

The role of economics and the quality of antitrust case assessment in China: an empirical investigation¹

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Abstract

This article empirically measures indicators capturing the role of economics in the antitrust decisions of the Competition Authorities of China from 2010 – 2021. The methodology allows that identification of the legal standards (LSs) adopted in assessing different conduct types and their evolution. The LSs are compared to their theoretically optimal level in order to deduce quality of enforcement. Comparative analysis is undertaken with published results on the role of economics for EC's DGCOMP, UK's CMA and Russia's FAS. The Chinese Authorities' enforcement record lags behind in quality that of DGCOMP and CMA in abuse of dominance cases though it is already well ahead of countries in which their modern Competition Law enforcement started at about the same time (2008), like Russia.

Keywords

antitrust, economic analysis, legal standards, Per Se, effects-based, enforcement quality

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В данной статье эмпирически измеряются показатели, отражающие роль экономики в решениях антимонопольных органов Китая в период с 2010 по 2021 год. Методология включает в себя определение правовых стандартов (ПС), принятых при оценке различных видов поведения, и их эволюцию. Для оценки качества правоприменения правовые стандарты сравниваются с их теоретически оптимальным уровнем. Исследовани использует опубликованные результаты деятельности DGCOMP ЕК, СМА Великобритании и ФАС России для проведения сравнительного анализа роли экономической науки в процессе принятия ими решений. Выяснилось, что правоприменительная практика китайских властей по делам о злоупотреблении доминирующим положением отстает по качеству от DGCOMP и СМА. Однако по этому показателю они уже значительно опережают такие страны, как Россия, которые ввели антимонопольное законодательство примерно в то же время, что и Китай.

антимонопольное регулирование, экономический анализ, правовые стандарты, *Per Se*, основанные на эффектах, качество правоприменения.

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1. Introduction, Literature Review and Summary of Main Results

Gerber (2004) had pointed out that “The European experience in establishing the goals and institutions of competition law may be instructive for Chinese decision-makers as they consider the creation and development of competition law in China.²”. Europe’s considerable experience regarding the purpose and framework of competition law has indeed proved beneficial for China. European competition law serves various legislative purposes, including the establishment and maintenance of the community market. Similarly, China’s Anti-Monopoly Law also encompasses multiple legislative objectives. China enacted the Anti-Monopoly Law in 2008, during which a broad consensus was reached on its legislative goals and scope. The fundamental legislative purpose of China’s anti-monopoly law is to curb the adverse consequences of monopoly power, uphold and promote competition, and protect diverse interests. Nevertheless, given the advancement of the market economy, information technology, and globalization, it has been considered crucial to consider additional requirements for the legislative purpose of anti-monopoly law. The latter must address not only the traditional issues associated with market power but also optimize the market environment and foster competition neutrality. It should not only assume a crucial role in constructing a modern market system but also meet the aspirations and requirements of diverse sectors of society for enhancing the business environment and

² See also (Hylton, 2012): “China has modelled its antitrust regime on that of the EU”.

ensuring fair competition. Moreover, it should clarify the recognition and trade-offs of the fair competition review system while reaffirming the fundamental importance of competition policy.

China and Europe share similarities in terms of their law enforcement agencies and institutions given that China has modelled its antitrust regime on that of the EU, which is closest to its own legal traditions. In Europe, administrative agencies are granted the authority to enforce competition law. This mode of administrative law enforcement not only facilitates the regulation of enterprises that engage in anti-competitive practices but also promotes the development of specialized knowledge in competition law and strengthens public trust in competition protection. Similarly, in China, administrative organs possess significant influence over economic development. The legal tradition and the foundation of Chinese legal culture rely on the interpretation of statutory law, the application of legal provisions, and the enforcement of administrative policies. This framework of legal operation aligns with the legal system in continental Europe.

Starting from the mid- to late- 1990s, the EU competition law has undergone a process of modernization, transitioning from a “form (or, object)-based approach” in assessing business practices to an “effects-based approach” (as the optimal Legal Standard, LS). This shift can be attributed to the continuous evolution of industrial organization theory, which questioned the presumption of many conducts, other than horizontal agreements, considered anticompetitive, explained how significant efficiencies can result from these conducts and thus highlighted the increasing significance of economic theory in practical antitrust enforcement. In the United States too, the earliest clause of antitrust law focused on the “per se illegal” rule for price agreements. However, as economic theory advanced, American judicial institutions were the first to become aware of the diverse impacts on the market of business conducts beyond price agreements and, consequently, they adopted the “rule of reason” (the assessment approach referred to as “effects-based” in Europe) for evaluating most of the other business conducts. China’s analysis framework and criteria for enforcing its anti-monopoly law largely draws upon those of the European Union.

In recent literature (Katsoulacos & Ulph, 2009; Katsoulacos & Ulph, 2016; Katsoulacos & Ulph, 2017) the optimal LSs are defined as the social welfare maximizing LSs, taking into account a number of factors: decision errors, deterrence effects and legal uncertainty. While horizontal agreements (cartels), leading to obvious restrictions on competition, are best dealt with by the principle of Per Se illegality, for vertical agreements and abuses of dominant market positions, for which, in addition to their potential anti-competitive effects, there are also under certain conditions welfare enhancing efficiency effects, the Per Se illegality principle is not generally justified.

The optimal LSs for evaluating certain violations, particularly vertical agreements and abuses of dominant market positions by individual firms, has for a long time been controversial. During this time, the economic analysis of antitrust has developed greatly, especially with regard to the welfare effects of these actions. Advancements

in industrial organization theory indicate that, regarding vertical agreements and exclusive behaviors of individual firms, competition agencies should adopt the legal standard of rule of reason. The analyses of Katsoulacos and Ulph mentioned above, aim to explain and formalize under what circumstances economic analysis, based on this standard, can enhance social welfare and strengthen the deterrent effect of anti-monopoly laws by reducing decision error costs. What had been missing until recently were empirical investigations about whether the actual law enforcement practice reflected the suggestions of economic theory. Our empirical investigation in this paper aims to determine if the economic analysis and legal standards implemented by Chinese anti-monopoly authorities are near or significantly diverge from the optimum level, and how they have evolved over time.

