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THE EFFECTS OF COMPETITION POLICY: MERGER APPROVAL, ENTRY BARRIER REMOVAL, ANTITRUST ENFORCEMENT COMPARED

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THE EFFECTS OF COMPETITION POLICY: MERGER APPROVAL, ENTRY BARRIER REMOVAL, ANTITRUST ENFORCEMENT COMPARED[3]

There is little evidence on the comparative effectiveness of different competition policy measures, especially in transition economies. This research represents the effort to expand the financial event study method for the assessment of different competition policy measures: merger control, antitrust investigations on abuse of dominance, and changes of import tariffs in the Russian ferrous and non-ferrous metals markets from 2007 to 2012. According to the reaction of financial market, mergers between Russian metal producers restrict competition and reduce consumer welfare. Antitrust investigations have a positive effect on stock prices of buyers of metal and no significant impact on the market valuation of target of investigation. Changes in import tariffs have a positive significant impact on the company stock prices. The sign of each effect allows the comparison of different measures of competition policy.

JEL Classification: L40, G14

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1. Introduction

An effective competition policy is one of the most important factors of successful economic development. Competition is affected by different economic policy tools, including those aimed at the prevention of competition restrictions as well as at competition promotion. The appropriate design of competition policy tools is an important task for the government and competition authorities.

The assessment of effects of different competition policy tools is based on industrial organization theory (IO). Traditional and the modern IO emphasize the greater importance of entry cost compared to the number of sellers and distribution of market participants between them for competition. This conclusion is confirmed, in particular, by the results research into different dimensions of competition policy [Buccirosi et al., 2014] and the impact of the liberalization of foreign trade on the competition [Melitz, Ottaviano, 2008]. Existing empirical papers assessing the effects of competition policy, especially for transition economies [Duso et al, 2011; Carletti, 2011], estimate, mainly, separate measures without any comparison. A comparative effect of competition policy measures should differ depending on the industry structure of an economy, the position of national industries in the global division of labor and the institutional environment of competition policy application. That is why studies of comparative effectiveness of policies in certain countries are important.

The method of financial event studies applied in the paper is suitable for an assessment of any notable events which affect company valuations. Financial event studies increasingly aim to evaluate decisions taken by regulators in the assessment of competition policy. If the hypothesis of the effective financial market is true, the market will react to the announcement of, for example, the beginning of an antimonopoly investigation by a change in stock prices. Changes in competition policy may have effects on investor expectations on welfare redistribution and thus stock prices. The extent to which government or competition agencies can rely on the approach first proposed by Eckbo & Weir [1985] depends on the degree of accuracy it takes into account. If stock market reactions correspond to theoretical predictions and this is confirmed by data from independent sources, it is possible to recognize the stock market ability to predict the effects of competition policy measures.

The basic idea underlying the use of the financial event approach for the assessment of competition policy measures relies on the impact of competition together with other important determinants (first of all the efficiency of the firms) on the profits of market participants. In an imperfectly competitive market the measure enhancing competition among existing sellers

ceteris paribus results in a decrease of their profit and increase of a buyer gains. Changes in market structure (including the number of participants in the market and entry cost for potential competitors), which affect competition, induce changes in the expected profits of market participants captured by the valuation of companies in financial markets.

There are several papers estimating the effects of competition policy measures using financial event studies [see for example: Eckbo, Wier, 1985; Prager, 1992; Gunster, Djik, 2010 Duso et al, 2011]. However only few authors analyze the influence of an event on all participants of competition – a target, directly affected company, its competitors, and buyers [Mullin et al; 1995]. Campa and Hernando [2008] assess the reaction of industry insiders, analysts and competitors to the announcement of M&As in the European Union financial industry in the period 1998-2006. They provide evidence that the correlation between abnormal returns for merging firms and competitors is positive and, in some cases, domestic deals are more likely to have a negative impact on industry competition. Including the stock changes of large buyers eliminates possible misinterpretations, as the combination of rival and buyer reactions enhances the reliability of the conclusions. Nevertheless, the inclusion of all these companies increases substantially the accuracy of the method. For example, only such calculations allow objective conclusions about the validity of one of the sub-hypotheses of the Market Power Hypothesis (efficiency or predatory pricing).

In this paper, we contribute to the existing literature by providing a comparison of the effects of different competition policies. We focus on the Russian metal industry which is dominated by large sellers, an export orientation, and a relatively isolated domestic market. These market features allow for the abuse of dominance, and there is relatively strong antitrust enforcement against abuse of dominance. In order to support proposed approaches we develop and test hypotheses on the impact of M&A announcements, antitrust investigations and changes in tariff policy on stock market values.

The paper is structured as follows: section 2 presents a literature review on comparative analysis of competition policy effects and financial event studies of competition policy. Section 3 analyzes the problems of competition development in the Russian ferrous and non-ferrous metal industries. Section 4 describes the competition policy tools applied by the Russian competition authority in the relevant markets. Section 5 deals with the methodology and the sample. Section 6 discusses the results. Section 7 concludes.

2. Competition policy effects: theory and empirical assessment

2.1. Implication of Industrial Organization for comparative effectiveness of competition policy measures

Historically, antitrust enforcement has paid attention to the market structure: the number of sellers and the distribution of the market between them. US DOJ Horizontal Merger Guidelines, the guidelines of the European Commission, and other competition authorities distinguish between market shares which would be harmful for competition and those that would not be. In this respect, competition policy follows so called structure-conduct-performance (SCP) paradigm, where number of competitors impacts competition. In spite of the fact that SCP was criticized [Demsetz, 1974] and mostly rejected as an analytical framework - it influences the approach of antitrust authorities worldwide. Moreover, modern IO supports the importance of the number of sellers for competition, for incentives to collude [Selten, 1973, Compte et al., 2002]. Being able to influence the number of sellers a merger approval changes the conditions for competition. More so when the competition authority imposes structural remedies, asking market participants to sell assets in a given industry as a necessary condition for merger approval.

