub-sample 4
PA	-0.067*** (0.021)	-0.062*** (0.022)	-0.074*** (0.021)	-0.034 (0.049)	-0.082*** (0.024)	-0.020 (0.043)	-0.050* (0.030)
Law period	0.031 (0.020)						
(1 – PA) x Law period		0.033 (0.022)					
<i>competition authority – related determinants</i>							
CA experience	0.036*** (0.007)	0.038*** (0.007)	0.043*** (0.006)	0.029** (0.014)	0.046*** (0.007)	0.047*** (0.014)	0.031*** (0.010)
<i>sanctions – related determinants</i>							
Fine	-0.063** (0.024)						
Size of fine		-0.013*** (0.004)	-0.013*** (0.004)	-0.019** (0.009)	-0.011*** (0.004)	-0.022*** (0.007)	-0.010* (0.005)
Conduct remedies	-0.053*** (0.017)	-0.053*** (0.017)	-0.052*** (0.017)	-0.072* (0.043)	-0.048*** (0.019)	-0.003 (0.035)	-0.040* (0.024)
<i>violator – related determinants</i>							
Size of violator	-0.064*** (0.023)	-0.059*** (0.022)	-0.049** (0.022)	-0.098 (0.063)	-0.044*** (0.023)	-0.027 (0.042)	0.033 (0.030)
Repeat offender	0.024 (0.016)	0.025 (0.017)					
<i>Number of observations</i>	3931	3884	3884	701	3183	860	2002
Non-proper antitrust (NPA) decisions, %	82.85			81.28	83.20	80.02	84.20
Proper antitrust (PA) decisions, %	17.15			18.72	16.80	19.98	15.80
Prob. (Pearson chi2) difference = 0				0.309	0.699	0.047	0.188

¹⁷ Marginal effects; st. err. in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

<i>Pseudo R2</i>	0.0158	0.0175	0.0164	0.0149	0.0176	0.0010	0.0016
<i>Prob. > chi2</i>	0.0000	0.0000	0.0000	0.0148	0.0000	0.0174	0.0075
<i>correctly classified positive values (default = 0.5)</i>	93.39%	93.22%	93.56%	91.79%	92.65%	83.65%	99.38%
<i>correctly classified negative values (default = 0.5)</i>	9.90%	10.67%	11.44%	15.68%	12.71%	24.80%	0.85%
<i>correctly classified (default = 0.5)</i>	60.34%	60.53%	61.05%	60.63%	61.23%	57.44%	64.54%

The results suggest that in the PA type of cases there is a decrease in the probability of infringement decisions to stay in force by 6-7%. This *regularity stays stable in all specifications of the estimated model*. Thus the Hypothesis 1 is confirmed.

We also find a positive impact of competition authority experience in litigation on enforcement success. This result may reflect how a young CA like FAS learns over time the standards of evidence applied by the judges in commercial courts and, by becoming more experienced, prepare decisions taking these into account, thus increasing the probability of infringement decisions to stay in force.

Our results indicate that higher penalties and conduct remedies as well as larger company turnover decrease the probability of non-annulment (increase the probability of annulment). To start with, all these factors are expected to increase the probability of *appeal*. Further, as noted above, severity of sanctions and company size increase incentives by alleged violators to disprove that infringement has taken place before an Appeals Court, thus increasing the probability of annulment. Also, the evidentiary standards required are likely to be higher for decisions with larger monetary penalties or additional conduct remedies again increasing the probability of annulment.

Other expected effects of control variables are not proved by the results of estimation of the regression model. We find no statistically significant effects of changes in Russian antitrust law in the end of 2011 among which there was a decrease in the size of monetary penalties for NPA violations. The fact that the violator is a repeat offender does not influence the probability of non-annulment.

Proper antitrust characteristics are revealed to be statistically significant either together with other control variables or instead of the control variables that differ across our classification. This implies that the content of illegal conduct is an important statistically significant determinant of the probability of non-annulment.

To check the results of estimation of the regression model (1) for robustness we also undertake the same analysis for a number of sub-samples:

Sub-sample 1: cases considered by an appeal court of first instance only

Sub-sample 2: cases considered by a second (appellate) appeal court¹⁸

Sub-sample 3: cases sued to highest (Supreme) cassation instance court (cases with strong impact on reputation).

¹⁸ Commercial court, in Russian terms.

Submission of cases to the highest court (during the period under analysis – to the Supreme Commercial Court of the Russian Federation, SCC RF) proves that parties attach great importance to the final decision. The very fact of submission to SCC RF indicates that parties employ significantly higher efforts than average in order to win the case.

Sub-sample 4: cases on decisions made by the 15 regional offices of Russian competition authority (out of the 76 ones presented in the database), which demonstrate the highest workload and whose decisions make up 50% of the total number of observations in the database.

