

Benefits of the retail payments card market: Evidence from Russian merchants

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Abstract

This article evaluates merchants' benefits resulting from the participation in the retail payments market. Using surveys to obtain a representative sample of 800 traditional (offline) Russian merchants, the article finds significant, robust evidence in favor of positive merchant' benefits. This study further separates the benefits into direct and opportunity finding that the non-welfare improving regulatory initiatives might result from the failure to account opportunity benefits of merchants. This article also examines the factors affecting the level of merchants' benefits. Results show that factors affecting the value of benefits and the probability to accept payment cards differ. Findings imply that unbalanced intervention may be detrimental to the agents' welfare and propose a mechanism for ex-ante evaluation of the effect of shocks and interventions.

Keywords: Retail payments; payment cards; merchant's acceptance; benefits; financial services.

1. Introduction

Payment cards are integral to the modern and innovative retail and finance ecosystems. Practitioners and ecosystem stakeholders confirm the increasing benefits associated with the participation in the retail payments market. The main critique to the existing market conditions, however, evolves around the argument that some groups of agents exploit benefits from the participation in the market at the expense of other agents. Main advocates of these arguments have been the merchants, which incur direct costs in terms of merchant fee with the decision to accept payment cards. This results in proposals to conduct regulatory and balancing interventions to the existing market conditions. None of such proposals has proved to be Pareto efficient yet (Weiner & Wright, 2005), which may link to the inability of both market participants and regulators to empirically evaluate current levels of benefits from the participation in the market, and the consequences of shocks and interventions for these benefits.

This article aims to contribute to two rising strands of literature. The first one concerns the formation of the retail payments market equilibrium (Bedre-Defolie & Calvano, 2013; Rochet & Tirole, 2002, 2003; Weiner & Wright, 2005). This literature so far has not provided any quantitative estimates of the benefits for stakeholders, claiming this value to be theoretical rather than empirical. This research aims to fill this gap by estimating the merchants' benefits at the Russian retail payments market. This article also unveils the reasons for accepting non-welfare improving regulatory interventions aiming at merchants' benefits increase and cost cuts by separating the opportunity and direct merchants' benefits.

After analyzing the literature, only Krivosheya & Korolev (2016) proposes the quantitative estimates for the cardholders' benefits resulting from the payment and cardholding decisions. This study, however, investigates the benefits of merchants that, unlike cardholders, make only one decision concerning the participation in the retail payments

market, namely, the decision to accept cards. In this respect, this research is complementary to the article by Krivosheya & Korolev (2016) and extends the results found by authors to the new market segment, which deepens the understanding of the general retail payments market equilibrium and provides the results for the second part of the two-sided market.

Additionally, this research contributes to the growing empirical literature on the emerging retail payments markets (e.g., Reinartz, Dellaert, Krafft, Kumar, & Varadarajan, 2011) by analyzing current market situation and identifying the merchant-related stylized facts of the retail payments market in Russia. Besides, this study provide the comparison between the determinants of merchants' benefits and determinants of probability to accept payment cards.

The empirical analysis of the benefits uses a representative sample of 800 traditional (offline) merchants from all Russian regions. The study finds significant robust evidence in favor of the presence of positive merchants' benefits at the Russian retail payments market. The article further separates benefits into direct and indirect showing that the intervention proposals might take into account the direct benefits. Failure to recognize opportunity benefits in the regulatory initiatives might link to welfare loss because of these interventions. The analysis continues with the investigation of factors affecting the size of merchants' benefits. Factors affecting the probability of merchants' payment cards acceptance differ from the determinants of merchants' benefits size. The results in this article highlight the importance of empirical evaluation of the benefits for explaining the market equilibrium formation and the merchants' behavior.

Following this introduction, section 2 provides the theoretical framework. Section 3 explains the empirical set-up of the research and method of merchants' benefits evaluation. Section 4 presents major findings. Finally, section 5 discusses the major results, outlines limitations and suggestions for future research, and concludes.