Entry cost is another feature which affects competition. After Bain [1956] the importance of entry cost to explain competition irrespective of market concentration was articulated by the contestable market approach [Baumol et al., 1982]. Modern economic theory including empirical research also highlights the importance of entry cost as a determinant of market competition [Seade, 1980]. Despite competition policy not affecting a large part of entry cost, at least two components of entry cost are important policy variables: import duties and the cost of compliance with entry requirements set by legislation.

In contrast antitrust enforcement tries to influence competition directly through punishing the restrictions of competition. The main instrument is a system of sanctions. In order to equalize the expected gains from the restriction of competition with the expected monetary equivalent of sanctions, legislators spend resources on detection, technique of investigation, vary the amount and principles of calculating fines. Though the effectiveness of prosecution is questionable [Crandall, Whinston, 2003], there is evidence that it provides an impact on the behavior of market participants.

IO provides no specific analytical framework to predict the comparative effectiveness of different competition policy measures. However, it allows the expectation that the removal of or a significant reduction in entry costs could provide a stronger effect on competition compared to the merger decision. In turn, both this decision and changes to entry cost should provide a stronger and more sustainable impact on competition compared to antitrust enforcement in form of sanctions and remedies. We expect that changes in market structure enhance competition more reliably than antitrust law enforcement, because the latter influences the incentives to compete in contrast to the incentives to compete in order not to commit on law violations.

2.2. Empirical Assessment of Competition Policy Effects

Empirical analyses of competition policy effects are important in the studies of transition and developing countries. This is reasonable because these countries provide conditions for 'natural experiments': in all countries the set of competition policy instruments was introduced, but the time span of the competition promotion differed. Recent papers found a positive impact of competition and competition policy on productivity indicators [Voigt, 2009]. The same results were recently obtained for developed countries as well [Buccirossi et al., 2013].

In contrast to competition itself, which is considered as an explanatory variable in many studies, the number of studies which consider the impact of competition policy and especially different competition policy tools is relatively limited. Effectiveness of competition policy measures was analyzed separately, but not in a comparative setting. Crandall and Whinston [2003] provide evidence on the ineffectiveness of US antitrust enforcement; Baker [2003] extensively criticizes their approach and results. For European competition policy Duso et al. [2011] estimate the effects of separate measures, but do not compare them. Many papers in order to show the effectiveness of competition policy focus on its impact on market participant performance in contrast to social welfare. For instance, Shaw and Simpson [1986] find a significant decrease in market shares by leading companies after a Competition Commission investigation.

Among these, the article of Buccirossi et al [2013] is an important exception. The authors analyze the impact on production efficiency (measured by Total Factor Productivity, TFP) Competition Policy Indexes (CPI) along with the Product Market Regulation index and import penetration indicators. This approach is closest to that we undertake comparing different determinants of competition in domestic markets. The important difference is the level of aggregation both for competition policy measures and for the effects.

For our research there are also some important papers on the impact of international trade and import penetration on competition [Navas and Licandro, 2011] and on the comparative impact of import liberalization and antitrust enforcement on competition in transition countries [Marinov, 2010].

The dependence of competition effectiveness on the concentration of the market is important for choosing the empirical sample. Domowitz et al. [1986] control for the degree of foreign competition in the takeover industry and provide evidence that price-cost margins are more sensitive in more concentrated industries. The inclusion of measures of import competition also elaborates for finding a sizable positive effect of import competition on the competition intensifying in concentrated industries [Katics, Petersen, 1994].

2.3. The competition policy tools effects in the financial event studies

Financial event studies in antitrust are generally applied to the analysis of M&A influence on the value of participating firms. Mergers motivated by monopoly power are detrimental to consumers and lead to anticompetitive effects as they result in higher prices and lower consumer welfare. M&As which provide a substantial efficiency increase are procompetitive and beneficial to consumers. Empirical results depend on the type of mergers, the valuation method and the industry considered [Singal, 1996]. Some papers concentrate on a single event. Warell [2007] analyzes a merger between Rio Tinto and North in ferrous metal industry, including their close competitor - BHP; others investigate the selection of largest mergers [Healy et al., 1992; Eckbo, Thorburn, 2000; Kuipers et al. 2003]. Among papers there are differences in the dataset: some papers concentrate on the analysis of M&As in a particular country or industry [Ismail, Davidson, 2005; Lensink, Maslennikova, 2008; Elfakhani et al. 2003] while others try to estimate the differences in the reaction to local deals and cross-border M&As. Gregory and O`Donohoe [2014] find a difference in short term wealth effects between public acquiring and target shareholders on the dataset of UK acquisitions over the period 1990–2005. In general, domestic acquirers under-perform cross-border acquirers; firm characteristics and leverage largely explain acquirer returns.

If merger control is effectively enforced, it should prevent the increase of market power leading to substantial reductions of competition, while it should stimulate M&As producing efficiency gains because this is beneficial to consumers and total welfare [Carletti, et.al. 2011]. Merger control should limit M&As or create remedies for those generating excessive market power. If investors anticipate this, the introduction of merger control or reforms leads to a decline in company stock values relative to the situation where merger control is absent. Usually

this happens for companies most likely to be involved in (large) mergers [Brady, Feinberg, 2000]. The economic impact of merger control on stock prices is investigated in the academic literature. Many papers focus on the effects of the decision of an antitrust authority to investigate a merger proposal in detail or to impose remedies [Ellert, 1976; Aktas, De Bodt and Roll, 2004; Duso, Neven and Röller, 2007]. The results confirm that regulatory actions influence valuation.