In China, disputes on LSs have mainly focused on vertical agreements (Weiping, 2018; Ping, 2022). For example, the Shanghai High Court clearly insisted on the use of rule of reason for assessing resale price maintenance (RPM) in Ruibang case in 2013, while the Hainan High Court stressed that it was *not* necessary to verify “whether RPM has the effect of excluding and restricting competition” in the Yutai case in 2018. In 2016, in the latter case, the Hainan Price Bureau considered that the Feed Product Sales Contract signed by Yutai Company and its distributor was illegal in reaching an agreement of “fixing the price of reselling commodities to a third party”. However, the court of first instance held that the decision on Administrative Punishment made by Hainan Price Bureau should be revoked. The court of first instance held that the determination of liability of vertical agreements in the Anti-Monopoly Law should not only be based on whether the operator and the transaction counterpart have reached a fixed or limited resale price agreement, but should further comprehensively consider whether the relevant price agreement has the effect of excluding and restricting competition. However, the Hainan High Court rejected this reasoning.

Such controversies have also characterized enforcement in Europe and the United States in the past. For example, the United States has experienced many iterations in the application of the antitrust Per Se Illegality LS to vertical constraints, especially vertical price constraints. Even after the Supreme Court of the United States established the rule of reason LS in assessing RPM in the *Leegin* case in 2007, some states still insist on the Per Se illegality LS in RPM cases.

This paper’s main objective is to empirically investigate the role of economics in antitrust enforcement for the case of China. Specifically, whether China’s CAs adopt the economic approach whenever this is the appropriate assessment approach. This is achieved by constructing and then measuring indicators capturing the extent to which the relevant economic analysis and evidence is used by the agency in order to identify anticompetitive behaviour, in the period 2010-2021. The deviation of the Chinese CAs performance is examined, for all the main antitrust conduct categories, from the *optimum level*, as proposed by economic theory and evidence in at least the last 2 decades (following the developments in theoretical and empirical Industrial

Organisation³), thus obtaining a measure of the *quality of enforcement*. Subsequently, an indicator is constructed that measures the “*total economic analysis*” undertaken in the assessment of the cases “irrespective of burden of proof”, i.e. an indicator that also incorporates, apart from the CAs performance in assessing whether conduct is anticompetitive, the *efficiency arguments* proposed by defendants and assessed by the CAs. Finally a *comparative analysis* of our results is undertaken with the results obtained for the EC antitrust decisions in Katsoulacos and Makri (2021) and for other countries (mainly Russia) in Katsoulacos et al. (2021).

The measurement of these indicators relies on an updated version of the methodology originally developed by Katsoulacos, Avdasheva and Golovanova (2019)⁴ and revised by Katsoulacos and Ulph (2022) and Katsoulacos (2023a, 2023b). This is applied on a dataset constructed by the authors that consists of the judgment documents of all the 127 antitrust infringement decisions by antitrust enforcement agencies of China from 2010 to 2021. We also utilize the dataset in order to identify the legal standards (LSs) adopted by the agencies when assessing different conducts. There is close relationship between the LSs and the indicators mentioned above.

The dataset distinguishes decisions according to the main conduct types associated with the enforcement of Competition Law. It also contains information about the decisions appealed and about whether or not the decisions were finally annulled by the Appeal Courts.

The structure of the paper is as follows. First, we describe briefly our methodology and the mapping between the assessment screens and the different LSs that we aim to identify using our antitrust infringement decisions database. We distinguish among 8 LSs each one corresponding to a specific level of economic analysis applied in the assessment procedure (including efficiency arguments), as explained in the next section. Then we construct Cumulative Economic Analysis Indicators (CEAI) associated with each decision i.e. indicators that measure the quantity of economic analysis used by the agency in examining anticompetitive effects. We distinguish among four CEAI depending on the extent and type of economic analysis utilised. Decisions are categorised into four main conduct types or groups: hard-core horizontal agreements (G1), other horizontal agreements and concerted practices (G2), vertical agreements and restraints (G3) and abuse of dominance practices (G4). Next, we measure a number of indices. We measure the Weighted Cumulative Economic Analysis Indicators (WACEAI) adopted for each conduct type (the weights being the share of each CEAI used in assessing decisions for each conduct), and the degree of concentration of the agencies’ decisions of each

³ By optimum we mean the level that minimizes decision error costs or maximises welfare, taking into account deterrence effects apart from the welfare costs of decision errors

⁴ See also (Jones & Kovacic, 2017; Areeda & Hovenkamp, 2017)

conduct type⁵. The higher the concentration on a specific CEAI when assessing specific cases of a conduct type the greater the certainty with which it can be anticipated that a specific amount of economic analysis will be used in the future for a conduct of that type.

We also present *indices of the quality of enforcement* measuring the extent of deviation of WACEAI from its optimal (i.e. its *error minimizing*) level for each conduct type relative to the maximum theoretical deviation, as well as an overall index of quality of enforcement by the agencies across all conduct types. With regard to the optimal level of LSs, following the theoretical literature reviewed above, a very broad consensus has emerged in the last two decades among economists that the optimal LS for G1 (hardcore horizontal agreements⁶) is strict Per Se Illegality, or, more accurately, for EC, a by-object restriction, while the optimal LS for G3 (vertical agreements and restraints) and G4 (abuse of dominance practices) is full effects-based (or rule-of-reason), which require a significant increase in the quantity of economic analysis and evidence examined. For G2 (concerted practices), the optimal LS is considered to be a by-object restriction for information exchanges involving future prices and full effects-based otherwise .