2. Merchants' benefits

Merchants' benefits are integral to the market equilibrium formation (Baxter, 1983; Bedre-Defolie & Calvano, 2013; Rochet & Tirole, 2002, 2003, 2006). Combining merchants' benefits with the benefits of the cardholders and other participants allows determining the level of equilibrium interchange fees to balance the costs and benefits between the two sides of the retail payments market (Baxter, 1983). Importantly merchants unlike consumers make only one decision, namely, to accept cards. Once merchants choose to accept cards, cardholders determine the transactions volumes and frequency (Bedre-Defolie & Calvano, 2013).

2.1. Sources and determinants of benefits

Sources of benefits include the increased security, faster payments processing, increased average check as well as network externalities (Baxter, 1983; Bedre-Defolie & Calvano, 2013). Merchants directly observe these benefits after the decision to accept payment cards. Benefits link to the acceptance decision and determine if a merchant chooses to participate in the retail payments market (Bounie & Francois, 2006).

Another stream of literature focuses on the efficiency of merchant choice between alternative payments method (Gresvik, 2008; Gresvik et al., 2009; Weiner & Wright, 2005). Method in this literature bases on the comparison of the costs of different payment methods (Arango & Taylor, 2008; Gresvik et al., 2009). Overall, the models find significant evidence that merchants do make a rational informed choice between the alternatives and that the payment cards bring merchants additional benefits (Arango & Taylor, 2008; Bounie, François & van Hove, 2016; Hayashi, 2006; Jonkers, 2011; Loke, 2007). None of the existing studies, however, analyses benefits of payment cards quantitatively. Expert interviews and closest surveys indicate that merchants associate payment cards with additional benefits, which results in the following proposition.

Proposition 1: Total merchants' benefits from participation in the cashless retail payments market are positive and significant.

None of the regulatory interventions proposes increases in the interchange fees that result in redistribution of costs from acquiring side of payments market to the issuing side and subsequent merchant fee rise (Weiner & Wright, 2005). Instead, all of the regulatory interventions aim at providing cost cuts to the acquirers and merchants accepting payment cards (Krivosheya, Korolev & Plaksenkov, 2015). Merchants are the main advocates of these interventions claiming that the card acceptance costs are larger than socially optimal (Börestam & Schmiedel, 2012; Rochet & Tirole, 2006; Weiner & Wright, 2005). Optimality conditions usually discuss direct benefits of merchants and conclude that the fees are usually too high for merchants (Bedre-Defolie & Calvano, 2013; Rochet & Tirole, 2002, 2006). This study proposes the following.

Proposition 2: Direct benefits of the merchants are statistically and economically insignificant.

Existing literature identifies also the strategic nature of merchants' behavior meaning that the merchants consider payment cards acceptance as means to acquire competitive advantage and attract clients (Rochet & Tirole, 2002, 2003). Empirical research confirms the existence of positive correlation between competition perception by the merchant and the probability to accept payment cards (Bounie et al., 2016; Hayashi, 2006; Loke, 2007). In this regard, merchants make an informed decision between the two opportunities: whether to accept only cash or both cash and cards. Krivosheya et al. (2015) and Plaksenkov, Korovkin & Krivosheya (2015) argue that Russian merchants regard strategic reasons as one of the most important when choosing whether to accept payment cards. One way to incorporate the strategic decision into the merchants' benefits and, therefore, equilibrium models is to account for opportunity benefits.

Acquiring banks recognize the existence of opportunity benefits and incorporate these benefits into the contract conditions. However, banks do not observe the competition perception and the strategy of a merchant and the opportunity benefits remain unknown to the acquirer due to the information asymmetries between merchant and the acquiring bank. This research makes the following propositions.

Proposition 3: Opportunity benefits of the merchants are statistically and economically significant.

Proposition 4: Direct benefits of the merchants are smaller than the opportunity benefits.