There are papers calculate the reaction of stock market not only on M&A announcements, but also on the antitrust investigations. Huth and MacDonald [1989] analyzed the influence of section 2 district and appellate court decisions on the stock prices of companies from 1962-1986. They found that stock prices increased in reaction to a positive judgment, otherwise stocks return fell. Prager [1992] investigated the influence of merger of the railway company Northern Securities Company in 1901 on competitor welfare. Authors revealed that stock prices of competitors grew after the announcement of the merger and fell after a judgment against the merger. Schumann [1993] on a dataset of 37 mergers in 1981-1987, after which the Federal Trade Commission initiated investigations, found out that if a merger leads to considerable changes in the industry concentration, then the Court decision has a significant negative impact on the stock prices of rivals. Singal [1996], analyzing 14 mergers of airlines in 1985-1988, revealed that in mergers opposed by the DOJ, stock prices of competitors grew faster, than in mergers not opposed by the DOJ. Fee and Thomas [2004] on a sample of horizontal mergers in 1980-1997 showed that competitors received a positive abnormal return during the announcement of the merger, and there was no significant effect at the time of antitrust authorities challenging the merger. McWilliams, Turk, and Zardkoohi [1993] investigate the impact of Supreme Court antitrust decisions between 1964 and 1973 on unrelated firms that happen to be in the process of merging at the time of the Supreme Court decision. The authors show that unfavorable Supreme Court decisions lowered the value of unrelated target firms by 1.4% during a two-day window.

Several papers calculate the competition authority performance efficiency by analyzing the sign of the abnormal return of companies and the subsequent comparison with the actual decision on a prohibition or acceptance of M&As. For example, Duso et al, [2011] carry out the comparison of abnormal returns for the announcement date of M&A and the date of announcement of the Commission decisions. If the relation between them is negative, that is potential additional benefits, resulting the expectation of the market power increase in the market, are leveled because of the announcement of the decision by competition authority. In this case, merger control can be considered effective. Based on the received results authors conclude that only the merger prohibition completely counterbalances the benefits of the

announcement of M&A. Remedies on average do not render a similar effect. In another paper Gunster and Djik, [2011] show that on average the stock prices of the participating companies decrease by 2% at the date of final decision-making on the M&A and increase by 4% with a favourable decision by competition authority. These results show that the stock market expects a decrease in the profitability of the united company with merger control. The scale of this decrease depends on the size of the penalty, duration of a violation of the law, the size of the company and the level of interest to M&A from mass media.

This paper contributes to the research stated above, assessing the effects of competition policy. The novelty is the application of event studies for the comparison of the effects of different competition policy tools. The paper is also the first trying to assess the effects of competition policy towards highly concentrated industry of the transition economy such as Russian Federation.

3. Competition policy issues in the Russian metallurgy industry

Russian metallurgy consists of ferrous and non-ferrous metals covering all stages of technological processes from the mining to finished products. The structure of Russian metallurgy reflects the orientation of production to exploration of the competitiveness of natural resources, which results in a high share of basic production and a relatively low share of high value-added products . The capacity and growth of the domestic metal market in Russia is low. Providing more than 40% of internal consumption, the largest metal consumers are the mechanical engineering and construction industries. Russian metallurgy mostly focuses on exports, with more than a half of ferrous metals and 80% of non-ferrous metals being exported. Russian metal producers are deeply integrated into the world market.

Along with an increase in the competitiveness of Russian metal producers in the world markets after the export liberalization in the early 1990 and a wave of mergers, the position of domestic metal buyers is considerably worsening. They suffer from insufficiently developed competition in input markets because of two factors: high concentration and high import protection. After the waves of mergers during 1990-2000 most Russian markets in ferrous and non-ferrous metals are dominated by large companies. In many markets (aluminum, nickel, and electric steel), the share of the largest company in domestic production is close to 100%. During the period several M&As with Russian metal producers were approved by the Federal Antitrust

Service (FAS): Rusal-Sual-Glencore (2007)[4]; LionOre mining-Norilsk Nickel (2007)[5]; Novolipetsk Steel (NLMK)-VIZ Steel (2008)[6] etc. M&As between these and many other companies were allowed conditional to price remedies, and despite the accurate implementation of these remedies, some of new companies were accused of abusing a dominant position.

Russian metallurgy a relatively high level of import protection among WTO members. Before 2008, import duties on the majority of metal products were about 5%. At the beginning of 2008 financial crisis, average import duties increased from 5% to 15% and from 15% to 20%, depending on the position, on the majority of wire and pipes made from ferrous metals. Also there was a 15% preference for domestic producers in government procurements, and anti-dumping and special protective investigations against foreign suppliers.

World prices increased, which allowed Russian metal producers to achieve competitive advantages and enjoy increased profits, however rising prices had a negative impact on Russian metal buyers of metals. Russian metal suppliers achieve higher market power on the domestic product market than foreign companies do in their own markets. According to international trade theory [Krugman, Obstfeld, 2012], internal prices will be set at world levels minus expenses connected with export only if the domestic market for goods is characterized by a high level of competition and low entry costs. Otherwise, when domestic producers dominate the market and can carry out price discrimination, the price of goods will be higher in the market with less elastic demand, i.e. in the domestic market. Papers show that prices for Russian exports in the domestic market are higher than when exporting confirm this statement [Golovanova, 2010]. Although possessing a monopoly in the domestic product market, sellers face high competition in foreign markets. This pushes them to apply a third degree price discrimination – to set domestic prices higher than those in export contracts. Price discrimination is not a rarity in export-oriented industries [Pursell, Snape, 1973].