Finally, we calculate an indicator that captures the Total Economic Evidence (TEE) considered on average during the assessment of decisions in a given conduct type, irrespective of the burden of proof, i.e. taking into account both the quantity of economic evidence used by the agencies to assess anticompetitive effects, as well as efficiency defence arguments by the defendants if the latter are assessed by the agencies. Therefore, TEE is measured as the weighted average of the LSs adopted in the assessment of the decisions of a particular conduct type.

Our analysis shows that, on average, economic analysis has played a relatively small role in the decisions made by Chinese law enforcement officials from 2010 to 2021, and there was little analysis of consumer welfare effects and potential efficiency effects in vertical monopoly agreements and illegal activities that were considered to abuse market dominance. We have found that the quality of law enforcement by China's antitrust law enforcers needs to be improved. Also, considering the evolution of law enforcement standards over time, we found that there has been no sustained and significant improvement in the quality of competition law enforcement in cases of abuse of dominant positions (enforcement under Article 17 of the Anti-monopoly Law⁷). Finally, comparing in detail the quality of enforcement, across different

⁵ The same indicators were constructed for the DGCOMP (EC) and UK's CMA – see footnote 5 for references.

⁶ In core horizontal agreements we do not include all horizontal agreements such as agreements, for example in R&D or technology transfers – only those that are expected with certainty to lead to lower output / higher prices.

⁷ Operators with dominant market positions are prohibited from engaging in the following behaviors of abusing their dominant market position:

- (1) Selling goods at unfairly high prices or purchasing goods at unfairly low prices;
- (2) Selling goods at a price below cost without justifiable reasons;

conduct categories and overall, between Chinese Authorities, DGCOMP (EC) and CMA (UK), we show that while the Chinese Authorities' enforcement record lags behind in quality on average that of DGCOMP and CMA in the assessment of abuse of dominance cases it is well ahead of countries established at about the same time like Russia⁸.

2. Brief Description of the Methodology for Identifying the Extent of Economic Analysis and Legal Standards in Antitrust Enforcement

As already noted, our methodology, begins with the premise that there are variations in the LSs adopted in competition law enforcement, encapsulating the idea that it is best to think of LSs as forming a *continuum*⁹ at the extremes of which are the strict Per Se (or object based) and the ('full') Effects-Based (or rule-of-reason) standards. The progression towards LSs closer to full effects-based requires that additional 'blocks' or components of economic analysis are applied in order to assess a number of screens. These are associated with the definition of the relevant market, the assessment of market power, the assessment of whether market power raising or exclusionary effects are present, the articulation of a theory of consumer harm, the assessment of efficiency effects and the assessment of what is, ultimately, the net welfare impact of the conduct. These screens are shown below.

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- (3) Refusing to engage in transactions with counterparties without justifiable reasons;
 - (4) Without justifiable reasons, restrict the trading counterparty to only engage in transactions with it or only engage in transactions with its designated operator;
 - (5) There is no legitimate reason to tie up the sale of goods, or to attach other unreasonable trading conditions during trading;
 - (6) Without justifiable reasons, differential treatment is applied to counterparties with the same trading conditions in terms of trading prices and other trading conditions;
 - (7) Other behaviors identified by the State Council's antitrust enforcement authorities as abusing market dominance. The term "dominant market position" as used in this Law refers to a market position in which an operator has the ability to control the price, quantity, or other trading conditions of goods in the relevant market, or to hinder or affect the ability of other operators to enter the relevant market.

⁸ We recognise that Competition Policy was first instituted in Russia in 1991, but modern antitrust enforcement can be considered to start with the adoption of the first antimonopoly package of amendments to antimonopoly legislation (2006). See also (Shastitko, 2018).

⁹ This is the concept introduced originally by legal experts and does not, of course, refer to the notion of mathematical continuum, but to the fact that the choice of LSs is not a binary choice between Per Se and Rule of Reason – there are LSs intermediate to these extremes as a result of more or less screens been assessed.

Table M1. Assessment Screens

Screens	Description
S1	Conduct characterisation screen.
S2	(a) Market contextualisation and (b) when relevant, Significant Market Power (SMP) /contestability screen.
S3	Potential for significant exclusionary impact or enhanced ability to exercise / maintain market power screen.
S4	Potential consumer welfare loss, due to just anticompetitive effects, screen. Examination of potential effects on output, prices, quality, variety and innovation.
S5	Efficiencies assessment and balancing screen.

We can then distinguish 8 different LS between strictly Per Se and Quick Look III, as shown in Table M2 below.

Table M2. Identifying legal standards

Screens examined in assessment	Legal Standard
S1	Strict Per Se (SPS)
S1 and S2 (a) S1 and S2	Object – based (EU) Modified Per Se (MPS)
S1 and S2 and S3	Truncated Effects Based I (TEB I)
S1 and S2 and S3 and S4	Truncated Effects Based II (TEB II)
S1 and S2 and S3 and S4 and S5	Full Effects Based (FEB) or Rule of Reason
S1 and S5	Quick Look I
S1 and S2 and S5	Quick Look II
S1 and S2 and S3 and S5	Quick Look III

3. Description of the Dataset and of the Conduct Groups

Our dataset consists of the judgment documents of 127 antitrust infringement decisions by antitrust enforcement agencies of China from 2010 to 2021, specifically, from four Chinese antitrust agencies: State Administration for Market Regulation (*SAMR*; after 2018), the Development and Reform Commission, the Administration for Industry and

Commerce, and the Market Regulation Bureau. We also collected data on whether cases are appealed and whether they are reversed (or annulled) by Appeal Courts. Table 1 below lists the total number of infringement decisions by group (or type of conduct), the decisions appealed, and the decisions reversed on appeal.