2.2. Determinants of the benefits size

One strand of literature analyzes the determinants of merchant card acceptance (Bounie et al., 2016; Hayashi, 2006; Loke, 2007). Since the level of benefits link to the card acceptance decision, the determinants of card acceptance probability and benefits size should be similar. Previous literature identifies the following significant determinants of card acceptance probability: merchant type, merchant characteristics (network connection, age), product types, competition, regional characteristics (Bounie et al., 2016; Hayashi, 2006). This article proposes the following.

Proposition 5: Factors affecting the probability of merchant acceptance also affect the size of the merchants' benefits.

3. Empirical set-up

3.1. Data

Finance, payments, and e-commerce chair generously provide private data from the proprietary survey of Russian merchants' profiles and their behavior in 2013–2014. Face-to-face surveys include all Russian regions and quotas for the shop types to ensure sample representativeness for the Russian retail payments market. Study includes only traditional

(offline) retail merchants because this segment is the largest in terms of the payments activity. The survey questionnaire focuses on the card acceptance decision of the merchants as well as the significant determinants from previous studies (e.g., competition perception, merchant fee size). Also, the questionnaire have sections on merchants' characteristics (e.g., size, types of products, number of employees, year of operations start, organization and ownership structures, relationship with acquiring bank and specifics of acquiring and cash collection contracts).

The resulting sample consists of 800 merchants. 51% of the merchants accept payment cards. This share varies from 30% in smaller merchants to 92% in larger merchants (such as supermarkets). The most popular merchant types are stalls and kiosks (26.26%) and specialized non-food stores (13.56%). Hypermarkets and supermarkets account for 5.18% of the sample; pharmacy stores constitute 7.4% while specialized food stores - 4.81%. Most of the merchants sell food products and beverages (54.75%). 10.11% of merchants sell durable goods and 7.03% of stores sell clothes and shoes. These figures correspond to official Russian government statistics and analytics. The mean experience of accepting cards is 2.34 years.

In addition, this study investigates bank costs and revenues from the payment cards business in seven of top 20 banks in Russia in terms of assets. This acquiring banks sample covers more than 80% of the Russian payment cards market.

The survey identifies some stylized facts about Russian retail payments market:

a) 23% of merchants do not accept payment cards no matter what conditions acquiring bank offers.

b) 50% of the merchants are indifferent between cash and cards.

c) Most of the merchants accept cards due to the demand from the customers.

d) Merchants that accept payment cards associate cards with economic benefit and perceive payment cards as convenient.

3.2. *Merchant benefits evaluation method*

Gross benefits are the sum of net benefits and (negative) loyalty program reward payments. The questionnaire includes the question about the total costs of acquiring services for the merchants. This question invites the merchants to evaluate not only the direct costs, namely, the merchant discount fee but also the indirect costs such as forgone transactions volume and increased staff training costs. The amount of self-reported costs corresponds to the actual willingness to pay for the acquiring services by the merchant. Due to the duality of costs and benefits (Luenberger, 1992), this also identifies the level of total merchant's benefits that merchant associates with the decision to accept cards. Dividing this value by the total merchant's transactions volume allows getting the benefits in percentage terms. This study uses benefits in terms of Russian Rubles (RUR) by multiplying the obtained value of benefits and the average check value. Following Krivosheya & Korolev (2016) this study assumes 550 RUR as a sum of average check in the retail industry during the period of study.

Following the differentiation between strategic nature and direct benefits of card acceptance choice in the existing literature this research further separates the benefits into two types: opportunity benefits and direct benefits. Opportunity benefits equal the percentage of transaction volume that merchant gives up if it chooses not to accept payment cards. Dataset in Krivosheya & Korolev (2016) allows calculating average probability that cardholder pays with a card if a merchant accepts payment cards at the point of sale as well as the probability that cardholder chooses different merchant if it does not accept payment cards. Multiplying the average cashless merchant's turnover by the average probability that the cardholder chooses different shop if a merchant does not accept payment cards and dividing by the average monthly turnover in the shop provides the value of opportunity benefits. Direct benefits are simply the difference between the total benefits and opportunity benefits. Direct

benefits represent all the benefits that are attributed to the acceptance decision (e.g., improved security, increased speed of transactions, network externalities, increases in average check) net of costs of such decision (e.g., increased staff training costs, possible short queue line length increase). Total benefits, therefore, also represent net benefits (gross value of benefits less the costs of acceptance decision). Figure 1 provides the distribution of the most important merchants' acceptance cost component, namely, merchant discount fee. Average merchant fee is 1.8% for the whole distribution.