This situation attracts the close attention of Russian competition authorities. The problem is that it is difficult to determine whether it is better not to disturb the strengthening of Russian metal producers in the global market by opposing the mergers or to apply tools for supporting internal buyers of metal by decreasing import duties or introducing remedies. The integration of domestic metal companies by mergers is accompanied by a positive effect that is expressed in an

[4] A merger of Russia's top aluminum producer RUSAL, smaller rival SUAL and commodities trader Glencore in 2007 http://www.reuters.com/article/2007/03/27/aluminium-russia-merger-idUSL2713534620070327

[5] OJSC MMC Norilsk Nickel - the world's largest producer of nickel and palladium - acquired all of LionOre Mining International Limited's (LionOre) assets - Australian mining company. http://www.nornik.com.au/About-Us/Our-History

[6] A leading international steel company Novolipetsk Steel (NLMK) acquired 100% interest in VIZ Steel, the second largest Russian electrical steel producer http://www.rustocks.com/put.phtml/nfmf_093006.pdf

increase in their international competitiveness and a negative effect in an increase in their market dominance and prices on domestic market.

The electric steel market illustrates the increase in international competitiveness for Russian metallurgists together with the increase of market power in the domestic market. In 2005 Novolipetsk Steel (NLMK) became the most profitable company on the global steel market[7]. The following year, after the acquisition of VIZ-Steel Ltd., the Russian market of electric steel became almost completely monopolized. As a part of merger approval the companies were assigned a set of remedies, according to which they cannot increase the price of electric steel by more than 3% a month for 20 years without prior notice to FAS. The competitiveness of the Russian electric steel remains high. In 2012, the NLMK group was the second most competitive steelmaking company in the world according to World Steel Dynamics. Five years after the merger, FAS said that NLMK and VIZ-Steel abused their dominant market positions by establishing high prices for electric anisotropic steel, and appointed a turnover penalty.

The competitiveness of Russian suppliers also increased in the aluminum market. In 2005 UC RUSAL was a top three global aluminum producer in the world[8]. In 2006, after a merger with SUAL, the united company became the world's largest aluminum producer and one of the largest metallurgical companies based on capitalization (about $18 billion). At present, its position in the world market is becoming stronger: based on the results of 2012, UC RUSAL is the largest producer of aluminum with an output that comprises 9% of the world's aluminum production[9]. At the same time, the domestic aluminum price is a subject to specific remedies developed by FAS in order to prevent excessive prices for Russian customers.

Here there are obvious contradictions in pursued policy: FAS allows M&As that may restrict competition, under the remaining import tariff protection introduced by the Government, which also does not strength competition, while initiating proceedings for the violation of the antitrust law, based on signs of buyer sufferings because of insufficiently developed local competition. Practically the choice of the appropriate tool of competition policy towards domestic market is an important and still unresolved issue for the Russian government.

[7] Annual report of NLMK, 2005. Available at http://lipetsk.nlmk.com/upload/Annual%20report/REPORT-red-eng.pdf

[8] https://www.google.ru/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.rustocks.com%2Fput.phtml%2Frual_060206-2.pdf&ei=bvb2U7uxNarl4QTnvYGgAQ&usg=AFQjCNGfS5Q3HxaTlhIY97oe5bqfr4lgOw&bvm=bv.73612305,d.bGE&cad=rjt

[9] http://rusal.ru/en/Why_invest_in_RUSAL.swf

Russian metal industries are good cases for assessing the influence of different competition policy tools on competition and for comparing their effects.

4. Tools of competition policy in metallurgy of the Russian Federation

Russian competition authority applies traditional competition policy tools, including merger control, antitrust investigation and enforcement.

The procedure of M&A approval represents an important tool of competition policy. The purpose of this procedure is to provide antitrust control over the changes of market structure. According to Russian Competition Law if the annual turnover of the combined businesses exceeds RU 10 bn or if assets exceed RU 7 bn, the FAS must be notified of the merger, and they must examine it to see if it would significantly impede competition. If the FAS the finds no distortion effect on competition, the M&A is approved unconditionally. Otherwise they must be prohibited to protect competition or cleared under specific conditions. Generally, less than 1 percent of investigated M&A were not approved[10]. However, not all mergers which significantly impede competition are prohibited. Considering the influence of this tool of competition policy on competition it is possible not to distinguish between M&A announcements which appeared in the media and were approved by the FAS. This is due to the peculiarities of Russian competition policy, i.e. companies rarely make an announcement before receiving informal approval by the FAS. Since this information is usually hidden, the only way for the financial market to obtain this information is during the announcement. Changes in stock prices of companies involved in M&As should reflect the expected redistribution of welfare in the market. For instance, for weakening competition, we expect a profit increase for sellers (both participants and non-participants of a merger deal) and a profit decrease for buyers. Otherwise, due to efficiency effects the stock market may reflect a profit increase for both participants and buyers and a profit decrease for competitors. However, these effects may differ depending on the type of M&A. A detailed description of possible stock market reaction is presented in Appendix 1.