Sub-samples 1, 2 and 4 are representative in terms of the PA/NPA structure. According to the Pearson chi2 test the hypothesis that there is no difference in the frequency of appearance of PA cases between the sub-samples and the overall sample cannot be rejected. The PA/NPA structure of the sample 3 is slightly shifted in favor of PA cases in comparison to the overall sample, this difference being statistically significant at 5% level.

Results in Table 4 reveal that the most substantial contribution of PA to enforcement success is in the decisions of appeal and cassation (2nd and 3rd commercial) courts. In contrast, judges in the court of first instance do not exhibit a difference in deciding on PA cases in contrast to NPA while all the effects of control variables keep statistical significance. For the subsample of “busy” regional offices of CA results of estimation are also qualitatively the same as reported for models 1-3. This suggests that the baseline specifications are robust to changes in the sample.

4.4.5. Determinants of duration of judicial review

In this section we focus on determinants of the time-costs of litigation. Results of estimation of the regression model (4.2) are reported in Table 5.

Table 5. Estimation results for the duration of court proceeding (2)

Dependent variable: duration of court proceeding in months	Baseline OLS Regressions			Robustness check			
	Model 4	Model 5	Model 6	Sub-sample 1	Sub-sample 2	Sub-sample 3	Sub-sample 4
Constant	1.909*** (0.032)	1.913*** (0.032)	1.917*** (0.032)	1.275*** (0.073)	2.188*** (0.026)	2.600*** (0.036)	1.976*** (0.056)
PA	0.203*** (0.028)	0.192*** (0.028)	0.196*** (0.028)	0.308*** (0.068)	0.180*** (0.022)	0.118*** (0.029)	0.252*** (0.038)
Law period	-0.007 (0.026)						
(1-NPA) x law period		-0.026 (0.028)					
<i>competition authority – related determinants</i>							
CA experience	0.030*** (0.009)	0.029*** (0.009)	0.027*** (0.008)	-0.015 (0.020)	0.013** (0.007)	0.016* (0.009)	0.016 (0.013)
<i>sanctions – related determinants</i>							
Fine	0.067** (0.031)						
Size of fine		0.015*** (0.005)	0.015*** (0.005)	0.052*** (0.013)	0.009** (0.004)	0.008* (0.005)	0.011 (0.007)
Conduct remedies	0.090*** (0.022)	0.089*** (0.022)	0.089*** (0.022)	-0.082 (0.060)	0.072*** (0.018)	0.040* (0.023)	0.076** (0.029)
<i>violator – related determinants</i>							
Size of violator	0.160*** (0.029)	0.161*** (0.029)	0.160*** (0.029)	0.034 (0.089)	0.109*** (0.023)	0.033 (0.029)	0.168*** (0.037)
Repeat offender	0.070*** (0.021)	0.068*** (0.022)	0.068*** (0.022)	0.062 (0.057)	-0.000 (0.017)	-0.043* (0.024)	0.054* (0.028)
<i>Number of observations</i>	3931	3884	3884	701	3183	860	2002
<i>R2 adj.</i>	0.0347	0.0351	0.0350	0.0542	0.0377	0.0291	0.0413
<i>Prob. > F</i>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

st. err. in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The results suggest that in all specifications of the estimated model, in the PA type of cases duration of litigation are higher than in NPA cases, on average, depending on the specification of the estimated model, by 1,1 – 1,4 months¹⁹. All the variables considered, have a statistically significant impact on duration of court proceedings with expected sign, except of the variable measuring experience of CA. The results of estimation are also robust to changes in the sample. Thus Hypothesis 2 is also confirmed.

The findings presented clarify that non-proper antitrust cases create savings in time and hence costs of litigation, especially in the Court of first instance and in regions where the competition authority demonstrate the highest workload. In the (appeal and cassation) 2nd and 3rd commercial courts the impact of this on the duration of litigation decreases (relative to the impact in the Court of first instance).

4.4.6 Interpreting the empirical results in terms of the model predictions

In terms of the model developed in section 3 above, our empirical findings show that FAS does not face a trade-off between the marginal utility and the marginal cost of typical PA and NPA decisions at any stage of the judicial review. Results of the econometric analysis show that the marginal contribution of a NPA case to reputation is higher and marginal cost under litigation is lower. There is no stage of the judicial review where higher expected enforcement success coexists with higher costs. According to the model this should imply that the number of NPA decisions for a reputation-maximizing authority²⁰ is higher than the number of PA decisions. This is exactly in accordance to what is observed in reality.

There are two things that still need to be clarified in order to confirm this result. The first is that the model talks about the infringement decisions of a CA while the empirical estimates are based on the *appealed* infringement decisions of a CA (FAS). The model predicts that a generalist CA (like FAS) will focus on one category of infringement decisions, the one that has lower probability of annulment. The empirical estimates show

¹⁹ Remembering that the dependent variable is the natural logarithm of months.