3.3. *Statistic and econometric methods*

The Student (1908) test of statistical significance allows testing the difference of the mean of resulting benefits from zero. Normality of the distributions the central limit theorem prescribes explains the validity of choice of the Student test. Following Krivosheya & Korolev (2016), this study uses the Heckman selection model to investigate the determinants of the benefits size and compare these determinants to the factors affecting the probability of cashless payment methods acceptance. Heckman selection model allows controlling for the selection bias that might occur when analyzing the subset of merchants accepting payment cards. Following Dinc & Erel (2013) this article also trims all of the benefits of 1% highest and lowest values to exclude outliers.

4. Results

4.1. *Total merchants' benefits*

The average value of total benefits of merchants equals 16.34% per transaction or 89.91 RUR. In other words, participating in the cashless retail payments market brings merchant, on average, 89.91 RUR per transaction, which includes, for instance, increase in security at the merchant location or decrease in the queue waiting time. Average value of corresponding Student t-statistics is 16.25. For both two-sided and one-sided (positive)

alternative hypotheses, the resulting mean is significant at any reasonable significance level.

Figure 2 presents the distribution of total merchants' benefits.

Figure 2 here.

The breakdown of the results by the type of the merchant is as follows (percent per transaction):

- a) Hypermarkets and supermarkets: 21.16%
- b) Specialized food stores: 15.67%
- c) Specialized non-food stores: 18.11%
- d) Kiosks, stalls: 13.23%
- e) Pharmacy stores: 17.31%

All of the means are significant at any reasonable significance level.

This study uses the yearly sales turnover and the number of employees as the indicators for the size of merchant. Questionnaire contains questions inviting the merchant to report both of these parameters. The breakdown of the total benefits by the number of employees is as follows:

- a) More than 50 people: 19.16%
- b) 26-50 people: 19.15%
- c) 11-25 people: 14.34%
- d) 3-10 people: 15.12%
- e) Less than 3 people: 19.67%

Total merchants' benefits are larger for both the smallest and the largest merchants. Merchants of average size are less likely to negotiate better terms, which translates to the benefits decrease. Breakdown by the yearly sales turnover shows that the total benefits are smaller for larger merchants:

- a) More than 15 mln RUR: 3.26%

- b) 8-15 mln RUR: 6.94%
- c) 5-8 mln RUR: 6.16%
- d) 2.5-5 mln RUR: 16.55%
- e) Less than 2.5 mln RUR: 16.75%

Overall, total benefits are significant and show the same correlation pattern with the size and the type of merchants as in previous literature. The results imply that participation in the cashless retail payments market by choosing to accept cards bring positive and significant benefits. Benefits are statistically and economically significant. Importantly, the merchants' benefits size alone cannot determine the volume of cashless payments at the point of sale. The merchant benefits are a surplus that the merchant gets when he chooses to accept cards instead of abstaining from them. Results support proposition 1.

4.2. *Opportunity merchants' benefits*

The average value of opportunity benefits per transaction is 14.5%. Assuming the average check of 550 RUR, this yields the average opportunity merchants' benefit of 79.8 RUR per transaction. The value of corresponding t-statistic is 31.94. Again, at any reasonable significance level, the mean is significantly different from zero. Figure 3 depicts the opportunity benefits distribution.

Figure 3 here.

The breakdown of the results by the type of the merchant is as follows (percent per transaction):

- a) Hypermarkets and supermarkets: 14.75%
- b) Specialized food stores: 12.18%
- c) Specialized non-food stores: 17.1%
- d) Kiosks, stalls: 13.3%
- e) Pharmacy stores: 13.94%

All of the means are significant at any reasonable significance level.