Antitrust investigation and enforcement became important for market participants after the reform of fine system, which introduced fines up to 4% company turnover for antitrust law violations. However the effectiveness of antitrust enforcement in Russia remains limited due to the high number of investigations and the high ratio of decisions reversed by courts, which indirectly display the high probability of Type I error (wrongful conviction) [Avdasheva,

[10] http://fas.gov.ru/fas-news/fas-news_35086.html

Kryuchkova, 2013]. Antitrust investigations provide a negative effect on future cash inflows of companies under investigations for several reasons. First, under antitrust investigations companies bear the substantial additional cost of evidence collection and presentation, regardless of the final decision of FAS. Second, if an investigation results in an infringement decision, substantial fines can be applied. According to the Code of Administrative Violations (art. 14.32) the maximum fine to be applied is 4% of annual company turnover. There are some differences between fines for collusion and fines for the abuse of dominance, in the latter case the expected fine is lower, however the highest fines in the history of the Russian antitrust law were for the abuse of dominance. Third, FAS often applies remedies towards sellers, which restrict the available set of marketing strategies and limit profit. Finally, an antitrust investigation is supposed to prevent further violations; and since any restriction of competition enhances the profit of a seller in the short or long-run the investigation prevents the violator from receiving this extra profit.

At present, FAS carries out the correction of behavior of large sellers in the domestic market by developing obligatory remedies for all dominant sellers in the markets in the framework of commercial policies [Radchenko et al., 2013]. It confirms that problems in this industry are so severe that FAS is even ready for price regulation. However, the expected efficiency of these measures is ambiguous.

In this situation, it makes sense to think over the use of such competition tools as import liberalization via changes in tariffs and non-tariff barriers. The reduction of quantity and the size of the import duties, whose fiscal or regulatory value is not confirmed, can positively effect the competition in industries in which there is a high concentration of a domestic production leading to a deterioration of competition conditions in the relevant markets. The elimination of import protection in Russian metal industries can have a positive effect on prices in the market by restricting the power of large metal producers and this leads to stock prices increases/decreases of buyers/sellers respectively. These effects may reverse if the investors expect shortages in the market after the reduction of import duties.

We compare the effects of these three measures of competition policy based on the idea that all of them influence company performance, the principles of price setting by sellers and the market value of the companies. In spite of different policy measures addressing different market participants in different ways, all they affect competition and/or the cost of sellers and therefore the long-term benefits of all parties are affected. For example, if an antitrust investigation prevents sellers from abusing dominance in the form of excessive prices, the redistribution of

welfare in favor of buyers takes place. However when an antitrust investigation lowers the price of the seller which is abusing the dominant position, it changes the market environment for other sellers and normally results in a decrease in their prices as well. Despite overseas metal producers potentially importing their products in Russia are the target group of import liberalization, import liberalization should also result in price decrease: it limits the ability of domestic sellers to increase prices in the short and long run and increases benefits of buyers. Since stock prices capture expectations of investors concerning company prospects the sign of statistically significant abnormal return allows a comparative assessment. At the given stage of the research we are unable to compare the magnitude of the effects of different measures, however the ability to compare the sign of effects is also important.

5. Methodology and data

5.1. Event study

To test the hypotheses a standard event study methodology is adopted [see Brown, Warner, 1985]. First, we estimate the market model during the estimation period [-220 days; -30 days][11] before the announcement date:

$$r_{it} = \alpha_i + \beta_i r_{mt} + ei, \quad (1)$$

where r_{it} is the current return for security *i* at day *t*, r_{mt} is the return on an appropriate market index at day *t*

Second, based on estimated coefficients from (1), we calculate abnormal returns for security *i* at day *t*:

$$AR_{it} = r_{it} - \hat{\alpha}_i - \hat{\beta}_i r_{mt}, \quad (2)$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are OLS values from the estimation period

Often it is not possible to estimate precisely an event date due to the time of information distribution, so that it is necessary to calculate cumulative abnormal returns:

$$CAR_i = AR_{i,t1} + .. + AR_{i,t2}, \quad (3)$$

where *t1* and *t2* are the boundaries for the event period

[11] The choice of the event window should satisfies at least two conditions: it should not overlap event window, and it should be long enough. For example (-260; -61) [Kuipers et al., 2003], (-244;-6) [Brown, Warner, 1985]; (-220;-30) [Günster, Dijk, 2010]; (-200; -10) [Padmavathy, Ashok,2013].

Then we run a t-test to calculate whether CARs are significantly different from zero. The null hypothesis is that the cumulative abnormal return is equal to zero:

$$H_0: E(CAR_i) = 0 \quad (4)$$

T-statistics are given by:

$$G = \sqrt{N}\frac{CAAR}{s} \approx N[0,1], \quad (5)$$

where *CAAR* is the cumulative average abnormal return, *s* is cross-sectional variance of the abnormal returns in period *t*:

$$s = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}[CAR_i - CAAR]^2} \quad (6)$$

However, the assumption that all abnormal returns are equally distributed is too rigid as some stocks are more volatile than others. The inclusion of such stocks into the dataset can lead to a high dispersion of AR_i and, as a result, to decrease the power of tests. In this regard, we use a standardization procedure [Brown, Warner, 1985]. For this purpose, the standardized abnormal return (SAR_{it}) is calculated by the division of abnormal return to its standard deviation (s_i) calculated on an analyzed interval (t1, t2):

$$SAR_{it} = \frac{AR_{it}}{s_i}, \text{ where} \quad (7)$$

$$s_i = \sqrt{\frac{1}{t_2 - t_1}\sum_{t=t_1}^{t_2}(AR_{it} - \overline{AR_i})^2}$$

(8)