(1) Conduct Groups

As noted briefly above, we classify conducts into four conduct groups (types). These, in more detail now, are as follows:

Conduct group G1: horizontal agreements, which have strong market power-enhancing effects. They include price fixing, bid rigging, boycotts, market sharing and exclusive territories (or a mixture of these);

Conduct group G2: concerted practices - all the decisions that were included here, involved price information exchange cases;

Conduct group G3: vertical restraints, such as various types of resale price maintenance and other vertical agreements such as exclusive dealing or exclusive territories.

Conduct group G4: practices by dominant firms that may have exclusionary effects and hence are considered abusive (such practices include predation, margin squeeze, price discriminations, loyalty rebates, exclusive contracts, tying and bundling and refusals to deal).

(2) Distribution of cases and of appeals and annulements

Table 1. Number of all decisions, appeals and annulments (by conduct group)

G1	G2	G3	G4	Total
Total number of decisions(shares)				
69 (54.3%)	2 (1.6%)	12 (9.4%)	44 (34.6%)	127
Number of appealed decisions(shares)				
6 (8.7%)	0 (0%)	1 (8.3%)	2 (4.5%)	9 (7.1%)
Number of annulled decisions (shares)				
0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

From Table 1, we can see that the conduct group with the largest proportion of cases is horizontal agreement (group G1, accounting for 54.3% of the total number of decisions), while the number cases on coordinated behavior is the least (Group G2, accounting for only 1.6%). The decisions concerning vertical agreements and abuse of dominant market position accounted for 9.4% and 34.6% respectively.

However, it is worth noting that the proportion of appeals is very low, with only nine¹⁰ out of 127 decisions being appealed, and in all cases the original decisions were upheld. G3 had the highest appeal rate (8.3%), G4 had 4.5%, and G1 and G2 had no appeals. This can be explained by the fact that, as noted by Zhang (2021) administrative agencies in China are not constrained by the judicial review system to adopt assessment procedures that satisfy certain standards in order to reach liability decisions, in the way that the DGCOMP and EU member states or the US agencies are. As Zhang (2021) notes antitrust enforcement in China relies on “administrative agencies who enforce the law but are subject to few challenges from the judiciary” (Zhang, 2021). To explain further it is mentioned that “...instead of a top-down process where the central government sets out clear goals and priorities of enforcement Chinese antitrust enforcement is largely a bottom – up process driven by bureaucratic departments...” (Zhang, 2021).

As has been noted in Katsoulacos and Makri (2021; 2023) and other studies, the greatest percentage of antitrust infringement decisions in EC also consists of decisions on hard-core horizontal agreements (group G1, that takes up over 58% of the total decisions). The number of decisions on concerted practices (G2) in EC too is negligible (3,5%), while decisions on vertical restraints and abuse of dominance take up, respectively, about 18,8% and 19,4% of the total infringement decisions. The difference is stark with respect to appeals and annulments. A very high percentage of infringement decisions is appealed (71%) in the EC and a high fraction of these is finally reversed by the Courts of Appeal (43%). Appeal rates are particularly high for group G1 (81%), but a high proportion of decisions in G3 (vertical restraints) (59%) and G4 (abuse of dominance) (58%) are also appealed. However, the picture concerning reversals is closer in China to the picture for UK’s CMA for which for the (54) antitrust infringement decisions from 2000 – 2020 examined we have 31,5% appealed and just 1,8% (1/54) annulled (Bageri & Katsoulacos, 2023).

4. Economic Analysis and Legal Standards in China’s Antitrust Enforcement: Results of the Empirical Analysis

4.1. The Role and Type of Economic Analysis Applied

The first measure of enforcement quality we examine is the highest stage of economic analysis present in the decision. Table 2, it shows that S2 is the highest level of economic analysis for most decisions (which is natural given that most decisions are for G1 conducts – horizontal agreements), which means that the largest percentage of the decisions has CEAI=2. By contrast, the share of decisions with efficiency analysis presented by the defendants and balancing (screen S5) is very low (only 3%).

¹⁰ For specific cases, please refer to Table 8 in Annex.

Table 2. Highest level of economic analysis present in each decision

	The highest level of economic analysis present in the decision					Total
	S1	S2	S3	S4	S5	
Total number of decisions	41	68	12	2	4	127
Shares	32%	54%	9%	2%	3%	

Table 3 describes the extent to which economic analysis has been applied by China’s antitrust authorities in reaching its decisions, per conduct group, and by type of economic analysis. The last two rows also provide information about the extent and type of economic analysis used for the two conduct groups G3 (vertical restraints) and G4 (abuse of dominance practices) for which, in theory, we would expect that effects based assessment should be used.

Apart from characterizing the conduct (component S1) which is present in all decisions, a contextual market analysis (S2) also characterizes most decisions (67.7 percent), especially the G3 and G4 conduct types (87,5%). This indicates that in China (as in EC), even in by-object restrictions the Authority must contextualize the conduct taking into account the situation in the market(s) in which it is undertaken.

Table 3 gives rise to a number of very interesting observations related to the use of economic analysis components S3, S4 and S5.