This study uses the sales turnover and the number of employees as the indicators for the size of merchant. Questionnaire contains questions inviting the merchant to report both of these parameters. The breakdown of the total benefits by the number of employees is as follows:

- a) More than 50 people: 15.22%
- b) 26-50 people: 15.89%
- c) 11-25 people: 14.55%
- d) 3-10 people: 13.77%
- e) Less than 3 people: 12.22%

Opportunity merchants' benefits are larger for the larger merchants, which may link to the larger importance of available payment methods for consumers in larger shops as well as higher probability that the competitors accept payment cards. Breakdown by the sales turnover shows the similar result. Average cashless turnover is higher in case of large merchants but the share of cashless payments is higher when the turnover is small:

- a) More than 15 mln RUR: 15.37%
- b) 8-15 mln RUR: 14.04%
- c) 5-8 mln RUR: 13.77%
- d) 2.5-5 mln RUR: 15.64%
- e) Less than 2.5 mln RUR: 15.9%

Overall, opportunity benefits are significant and show the same correlation pattern with the size and the type of merchants as the probability to accept cards in previous literature. The results imply that most of the benefits attribute to the strategic advantage present in the decision to accept cards. Therefore, the merchants choose to accept cards in

order to attract or retain client as Rochet and Tirole (2002) research mentions. Opportunity benefits are statistically and economically significant. This research supports proposition 3.

4.3. *Direct merchants' benefits*

The average value of direct benefits per transaction is 1.56%. Assuming the average check of 550 RUR, this transforms into the average direct merchants' benefit of 8.58 RUR per transaction. The value of corresponding t-statistic is 1.38. Direct benefits are insignificant at convenient significance levels using the two-sided hypothesis unlike in the case with opportunity and total benefits. However, one of the stylized facts indicates that most of the merchants in Russia are at least indifferent between accepting payment cards and accepting cash only. Therefore, average merchant benefits cannot be negative and this study can use one-sided (positive) hypothesis to test merchants' benefits statistical significance. Merchants' direct benefits become statistically significant at 10% significance level. Figure 4 depicts distribution of direct merchants' benefits.

The breakdown of the direct benefits by the type of the merchant is as follows (percent per transaction):

- a) Hypermarkets and supermarkets: 7.1%
- b) Specialized food stores: 3.35%
- c) Specialized non-food stores: 0.47%
- d) Kiosks, stalls: 0.01%
- e) Pharmacy stores: 2.01%

The average direct benefits of all shop types except for stalls and kiosks are significant both economically and statistically. Low average value of direct benefits in this segment comes from the heterogeneity of merchants and low acceptance rate. In fact, only 30% of kiosks and stalls accept payment cards in comparison to 92% of supermarkets and Hypermarkets. Terms in acquiring contracts are also less flexible for smaller merchants

because this type of merchants have fewer opportunities for acquirer choice. Nevertheless, the maximum value of direct benefits in this type of merchants is also the highest amongst all of the groups and equals 82.81% or 455.46 RUR per transaction. Similarly, higher heterogeneity and usually smaller size of merchants in the specialized non-food stores segment of the market explains lower average value and higher variance of direct benefits.

The breakdown of the direct benefits by the number of employees is as follows:

- a) More than 50 people: 4.73%
- b) 26-50 people: 3.57%
- c) 11-25 people: 0.3%
- d) 3-10 people: 0.84%
- e) Less than 3 people: 6.89%

Again, average merchants are less likely to negotiate better acquiring contract terms and the problems of queue length and security are not as important as in case of larger and smaller merchants.

Overall, direct benefits are economically significant and show the same correlation pattern with the size and the type of merchants as the probability to accept cards in previous literature. Statistical significance at 10% level using one-sided hypotheses uncovers another important result, which explains the behavior of merchants concerning the regulatory initiatives. Most of the merchants understand the strategic nature of card acceptance decision.