T-statistics is given by:

$$G_s = \frac{1}{\sqrt{N}}\sum_{i=1}^{N} SAR_{it} \quad (9)$$

Event study method is based on the idea that changes in stock valuation will properly capture expected changes in the profitability of the firm and the subsequent redistribution of welfare in the market. The main problem is that identical changes in the expected profit of sellers may reflect different changes in market structure and competition: to identify the relevant effect assessment of respective changes of the expected profits of rivals and customers for the specific type of event. For instance, an increase of profit and the valuation of the merging company under a horizontal merger can reflect a weakening of competition (the market power hypothesis) but also an efficiency improvement (the efficiency hypothesis). To delineate between them it is

necessary to take into account the changes in expected profits of other types of market participants – namely rivals and customers. If the market power hypothesis holds, positive abnormal returns on the stocks of merger participants should be complemented by positive abnormal returns for rivals (not affected by the merger directly) and negative abnormal returns for customers. If the efficiency hypothesis in the horizontal merger holds, we expect exactly the opposite: negative abnormal returns of rivals and positive abnormal returns of customers. Generally the competition enhancing effect is associated with positive abnormal returns of customers together with negative abnormal returns of sellers or oppositely directed returns for different groups of sellers (positive for target company but negative for the rivals). A detailed interpretation of the results of abnormal return calculations is presented in Appendix 1.

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5.2. Data

The dataset includes all 17 companies in metal industry listed MICEX-RTS stock exchange during the period 2007-2012. Data on stock prices of companies is obtained from database MFD, a Russian information agency specializing in financial data and software for investment purposes [http://www.mfd.ru]. In companies are divided into sellers and buyers of metal according to which stage of the technological chain they belong to. This division is necessary to cover the market, and to test the similarity or differences of stock price reactions to the events. The complete list of companies and the periods of the quotations used in calculations is in the Appendix 2.

Data on M&As with Russian metal companies is obtained from Thomson database. We analyze only completed M&As with acquired shares of more than 50%. For the formation of the list, we use the website of news agencies [http://www.rbc.ru], the official website of FAS and the Supreme Arbitration Court of Russia [http://kad.arbitr.ru/]. The list of changes of import tariffs is from the Ministry of Economic Development [http://www.economy.gov.ru] and the information system Consultant Plus [http://www.consultant.ru/].

6. Results and discussions

Tab. 1 presents the t-statistics for a subset of 10 horizontal M&As and 3 vertical deals. The analysis reveals that horizontal M&As lead to a negative abnormal return for domestic buyers equivalent to 3.12 standard deviations during the period surrounding the announcement

date [-5 days, +5 days]. Not all policy measures provide statistically significant impact on market participants' valuation. Moreover, in some cases results are opposite to expected ones.

Tab. 1. M&A effects*: t*-statistics for CAR

		Announcement day	[–5 days before, +5 days after]
10 Horizontal M&As	Parties of a deal	-0.37	-2.14**
	Competitors	-2.50**	-5.43***
	Buyers	-0.63	-3.12***
3 Vertical M&As	Parties of a deal	2.22**	1.34
	Competitors	3.2***	-2.72***
	Buyers	3.51***	-1.33

Notes: *, **, *** — the level of significance 10, 5, and 1% respectively.

The impact in both periods of horizontal M&As on competitors is negative and significant as expected. Theoretically, after horizontal M&As, competitors not participating in the deal could receive some benefit since a decrease in the number of sellers leads to a strengthening of bargaining power of all market players. It is obvious that M&As between large sellers create additional profit not only for themselves but also for small competitors. On the other hand, M&A participants could achieve a competitive advantage that will result in a profit decrease for their competitors. Results suggest that this second effect significantly exceeds the effects from a strengthening of bargaining power in the Russian Federation.

These results paint an ambiguous picture of the effects of M&As on competition. The negative impact of deals on the expected profit of other sellers suggests that M&A participants gain competitive advantages and use them in competition. On the other hand, the expected decrease in profit of buyers illustrates the negative influence of M&As on their position in the market. This seeming contradiction is allowed as follows: The competitive field for large Russian metal companies is the world market, and the competitive advantages affect their position in this market. However, the competition within the global market does not include the existence of separate segments protected from competition where integrated companies can exercise bargaining power to the detriment of local buyers. The Russian market protected from foreign competition is a good example of such a case.

Vertical M&As positively influence the stock prices of participants of a deal as well as metal buyers. This result corresponds to the well-known statement that a negative impact on

competition from vertical deals is less probable, than in horizontal mergers. The results show the efficiency hypothesis - the efficiency-enhancing impact of vertical M&As. After a vertical M&A participants achieve an advantage over rivals, while customers face lower prices due to higher efficiency. The results show that vertical transactions with Russian companies have an ambiguous impact on competitors.

Tab. 2. Antitrust investigations effects*: t*-statistics for CAR (10 events)

	Announcement day	[–5 days before, +5 days after]
Participants	-0.97	-0.88
Competitors	0.12	-0.42
Buyers	2.05**	-1.15

Notes: *, **, *** — the level of significance 10, 5, and 1% respectively.

The analysis of antitrust investigations reveals only one statistically significant dependence for metal buyers (see Table 2). Stock prices of buyers noticeably increase (at a rate of 2.05 standard deviations) which could be caused by the expectations of improved competition conditions after investigations in the industry, but when we extend the period analyzed this effect becomes insignificant. Stock prices of participants of investigation decrease showing that the stock market expects a deterioration of their welfare. However, this dependence is not statistically significant.