- Analysis showing a market power enhancing or exclusionary effect (S3). This is present in only 14.2 percent of the total number of decisions in Table 3, however this small fraction is due to the large number of G1 cases (hard core horizontal agreements) in which, rightly, no such analysis needs to be undertaken. It is worth noting that for G3 and G4 conduct groups, antitrust authorities should analyze the changes in the market power of enterprises. Conduct group 3 is divided into two different categories: RPM and non-RPM conducts. Only 18.2% of G3 (RPM) cases were assessed with S3 analysis. The G4 conduct group did better, at 27.3 percent. According to Katsoulacos and Makri (2021), 40% of the total cases have S3 analysis in EC, among which, however, 68.8% cases have S3 analysis in the G3 conduct group; and, this proportion is as high as 90.9% in the G4 conduct group, (and in the total number of G3 and G4 conduct groups S3 analysis accounts for 80% of the total number of decisions). For CMA the fraction of decisions with S3 analysis for G3 and G4 is 100% Thus compared with the enforcement agencies of the DGCOMP and CMA, the performance of the Chinese anti-monopoly agencies in undertaken analysis S3 is quite unsatisfactory.
- The analysis of potential effects on consumer welfare loss is reflected in screen S4, which is analysed only in 3.9% of all the cases in Table 3, by the antitrust authorities in China. For the G3 and G4 conduct groups, the number of cases assessed with analysis of S4 accounted for only 8.9% of the total number of cases(just 6,4 % for G4), again, much lower again than the proportions

where S4 is examined in G3 and G4 conducts in DGCOMP and CMA (where S4 is analysed in G4 conducts, in 42% and 80%, respectively) .

- Efficiency defence and balancing analysis S5. The analysis of the efficiency effects of enterprise behavior are reflected in screen S5. For the analysis of S5, in general, S5 only appeared in 3.1% of the cases. Considering the G3 and G4 conduct groups separately, only in 9.1% of the cases in the G3 (RPM) conduct group and 6,8% of the cases in the G4 conduct group performed investigation of the screen S5. Therefore, in only very small fractions of the decisions we find that efficiency effects are examined by the Chinese anti-monopoly authorities, compared to DGCOMP (29% and 38%) and CMA (100% and 17%).

Table 3. The role and type of economic analysis applied per conduct group

Type of Analysis Applied Conduct group	S1=1	S2=1*	S3=1	S4=1	S5=1
G1	69	37	3	0	0
% within group	100.0	53.6	4.3	0.0	0.0
G2	2	1	0	0	0
% within group	100.0	50.0	0.0	0.0	0.0
G3 (RPM)	11	3	2	1	1
% within group	100.0	27.3	18.2	9.1	9.1
G3 (non-RPM)	1	1	1	1	0
% within group	100.0	100.0	100.0	100.0	0.0
G4	44	44	12	3	3
% within group	100.0	100.0	27.3	6.8	6.8
Total	127	86	18	5	4
% of Total	100.0	67.7	14.2	3.9	3.1
G3+G4	56	48	15	5	4
% of Total (G3+G4)	100.0	85.7	26.8	8.9	7.1

4.2. Identifying the LSs adopted

The result of Table 3 displays the LSs adopted in the decisions of each conduct group. For the G1 and G2 cases, the LS adopted in the assessment of the decisions are basically those of SPS and object-based/MPS. This is as would be expected, The same is true for G3 (RPM) though one case (out of 11) was assessed under TEB I, and a another case under FEB. However, G3 (non-RPM) and some of G4 cases prefer more effects based

LSs. In G4 cases the *predominant LS* is, however, still MPS and FEB is adopted in only 4,5% 100% of the cases, much lower than DGCOMP (24%) and CMA (20%).

Only one case in G4 is assessed under what we call Quick Look III LS. Under Quick Look LSs the agency presumes without trying to prove anticompetitive effects (so here it does not examine screen S4) but, at the same time, it allows the defendants to provide arguments about the potential pro- competitive effects of their conduct.

Table 4. Number of decisions per conduct group in which different Legal Standards were adopted

Conduct group (share)	Legal Standard								Total
	SPS	Object- Based or MPS	TEB I	TEB II	FEB	Quick Look I	Quick Look II	Quick Look III	
G1	32	34	3	0	0	0	0	0	69
% within group	46.4%	49.3%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
G2	1	1	0	0	0	0	0	0	2
% within group	50%	50%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
G3 (RPM)	8	1	1	0	1	0	0	0	11
% within group	72.7%	9.1%	9.1%	0.0%	9.1%	0.0%	0.0%	0.0%	
G3 (non-RPM)	0	0	0	1	0	0	0	0	1
% within group	0.0%	0.0%	0.0%	100%	0.0%	0.0%	0.0%	0.0%	
G4	0	32	8	1	2	0	0	1	44
% within group	0.0%	72.7%	18.2%	2.3%	4.5%	0.0%	0.0%	2.3%	
Total	41	68	12	2	3	0	0	1	127
% of Total Decisions	32.3%	53.5%	9.4%	1.6%	2.4%	0.0%	0.0%	0.8%	

4.3. Measuring the Cumulative Economic Analysis Indicator (CEAI), the Weighted Average Cumulative Economic Analysis Indicator (WACEAI) and indicators of legal certainty and of the Quality (Q) of enforcement per conduct group

CEAI is an indicator of the total economic evidence examined in assessing conducts in a given category by the agency, in order to prove that it is anticompetitive. Thus, for the construction of this index we do not take into account efficiency defense analyses, i.e. economic analyses where the burden of proof lies with the defendants. Below we show the value of CEAI depending on the number of screens assessed (cumulatively).

Screens examined in assessment	Value of CEAI corresponding to screens examined
S1	1
S1 and S2	2
S1 and S2 and S3	3
S1 and S2 and S3 and S4	4

The number and share of decisions that correspond to each CEAI are presented, by conduct group, in Table 5. The information provided here is fully consistent with the conclusions of Table 3. As shown, most of cases for conduct groups G1, G2 and G3 (RPM) have low CEAI values, while G3 (non-RPM) and G4 tend to show a higher level of economic analysis. However, it is worth emphasizing that assessment for most of the G4 cases the level of economic analysis falls far short of CEAI = 4, which the optimal value for this type of conduct.