However, the direct benefits that a merchant experiences and observe at the point of sale such as increase in security or queue line decrease constitute much smaller portion of total benefits. Acquiring banks realize the necessity of merchants to compete and use cards for strategic reasons and, therefore, set merchant fees taking into the account both direct and indirect benefits. Merchants who observe only direct benefits after card acceptance and do not account for the opportunity benefits recognize the contracted merchant fees as too high and

try to lobby merchant and interchange fee cuts. Non-differentiation of the benefits into direct and opportunity is also the reason why previous research recognizes merchant costs of card acceptance as higher than optimal (Baxter, 1983; Bedre-Defolie & Calvano, 2013; Rochet & Tirole, 2006) and why regulatory initiatives that base actions and calculations on the findings and methods of this research produce non-welfare improving solutions (Weiner & Wright, 2005). Further studies as well as regulators and decision makers need to differentiate between direct and opportunity benefits as well as account for strategic nature of card acceptance decision to produce welfare improving decisions.

Card acceptance benefits merchants not only due to strategic advantage but also due to direct benefits, which banks and payment systems promote. Direct benefits are statistically (using one-sided (positive) alternative hypothesis) and economically significant. This research rejects the proposition 2. The value of opportunity benefits is on average 9.3 times higher than the direct benefits. T-statistic for the difference in means equals 9.38. Opportunity and direct benefits differ at any meaningful significance level and, therefore, this study supports proposition 4. Russian merchants indeed have larger benefits due to the strategic nature of card acceptance rather than due to the direct benefits. However, this fact does not mean that other retail payments market agents (e.g. acquiring banks or payment systems) compromise merchants' benefits by setting too high tariffs. Modern pricing schemes incorporate the beneficiary pays principle trying to price the services proportionally to the enjoyed benefits. Banks, therefore, might incorporate the opportunity benefits in their pricing mechanisms that is why merchants get higher than direct benefits fees. However, to investigate the Pareto efficiency and optimality of current market state in full details further research need to evaluate empirically socially and privately optimal interchange fees using the empirical values of benefits and fee setting mechanisms from theoretical models.

4.4. Merchants' benefits determinants

Table 1 reports the results of estimating the two-step Heckman model for the analysis of the determinants of merchants' benefits. Panel A represents the results for total merchants' benefits while panels B and C for opportunity and direct benefits respectively. All three regression models have the same basic parameters and include variables that significantly influence the probability of merchant card acceptance in previous studies.

Table 1 here.

Factors affecting the probability of merchant acceptance in the selection equations and the size of the merchant benefits differ for all the total, direct and opportunity benefits. In particular, the share of competitors accepting payment cards does not influence the level of benefits significantly, however, does increase the probability to accept payment cards. Overall, this research rejects proposition 5. Some heterogeneity exists between the regions. In particular, benefits are larger in the central region. Opportunity benefits are lower between kiosks and stalls due to lower merchant acceptance rates and competitive nature of the industrial organization. Further research with respect to identification of factors influencing the merchant benefits size might be helpful. In particular, benefits across different product types can help unveil heterogeneity in merchants' behavior at the retail payments market. Finally, the acquiring contract characteristics and network externalities can affect the size of the benefits.

Merchants unlike consumers make only one decision: to accept payment cards or not. Therefore, the merchants cannot influence the volumes of cashless retail payments. Significant share of cardholders is vulnerable to changes in the market conditions (Krivosheya & Korolev, 2016). This makes current market equilibrium on the retail payments market in Russia fragile. Unbalanced interventions resulting in tariff changes aiming at direct benefits increase for the merchants may lead to loyalty programs' shutdowns, which would likely result in significant payment activity decline even if the acceptance rates increase. Active

usage of electronic payments correlates, in turn, with the economic growth, transparency and sustainability (Handa & Khan, 2008; Plaksenkov et al., 2015).

5. Discussion and conclusion

This study evaluates the benefits of agents present at the retail payments market, specifically, those of the merchants. A representative survey of 800 traditional Russian merchants allows calculating total, opportunity and direct benefits of the merchants. The corresponding Student's t-statistics show significant evidence in favor of the presence of positive total and opportunity benefits for Russian merchants. Direct benefits, however, are weakly significant under the assumption of non-negativity. The study, then, shows significant evidence in favor of differences between the determinants of merchants' benefits value and the probability to accept cashless payment methods. These findings underline the importance of the merchants' benefits for the equilibrium formation at the retail payments market and can help deepen the understanding of merchants' behavior.