²⁰ For which reputation is increasing in enforcement success.

that there is indeed a category of *appealed* infringement decisions (NPA decisions) which (a) are a higher fraction of total *appealed* infringement decisions and which (b) have a lower probability of annulment. How can we reconcile the predictions of the model with the empirical results? Well, the two are reconciled if the fraction of NPA decisions in overall infringement decisions is at least as high as the fraction of NPA decisions in *appealed* infringement decisions. But we can claim that this last statement is true because if anything the fraction of PA decisions in *appealed* infringement decisions is biased in favor of PA decisions, given the higher probability that PA decisions are appealed. Why do we expect PA decisions to have a higher probability to be appealed? Exactly because the probability of annulment for these is higher and also because they face more severe fines (as shown in Table 2) and remedies (that are essentially not imposed in NPA decisions), as well as, we could add, they are associated with bigger firms with more resources to invest in appeal procedures.

The second thing that needs to be clarified concerns an apparent inconsistency between our theoretical model and the empirical results, which is that while the model considers the *joint* probability of annulment of infringement decisions, in the empirical work we estimate the *conditional* probability of annulment of *appealed* infringement decisions. But again this apparent inconsistency can be resolved by pointing out that the probability of appeal (for the reasons just given above) is higher for PA decisions and hence if the empirical results establish a difference in the conditional probability of annulment between PA and NPA decisions²¹ this difference will be even higher for the joint probability for these two types of decisions.

5. Concluding remarks

This article contributes to the debate on the optimal structure of Competition Authorities (CAs) and specifically to a better understanding of the conditions under which “generalist” (multi-activity) structures, that have been popular in Europe and many other developed and developing countries in recent years, are most appropriate. An important element, which we consider has been ignored in this debate until now, is that this issue should be examined under the (realistic) assumption that CAs are reputation

²¹ What we establish is that the conditional probability of annulment is higher for PA than for NPA decisions.

sensitive organizations that are managed by individuals that are motivated by the pursuit of “enforcement success”. This motivation is entirely consistent with the performance criteria under which we find that CAs often operate. We propose a model of a reputation maximizing CA in which reputation is increasing in enforcement success measured by the number of appealed infringement decisions that are not annulled. We show that such a CA will tend to focus on activities in which the probability of decision annulment is low and which have relatively low investigation and litigation costs, though this focus may be detrimental to social welfare (relative to a more balanced portfolio of activities) – implying that generalist structures may be inappropriate. We consider our modeling choice suitable given our primary objective which is to examine whether *non-welfarist performance criteria*, often used to assess CAs, and, hence, non-welfarist CA objectives, especially in developing countries, are consistent with the CAs’ institutional structure.

We use a large data set of appealed infringement decisions made by the Russian CA (FAS) in the years 2008 – 2012 to provide empirical support for the model’s predictions. FAS is a generalist authority subject to performance criteria that imply a strong motivation to maximize reputation through enforcement success. More concretely, we estimate whether the activities or types of investigation on which FAS concentrates are investigations associated with a lower probability of annulment and lower costs and we find strong statistically significant evidence that this is indeed the case.

References

- Baker, G. P. (1992). Incentive contracts and performance measurement. *Journal of Political Economy*, 598-614.
- Barnow, B. S. (2000). Exploring the relationship between performance management and program impact: A case study of the Job Training Partnership Act. *Journal of Policy Analysis and Management*, 118-141.
- Becker, G. S. (1968). Crime and punishment: An economic approach. In *The Economic Dimensions of Crime* (pp. 13-68). Palgrave Macmillan UK.
- Bonakele, T. (2016). The Nature and Use of Economic Evidence in Competition Enforcement (with Special Emphasis to the Case of South Africa). In *Competition Law Enforcement in the BRICS and in Developing Countries* (pp. 187-205). Springer International Publishing.
- Boylan, R. T., & Long, C. X. (2005). Salaries, plea rates, and the career objectives of federal prosecutors. *The Journal of Law and Economics*, 48(2), 627-651.