In this table we also present the Average Efficiencies Indicator (AEFI) as the fraction of decisions in a conduct group in which efficiency arguments were used. It captures the frequency that efficiency gains have been claimed by the defendants and subsequently examined by the agency. The results a very low value of AEFI indicating that efficiency analysis plays, until now, a negligible role in Chinese antitrust enforcement.

Table 5. Number and share of decisions that correspond to each CEAI

Conduct group	CEAI				Total	Average Efficiencies Indicator (AEFI)
	1	2	3	4		
G1	32	34	3	0	69	0.00
Share of decisions for each CEAI (%)	46.4	49.3	4.3	0.0		
G2	1	1	0	0	2	0.00
Share of decisions for each CEAI (%)	50.0	50.0	0.0	0.0		
G3 (RPM)	8	1	1	1	11	0.09
Share of decisions for each CEAI (%)	72.7	9.1	9.1	9.1		
G3 (non-RPM)	0	0	0	1	1	0.00
Share of decisions for each CEAI (%)	0.0	0.0	0.0	100.0		
G4	0	32	9	3	44	0.07
Share of decisions for each CEAI (%)	0.0	72.7	20.5	6.8		

In Table 6 we present estimates of the Weighted Average Cumulative Economic Analysis Indicator (WACEAI) adopted, as well as measures of both the quality of enforcement and of the extent to which there is consistency in the use of LSs creating legal certainty. The Weighted Average Cumulative Economic Analysis Indicator (WACEAI), which is the sum of the values of CEAI, as shown in Table 5, weighted by the share of decisions that correspond to each CEAI in a given conduct group.

$$WACEAI_j = \sum_i CEAI_{ji} \times s_{ji}, \quad i = 1, 2, 3, 4, \quad j = 1, 2, 3, 4$$

where s_{ji} are the shares of the CEAI_is in each particular conduct group j . The values of WACEAI are interpreted as follows: the higher the WACEAI value the higher the extent of economic analysis utilised by the agency to reach decisions.

The first observation is that, for the conduct group (G1) that is traditionally illegal Per Se (price fixing and market sharing), the WACEAI is, as expected, low. In North American antitrust we would expect the values of WACEAI for G1 cases to be very close to 1 (the optimal value of CEAI along our continuum with Per Se illegality). As can be seen from Table 6, the WACEAI of Chinese anti-monopoly institutions for G1 conduct group is close to that of 2. This is because according to the anti-monopoly law of China's, Antitrust agencies have to define the relevant market for illegal enterprises to clarify the market scope of operators. Therefore, in the legal context of China (as for EC and EU), we assume that the optimal WACEAI value of G1 conduct group is 2. Market contextualization is also undertaken in EU in G1 cases.

Secondly, among the cases we have collected, there are two cases of G2 conduct group (coordinated behavior). One case involves the exchange of price information between enterprises, and another one is the division of the market between manufacturers, which involves the exchange of geographical information by the firms. They both should be regarded as horizontal collusion between enterprises, and the optimal CEAI value is 2.

For the G3 (non-RPM) and G4 groups, existing literature has demonstrated that such violations have both the effect of limiting competition and improving efficiency, and antitrust should use comprehensive economic analysis to measure both effects before finding that conduct is illegal. Therefore, the optimal WACEAI value for the G3 (non-RPM) and G4 conduct groups is 4. It can be observed that the WACEAI of the single G3 (non-RPM) conduct shown (Table 6) is 4.00, so all the required screens were examined to assess this vertical agreement. RPM vertical agreements, are treated BY the Chinese authorities as object-restrictions. This was considered to be the appropriate approach in EU and US too until about 20 years ago. Importantly, conducts in the G4 conduct group, for which the ideal WACEAI would be 4, has a WACEAI =2.3, which implies a LS close to MPS.

Therefore, it can be concluded that in the actual antitrust law enforcement in China, the agencies have utilized appropriate levels of economic analysis of conduct types G1, G2 and G3 (RPM). However, compared with the DGCOMP and CMA, conducts in the important G4 group, in which we do expect that significant amounts of economic

analysis should be used, are assessed using much less economic analysis than is optimal. Compared to China’s WACEAI =2.3, for DGCOMP, for conduct group G4, WACEAT = 3,37 and for CMA it is WACEAI = 4.

Table 6. The WACEAI and indicators of the quality of enforcement and of legal certainty by conduct group

Conduct group (share)	WACEAI	CEAI with highest share	Concentration index(Max.1)	Quality (Q) of enforcement (Optimal CEAI)	Value of Q relative to max. dev. of 3
G1	0.543	1.58	2	2.58(2)	0.86
G2	0.016	1.50	1,2	2.50(2)	0.83
G3 (RPM)	0.087	1.55	1	2.55(2)	0.85
G3 (non-RPM)	0.008	4.00	4	3.00(4)	1.00
G4	0.346	2.34	2	1.34(4)	0.45
WAEQ (Weighted Average Enforcement Quality (WAEQ) of agency)				2.15	
WAEQ relative to maximum				0.72	

The index of the concentration of legal standards (the HHI concentration index calculated as the sum of the squared shares) in Table 6 measures the extent to which there is consistency in the use of LSs creating legal certainty; the Concentration index

is calculated as $HHI = \sum_i s_i^2$ – where s_i is a share of the particular legal standard i in

the investigation of the particular conduct group, $1/4 < Concentration\ index < 1$.

Our analysis shows that the index of concentration of LSs used by the antitrust agencies dealing with various conduct groups is at a low level, close to or lower than 0,5, neglecting G3 (non-RPM) in which we have just one conduct. The concentration is lower than in DGCOM (except for G4) and even lower than CMA¹¹.