This research contributes to the burgeoning literature on the analysis of agents' behavior and equilibrium determinants at the retail payments market (Bedre-Defolie & Calvano, 2013; Guthrie & Wright, 2007; Martikainen, Schmiedel, & Takalo, 2015; Rochet & Tirole, 2002, 2003). This literature, however, treats benefits as purely theoretical rather than empirical value. This study is the first attempt to design a method to calculate empirical benefits of merchants and complements Krivosheya & Korolev (2016) article by expanding the benefits analysis to new retail payments market segment. The empirical value of benefits is a toolbox for academics and practitioners to address effectively the development of the retail payments market by analyzing the effect of various policies and shocks introduced to the market. In addition, this study extends the rising strand of literature concerning the evaluation of the current situation at the emerging retail payments markets (Chizhikova, 2013;

Reinartz et al., 2011). Revisiting the current market situation description with a focus on benefits allows deepening the understanding of differences in terms of retail payments market development and, specifically, card acceptance.

One of the main practical and social implications of this research concerns the fact that the benefits of the participation in the retail payments market exist for all the agents on the market and not just payment systems. Criticism of the payment systems often includes capturing benefits of other participants (Schmalensee & Evans, 2005). Also, the regulatory bodies and government officials do not account for the opportunity benefits properly, which results in non-welfare improving policies. This research can help officials understand the market equilibrium formation in details to produce effective regulatory interventions. Besides, understanding the ways to evaluate the level of benefits allows approaching potential regulation initiatives ex-ante in order not to disturb fragile equilibrium. Empirical evaluation of the benefits is a step towards the introduction of fair pricing of the payment instruments, implementation of effective policies and identification of socially optimal market equilibrium in Russia as well as other countries.

This study has certain limitations that create opportunities for further research in this area. Firstly, the research focuses on merchants' benefits. Expanding the method to all stakeholders of the retail payments market system can help explain the general equilibrium formation empirically. Secondly, future research may aim at explaining the factors affecting the value of benefits empirically, especially those factors concerning the network externalities and acquiring contract specifics. Finally, other countries' and cross-country benefits may be of interest in the context of the increasing economic integration.

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Figure 1. Distribution of the merchants' discount fee: % of transaction