As elimination of import protection in the Russian metal industry can have a positive effect on competition by restricting the market power of large metal producers, we expect that a decrease in import tariffs leads to stock price decreases for metal producers, and an increase in the stock prices of metal buyers. The analysis concludes that changes in tariff policy have a positive effect on the stock prices of producers and no significant impact on the stock prices of buyers in Russian metal industry (see Table 3). The results contradict intuition, because the stock market positively assess the competition strengthening for producers.

Tab. 3. Tariff policy effects: *t*-statistics for CAR (10 events)

	Announcement day	[–5 days before, +5 days after]
Producers of metal	2.17**	1.92*
Buyers of metal	0.11	0.14

Notes: *, **, *** — the level of significance 10, 5, and 1% respectively.

The absence of statistically significant effects and the unexpected impact may have different explanations. The first explanations are connected with the mismatch between the geographical boundaries of the target product markets of Russian metal companies and the

borders of Russia. When the overseas market is the most important target market for the company, an antitrust investigation in the domestic market can significantly increase the benefits of buyers without serious impacting the overall benefits of the seller. The second explanations are connected with the market efficiency hypothesis. If this hypothesis holds in the weak or semi-strong form, market valuation reflects only a part of the information available, and therefore can assess changes in market environment in a non-trivial way. For instance, without information on the cost advantage of domestic suppliers, financial markets can expect that large companies, which are stronger lobbyists, do not oppose a decrease or complete removal of import duties if and only if they exhibit substantial cost advantage vis-à-vis overseas competitors which prevents potential entry in the market even without any import restrictions. Finally, the results can be explained by the limited effectiveness of competition policy measures. For instance, if tariff import restrictions are not effective because non-tariff import restrictions block the threat of imports.

However even these results allow us to draw several interesting conclusions. First, financial event studies can be applied not only to assess distinct policy measures but also to compare different measures, at least on the qualitative level. Second, among different competition policy measures financial markets consider mergers to be the most influential.

7. Conclusions

Among the competition policy measures examined, the effects of merger approval are assessed as the strongest. According to the reaction of financial markets, horizontal mergers are detrimental for consumers, in contrast to the negligible effects of import liberalization. This is in spite of the impact of decreasing entry costs which should provide a stronger and more sustainable impact on the market than mergers. The possible interpretation is that stock markets consider the likelihood of entry as low irrespective of the level of import protection. In this case, large horizontal mergers under imperfect competition can substantially harm consumers and other tools of competition policy cannot compensate because of the market structure. Investigations on the abuse of dominance in contrast to what should be expected provide no effects on the target company and competitors, but positive effects on consumers. A possible interpretation is the expectation that the removal of abusive practices should benefit consumers without negatively impacting the dominant company. Concerning tariff policy the analysis suggests that changes in the rates of import duties on metal products in Russia have a significant positive impact on the price of incumbent stocks. Again, a probable explanation is that the

removal or decrease of import duty is considered as evidence that potential entry does not create a credible threat for the dominance of the incumbent which confirms the strong competitive advantages of the latter. Alternatively, it may be that the metal producers and their stockholders expected the outcome to be even worse - say, for tariffs to be cut to 2%, while in reality they were only cut to 4% - and so this was actually a good surprise rather than a bad surprise

The most interesting question for the design of competition policy is to what extent the stock market is right or wrong in assessing the comparative magnitude of competition policy effects. If the assessment of a company's future performance is substantiated then in the country with large export-oriented sectors the 'old-fashioned' concept of competition policy can be successfully applied. Domestic markets are substantially affected by changes in market structure, international trade liberalization has ambiguous effects on competition, antitrust enforcement has very limited effects. The possible implications for a competition policy design are even more interesting if the stock market is wrong, underestimating the impact of trade liberalization and overestimating the impact of market redistribution, and it shares 'market common knowledge' in this respect. This would mean incumbent sellers do not oppose a decrease in entry costs in spite of the long-term effects on competition. The delineation between these two interpretations needs further research.

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Appendix 1

Summary of predictions for different hypotheses regarding the signs of abnormal returns

Event	*Companies*			*Influence on competition*
M&As	**Merging companies**	**Competitors**	**Buyers**	
Horizontal	Efficiency hypothesis			
	Positive The efficiency improvement **Negative** Increased competition	**Negative** Comparative disadvantage **Negative** Increased competition	**Positive** Increased competition **Positive** Increased competition	**Positive** **Positive**
	Market power hypothesis			
	Positive Higher prices due to competition weakening **Positive** Monopoly profit	**Positive** Higher prices due to competition weakening **Negative** Predatory pricing	**Negative** Higher prices due to competition weakening **Negative** Predatory pricing	**Negative** **Negative**
Vertical	Efficiency hypothesis			
	Positive Contractual efficiency improvement	**Negative** No contractual efficiency improvement	**Positive** Lower prices due to higher efficiency	**Positive**
	Rising rival cost hypothesis			
	Positive Competitive advantage	**Negative** Reduced revenues since integrated firm does not buy their output	**Negative** Increased market power of the integrated firm	**Negative**
Antitrust investigation	**Target of investigation**	**Competitors**	**Buyers**	
	Negative Fear of future fines and remedies **Negative** Fear of future fines **Negative** Fear of future fines	**Negative** Expectations of possible investigations **Positive** Expectations of bad consequences for a rival **Negative** Necessity to “carefully” make business decisions	**Positive** Decreasing probability of illegal practice **Positive** Decreasing probability of illegal practice **Negative** Decrease of “good” business practice due to remedies	**Positive** **Positive** **Negative**
Tariff policy	**Producers of metal**		**Buyers**	
	Decrease of import duties			

	Negative Increased competition **Positive** Expected shortage in the market		**Positive** Increased competition **Negative** Expected shortage in the market	**Positive** **Negative**