- Carree, M., Günster, A., & Schinkel, M. P. (2010). European antitrust policy 1957–2004: an analysis of commission decisions. *Review of Industrial Organization*, 36(2), 97-131.
- Courty, P., & Marschke, G. (2004). An empirical investigation of gaming responses to explicit performance incentives. *Journal of Labor Economics*, 22(1), 23-56.
- Cragg, M. (1997). Performance incentives in the public sector: Evidence from the Job Training Partnership Act. *Journal of Law, Economics, and Organization*, 13(1), 147-168.
- Fels, A., & Ergas, H. (2014, December 17–18). Note, Institutional design of competition authorities, OECD Competition Committee.
- Fox, E. M. (2016). Competition Policy: The Comparative Advantage of Developing Countries. *Law and Contemporary Problems*, 79(4), 69-84.
- Fox, E. M., & Trebilcox, M. J. (2012, August 1). The design of competition law institutions and the global convergence of process norms: The GAL competition project. New York University Law and Economics Working Papers.
- Frey, B. S., & Jegen, R. (2001). Motivation crowding theory. *Journal of Economic Surveys*, 15(5), 589-611.
- Garoupa, N. (2009). Some reflections on the economics of prosecutors: Mandatory vs. selective prosecution. *International Review of Law and Economics*, 29(1), 25-28.
- Glaeser, E. L., Kessler, D. P., & Morrison Piehl, A. (2000). What do prosecutors maximize? An analysis of the federalization of drug crimes. *American Law and Economics Review*, 2(2), 259-290.
- Gouri, G. (2016). Economic Evidence in Competition Law Enforcement in India. In *Competition Law Enforcement in the BRICS and in Developing Countries* (pp. 223-228). Springer International Publishing.
- Heckman, J., Heinrich, C., & Smith, J. (1997). Assessing the performance of performance standards in public bureaucracies. *The American Economic Review*, 87(2), 389-395.
- Hüschelrath, K., & Smuda, F. (2014). The appeals process: an empirical assessment. ZEW discussion papers, 14.
- Jenny F. (2016) The Institutional Design of Competition Authorities: Debates and Trends. In *Competition Law Enforcement in the BRICS and in Developing Countries* (pp. 1-58). Springer International Publishing.
- Katsoulacos, Y. (2017). Judicial Review, Economic Evidence and the Choice of Legal Standards by Utility Maximising Competition Authorities. Discussion Paper available in: <http://www.cresse.info/uploadfiles/Paper%20on%20EB%20vs%20PS%20YK%20New%20Model%2023052017.pdf>
- Katsoulacos, Y., & Ulph, D. (2016). Regulatory decision errors, Legal Uncertainty and welfare: A general treatment. *International Journal of Industrial Organization*, forthcoming
- Katsoulacos, Y., Avdasheva, S., & Golovanova, S. (2016). Legal standards and the role of economics in Competition Law enforcement. *European Competition Journal*, 1-21.
- Kerr, S. (1975). On the folly of rewarding A, while hoping for B. *Academy of Management journal*, 18(4), 769-783.

- Kovacic, W. E., & Hyman, D. A. (2016). Consume or Invest: What Do/Should Agency Leaders Maximize. *Wash. L. Rev.*, 91, 295.
- Kovacic, W. E., Hollman, H. M., & Grant, P. (2011). How Does Your Competition Agency Measure Up?. *European Competition Journal*, 7(1), 25-45.
- Kovacic, William E. and Hyman, David A., "Competition Agencies with Complex Policy Portfolios: Divide or Conquer?" (2013). *GW Law Faculty Publications & Other Works*. Paper 631. http://scholarship.law.gwu.edu/faculty_publications/631
- Ma, T. C. (2013). Legal transplant, legal origin, and antitrust effectiveness. *Journal of Competition Law and Economics*, 9(1), 65-88.
- OECD Global Forum on Competition 2003. Session I "The objectives of competition law and policy".
- OECD, Note BIA. (2014, December 10). Roundtable on institutional changes, OECD Competition Committee, DAF/COMP/WD(2014)126.
- Priest, G. L., & Klein, B. (1984). The selection of disputes for litigation. *The Journal of Legal Studies*, 13(1), 1-55.
- Rasmusen, E., Raghav, M., & Ramseyer, M. (2009). Convictions versus conviction rates: the prosecutor's choice. *American Law and Economics Review*, 11(1), 47-78.
- Schinkel, Maarten Pieter and Tóth, Lukáš and Tuinstra, Jan, Discretionary Authority and Prioritizing in Government Agencies (May 19, 2015). Tinbergen Institute Discussion Paper 15-058/VII. Available at SSRN: <https://ssrn.com/abstract=2607868> or <http://dx.doi.org/10.2139/ssrn.2607868>
- Smuda, F., Bougette, P., & Hüschelrath, K. (2015). Determinants of the duration of European appellate court proceedings in cartel cases. *JCMS: Journal of Common Market Studies*, 53(6), 1352-1369.
- Vickers J (2008) Abuse of market power. In: Buccrossi P (ed) Handbook of antitrust economics, Cambridge, MA: USA, MIT Press, pp 415-432
- Wong-Ervin, K. W., Ginsburg, D. H., Wright, J. D., & Kobayashi, B. H. (2017). Comment of the Global Antitrust Institute, Antonin Scalia Law School, George Mason University, on the Proposed Revisions to the People's Republic of China Anti-Unfair Competition Law.