In Table 6, two indicators measure the quality of enforcement. One (indicated by Q) measures quality in assessing specific conduct groups. This is a measure of the divergence of WACEAI from the theoretically ‘optimal’ legal standard. In Table 6 we assume that the ‘optimal’ CEAI is given by the value of “2” for group G1, G2 and G3 (RPM), “4” for groups G3 (non-RPM) and G4 when the substantive standard is that of consumer surplus¹². Since the ‘optimal’ LS can be higher or lower than the standards actually used, we estimate Q as the difference between the maximum possible deviation and the

¹¹ See, respectively, Katsoulacos and Makri (2021) and Bageri and Katsoulacos (2023)

¹² So, the agencies’ main objective is to examine when there is harm to consumers.

(absolute value of the) actual deviation of WACEAI from the theoretically optimal LS. If the difference is equal to the maximum deviation (which implies a zero actual deviation) then Q is at its maximum. If the difference is zero (which implies that actual is equal to maximum deviation) then Q is at its minimum. We also express this difference relative to the maximum deviation so its value lies between 0 (minimum quality) and 1 (maximum quality). The value of Q , the quality of enforcement for conduct group j , $j = 1, 2, 3, 4$, in Table 6 is calculated using the following equation:

$$Q_j = 3 - \text{ABS}(WACEAI_j - CEAI_j), j = 1, 2, 3, 4$$

where $CEAI_j$ is the optimal LS for conduct group j and “3” is the maximum possible CEAI deviation and ABS is ‘the absolute value of’.

In Table 6, we can observe that the G1 and G3 (non-RPM) conduct groups have the highest law enforcement quality and the G4 conduct group has the lowest law enforcement quality. *So, in China, when it is not necessary to use economic analysis this is what antitrust agencies do (conduct groups G1, G2, G3 (RPM) and the value of Q is high), while when (as in G4) it is important to use and rely on the assessment of economic screens, the agencies’ use of economic analysis is inadequate.* Thus, the value Q for the G4 conduct group is just 0.45, compared to 0.79 in DGCMP (a gap of 43%) and 0.93 in CMA.

In addition, in order to measure the overall enforcement quality of China’s antitrust authorities from 2010 to 2021, we construct the Weighted Average Enforcement Quality (WAEQ) index, using the value of Q for each conduct group with their respective shares in all the antitrust decisions.

Overall, the enforcement quality of China’s law enforcement agencies is significantly lower than that of EC and CMA. The WAEQ for EC is 0.86, while for China it is 0.72 (about 16.5% lower). And the difference with CMA (where it is 0.91) is even greater. Clearly China’s overall enforcement quality, is low relative to EC and CMA as a result of the lack of necessary economic analysis in the G4 conduct group.

4.4. Index of Total Economic Evidence (TEE)

TEE indicates the *total* economic evidence considered on average during the assessment of decisions in a given conduct group, irrespective of the burden of proof.

For the calculation of the TEE index we treat each of the 5 evidentiary screens identically and assign a value of 1 to the “amount of evidence produced by the screen” if the screen is assessed and a value of 0 otherwise. Obviously the total evidence has a maximum of 5 if all screens are assessed. Subsequently, to each of the 8 LSs we assign a value of the total economic evidence considered by the LS, ranging from 1 to 5 for SPS to FEB, a value of 2 for Quick Look (QL) I, of 3 for QL II and of 4 for QL III.

Note that Quick Look LSs, i.e. assessment procedures where the agency did not go through all the components of economic analysis that examine anticompetitive

effects before examining efficiency claims i.e. made a quick examination of the pro- and anti-competitive considerations of the allegedly illegal conduct, need to be taken in account. Therefore, the TEE index for each conduct group will be the weighted average of the LSs adopted in the assessment of the decisions of that particular conduct group.

Table 7. Index of Total Economic Evidence (TEE) considered during assessment, irrespective of burden of proof, so, taking into account the efficiencies screen

Conduct group	TEE irrespective of burden of proof: Max. 5	TEE irrespective of burden of proof, relative to maximum: Max. 1
G1	1.58	0.32
G2	1.50	0.30
G3 (RPM)	1.64	0.33
G3 (non-RPM)	4.00	0.80
G4	2.41	0.48

($TEE_j = \sum_i share_i \times LS_i$, $i = 1 \dots 8$, $j = 1, 2, 3, 4$, where is the legal standard (i.e. SPS, MPS, TEB I, TEB II, FEB, Quick Look I, Quick Look II, Quick Look III).)

As expected (and as it should be), Table 7 shows that for the G1, G2 and G3 (RPM) groups the value of TEE is low. However, they are much lower than in DGCOMP and CMA, where values are, respectively, 0,43, 0,54, 0,58 (DGCOMP) and 0,42, 0,46, 0,48 (CMA) because the fraction of decisions in which efficiency analyses (that are included in the calculation of TEE) are present, is much higher in DGCOMP and CMA than in China. G4 in China has a larger value of TEE than tht of other conducts (as it should) but again much lower than in DGCOMP (where the value is 0,73) and CMA (where the value is 0,8)¹³.

4.5. Evolution of WACEAI over time

We conclude our analysis with an examination of the evolution of the indicator WACEAI showing the weighted average cumulative economic analysis used in the decisions of each conduct group. Our main interest has been to check whether in the group in which China is performing most poorly (abuse of dominance, group 4) there is a significant improvement. As we see in Table 8 below, this is not the case: there is some improvement comparing 2012 – 2013 to 2020 – 2021, but this is no continuous improvement over the years and, at the end, the assessment stays closest to a WCEAI of 2 that relies mainly on just screens 1 and 2.

¹³ As in the discussion of the other results above we essentially ignore G3 (non-RPM) where we have just one decision in our sample.