Appendix 2

The list of companies

Company	*Period of stock prices*
OAO Severstal	17.01.2007-28.12.12
UC RUSAL	24.12.2010-28.12.12
NLMK Group	17.01.2007-28.12.12
Mechel	29.12.2008-28.12.12
Noril'skiy Nikel'	17.01.2007-28.12.12
OJSC MMK Group	17.01.2007-28.12.12
Evraz Group	02.01.2007-31.12.12
PJSC UAZ	17.01.2007-28.12.12
GAZ Group	21.12.2011-28.12.12
OJSC KAMAZ	17.01.2007-28.12.12
Chelyabinsk Forge-and-Press Plant	28.07.2010-28.12.12
OMZ	17.01.2007-28.12.12
TMK	17.04-2007-28.12.12
PJSC AVTOVAZ	17.01.2007-28.12.12
Ashinsky Metallurgichesky Zawod	28.08.2008-28.12.12
Zawolzhsky Motorny Zawod	17.01.2007-28.12.12
Karacharovsky Mechanichesky Zawod	19.01.2010-28.12.12

Appendix 3

Analyzed M&As

Date	*Target*	*Acquirer*	*Type*	*Market*
10.12.2007	Claymont Steel Holdings	Evraz Group	H	Mining and Manufacturing of basic iron and steel
11.12.2007	Sukhaya Balka	Evraz Group	H	Mining and Manufacturing of basic iron and steel
21.03.2008	Baoguan	RUSAL	V	Aluminum production
13.03.2008	Onarbay Enterprises	OJSC MMK Group	V	Manufacture of basic iron and steel and of ferro-alloys
14.03.2008	IPSCO Tubulars	TMK	H	Manufacture of basic iron and steel and of ferro-alloys
20.05.2008	Esmark	OAO Severstal	H	Manufacture of basic iron and steel
22.08.2008	PBS Coals	OAO Severstal	H	Manufacture of basic iron and steel
04.09.2008	Beta Steel	NLMK Group	H	Manufacture of basic iron and steel and of ferro-alloys
10.12.2008	African Iron Ore Group	OAO Severstal	H	Manufacture of basic iron and steel
26.02.2009	Bluestone Coal	OAO Mechel	H	Mining and Manufacturing of basic iron and steel
28.04.2010	DEMZ	OAO Mechel	H	Mining and Manufacturing of basic iron and steel
16.09.2011	Alpart	RUSAL	H	Aluminum production
26.01.2012	Ol`hovoe	Rio Tinto	V	Mining of metal ores

* V — vertical; H — horizontal.

Appendix 4

Analyzed antitrust investigations

Date	*Company*	*Details*
15.07.2008 Source: http://www.rbc.ru/rbcfreenews/20080715160615.shtml	Mechel	Abuse of a dominant position on the market of coking coal
25.07.2008 Source: http://pda.top.rbc.ru/economics/25/07/2008/207753.shtml	Mechel	Abuse of a dominant position on the market of coking coal
16.05.2011 Source: http://www.rbcdaily.ru/industry/562949980248569	RUSAL	Abuse of a dominant position on the market of silicon
30.07.2008 Source: http://top.rbc.ru/economics/30/07/2008/210934.shtml	Evraz Group OJSC Raspadskaya	Abuse of a dominant position on the market of coking coal
08.12.2008 Source: http://www.rbc.ru/rbcfreenews/20081208190352.shtml	MMK	Abuse of a dominant position on the market of metal products
5.09.2011 Source: http://top.rbc.ru/economics/07/09/2011/614289.shtml	RUSAL	Abuse of a dominant position on the market of aluminum
26.05.2011 Source: http://top.rbc.ru/finances/26/05/2011/595969.shtml	MMK	Abuse of a dominant position on the market of flats
24.05.2010 Source: http://top.rbc.ru/economics/24/05/2010/411087.shtml	Evraz Group	Monopoly prices on metal products
25.06.2010 Source: http://quote.rbc.ru/topnews/2010/07/08/32877737.html	Evraz Group OJSC Raspadskaya Severstal	Abuse of a dominant position on the market of coal
01.06.2011 Source:	NLMK Group VIZ-steel	Abuse of a dominant position on the market of electric

http://www.forbes.ru/news/68734-fas-vozbudila-delo-protiv-nlmk-za-narusheniya-na-rynke-transformatornoi-stali		steel

Source: FAS (www.fas.gov.ru), the Supreme Arbitration Court of the Russian Federation (www.kad.arbitr.ru)

Appendix 5

Changes in import tariffs in Russian metal industries 2008-2012

Date	Product	Tariff
7.11.2008 N 813	waste and scrap of the ferrous metals, separate types of rolled metal	decrease
19.12.2008 N 962	separate types of cold-rolled metal	decrease
9.01.2009 N 9	separate types of rolled metal and pipes from ferrous metals	decrease
3.04.2009 N 299	separate types of metal products, waste and copper scrap	decrease
28.09.2009 N 759	pipes from corrosion-resisting steel	decrease
3.12.2009 N 986	separate types of cold-rolled metal	decrease
28.11.2009 N 959	separate types of rolled metal and pipes from ferrous metals	decrease
16.08.2011 N 762	rolled metal (width not less 215мм, containing not less than 3,5%, but no more than 9,5% nickels)	decrease
16.08.2011 N 765	aluminum foil (thickness less than 0,021 mm)	decrease
25.01.2012 N 912	rods of unalloyed hot rolling steel, long-products and shape-rolled stock	decrease

Source: Consultant Plus, www.consultant.ru/

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