Table 8. Evolution of WACEAI by conduct group

Conduct Group	2010-2011	2012-2013	2014-2015	2016-2017	2018-2019	2020-2021
G1: WACEAI	1.00	1.55	1.50	1.82	1.47	1.67
No of decisions: 69	2	11	12	11	15	18
G2: WACEAI	n/a	n/a	1.00	n/a	2.00	n/a
No of decisions: 2	0	0	1	0	1	0
G3 (RPM): WACEAI	n/a	1.00	1.00	1.67	1.00	2.50
No of decisions: 11	0	3	1	3	2	2
G3 (non-RPM): WACEAI	n/a	n/a	n/a	n/a	n/a	4.00
No of decisions: 1	0	0	0	0	0	1
G4: WACEAI	n/a	2.00	2.13	2.31	2.83	2.38
No of decisions: 44	0	1	8	13	6	16

5. Discussion

China’s antitrust law enforcement has achieved a very significant progress in the 15 years since its inception in 2008. Of course, it is still in a period of learning and transformation: institutions have been adjusting, so much so that after maintaining a decade long tripartite enforcement structure, the three former agencies were consolidated in 2018 forming a brand new agency (State Administration for Market Regulation, SAMR). Given that competition law legislation was only recently put into place, and the lack of case assessment experience, it is inevitable that when enforcement record is judged in terms of the quality of assessment procedures (as we have tried to do in this article) the “quality” of enforcement will lag behind two of the most advanced and experienced agencies in the world, DGCOMP and CMA. In comparisons with the antitrust enforcement record of DGCOMP, France, Greece and Russia, all 3 countries lag behind DGCOMP (Katsoulacos et al, 2021). But most importantly, China’s agencies are clearly ahead of FAS (the Russian agency) that also started in 2008. The value of Q for conduct group G4 (abuse of dominance) which is low in China, at 0,45, is just 0,27 in Russia. Concerning the overall quality index WAEQ which is 0,72 in China, is just 0,54 in Russia.

There are some more reasons that could be responsible for slowing down the adjustment to using more economic analysis for assessment of conduct group G4 in China. The first is that the competition law in China primarily follows the European law and so for enforcement practice Chinese enforcers are likely to be influenced primarily by the EC and EU enforcers (Zhang, 2021). Now, in Europe the application of a more-economic approach to abuse of dominance practices started slowly after 2008 and became more dominant in the last ten years (as shown clearly in Katsoulacos and Makri (2021) DGCOMP’s enforcement record in abuse of dominance case improved

considerably over time only after 2008. When Chinese enforcers started implementing the law in 2008, the approach used on older EC cases that were already decided was much less based on economic analysis than it has in more recent years. This factor has also influenced the lack of efficiency analysis in Chinese cases.

Another factor is that, as noted above, in China administrative agencies are not constrained by the judicial review system in a way that induces them to adopt assessment procedures in order to satisfy standards, for reaching liability decisions, considered optimal from the point of view of minimizing decision errors, as are the DGCOMP and EU member state or US agencies. This is also reflected in the very low appeal rate, as judged by international standards (i.e. as compared to countries we have examined: EC, UK, France, Greece and Russia) and the zero reversals in the (limited number) of cases appealed (Zhang, 2021).

Finally, account has to be taken of the fact that the creation of economic analysis capabilities in antitrust case assessment is a slowly developing process. And, the lack of economic analysis capability means that the cost of obtaining economic analysis evidence is too high, which tends to force antitrust agencies to an approach of *Per Se* illegality replacing high administrative costs with relatively high positive error costs, resulting in *de facto* strict law enforcement. Since the establishment of the State Administration for Market Regulation (SAMR) in China, the enforcement capacity and level of law enforcement have improved. However, the experience and level of law enforcement by various provincial regulatory bureaus are uneven, and their grasp of and ability to implement competition law enforcement standards inevitably varies.

6. Concluding remarks

On average, economic analysis has played a relatively modest role in the decisions made by the Chinese antitrust law enforcement agencies from 2010 to 2021, and there was little analysis of exclusionary and consumer welfare effects and potential efficiency effects when assessing conduct for which it is considered important, in the last 2 decades at least, to incorporate this analysis before reaching liability decisions. Thus, after constructing a series of indicators to measure the quality of law enforcement, we found that the quality of antitrust law enforcement by China's enforcers needs to be improved in the case of conduct types for which it is essential to rely for case assessment on the examination of economic screens that requires the application of economic theoretical and empirical analysis. Considering the evolution of law enforcement standards over time, we found that, unfortunately, there has been no sustained and significant improvement in the quality of law enforcement in the important case of abuse of dominant positions for which the level of economic analysis and quality has been found especially low in the period under examination. Nevertheless, our analysis shows that China's agencies have been improving their assessment procedures faster than agencies like FAS (the Russian agency) that also started antitrust enforcement at the same time.

Data availability

The authors confirm that all data generated or analysed during this study are included in this published article. Furthermore, primary and secondary sources and data supporting the findings of this study were all publicly available at the time of submission.

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ANNEX

The nine cases appealed from 2010 to 2021

Conduct group	Year	Case
G1	2016	Linyi Accounting Firm Co., LTD. V. Shandong Provincial Administration for Industry and Commerce
	2016	Shanghai Haiji Hi-tech Co., LTD. V. Anhui Provincial Administration for Industry and Commerce
	2019	Yunyang Yongwang Building Materials Co., LTD. V. Chongqing Market Supervision Administration
	2019	Heze Automobile Industry Association v. Shandong Market Supervision Administration
	2019	Guizhou Qiandongnan Jinkai Driving School et al. v. Guizhou Development and Reform Commission
	2020	13 concrete enterprises in Maoming City v. Guangdong Market Supervision Administration
G3	2017	Hainan Yutai Technology Feed Co., LTD v. Hainan Price Bureau
G4	2020	Shandong Kanghui Pharmaceutical Co., Ltd. and other lawsuits v. Shandong Market Supervision Administration
	2020	Qinghai Provincial Minhechuan Cnpc Natural Gas Co., Ltd. v. Qinghai Provincial Market Supervision and Administration Bureau