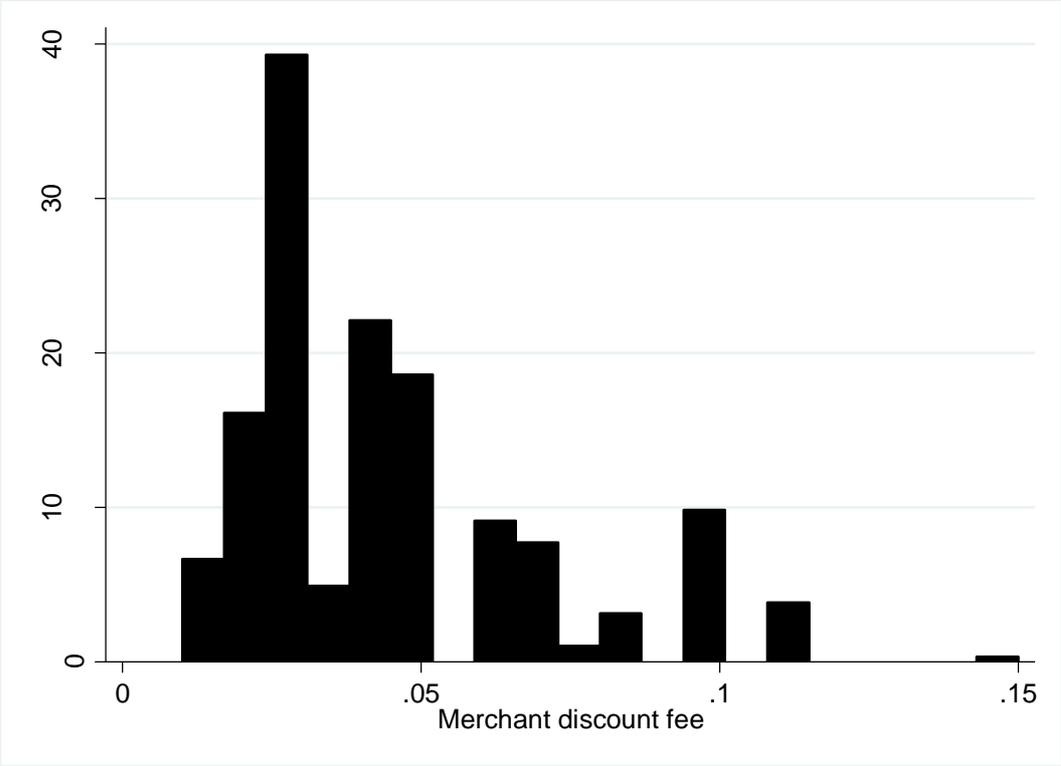


Figure 2. Distribution of the total merchants' benefits: % of transaction

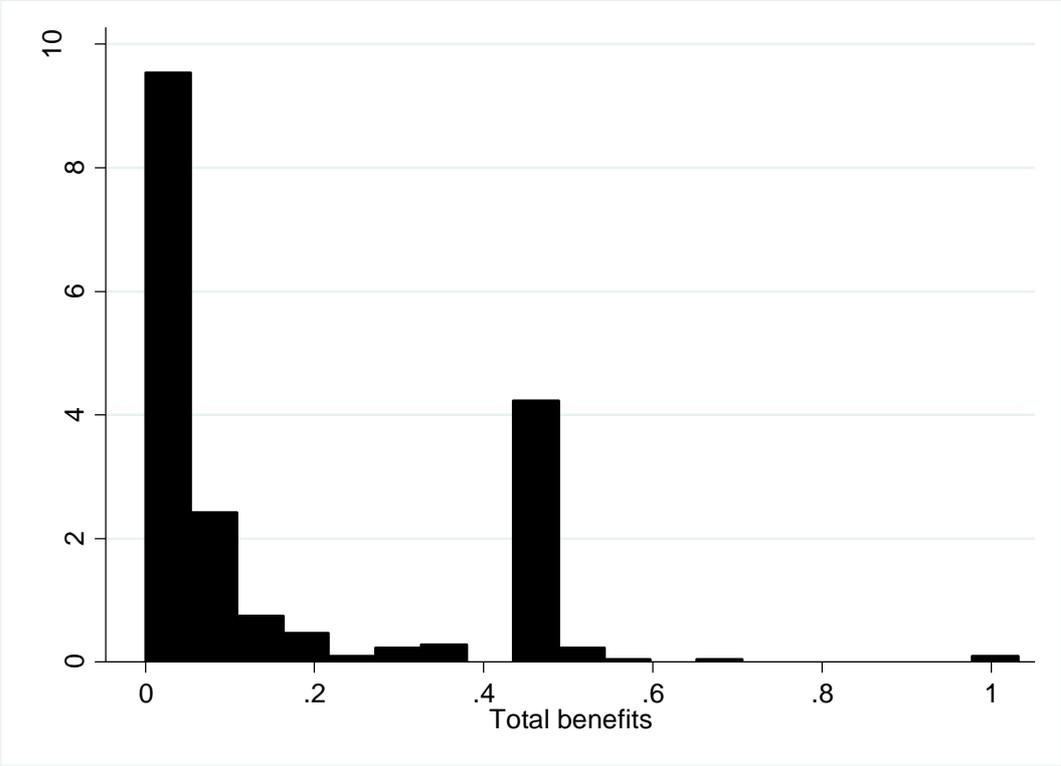


Figure 3. Distribution of opportunity merchants' benefits: % of the transaction

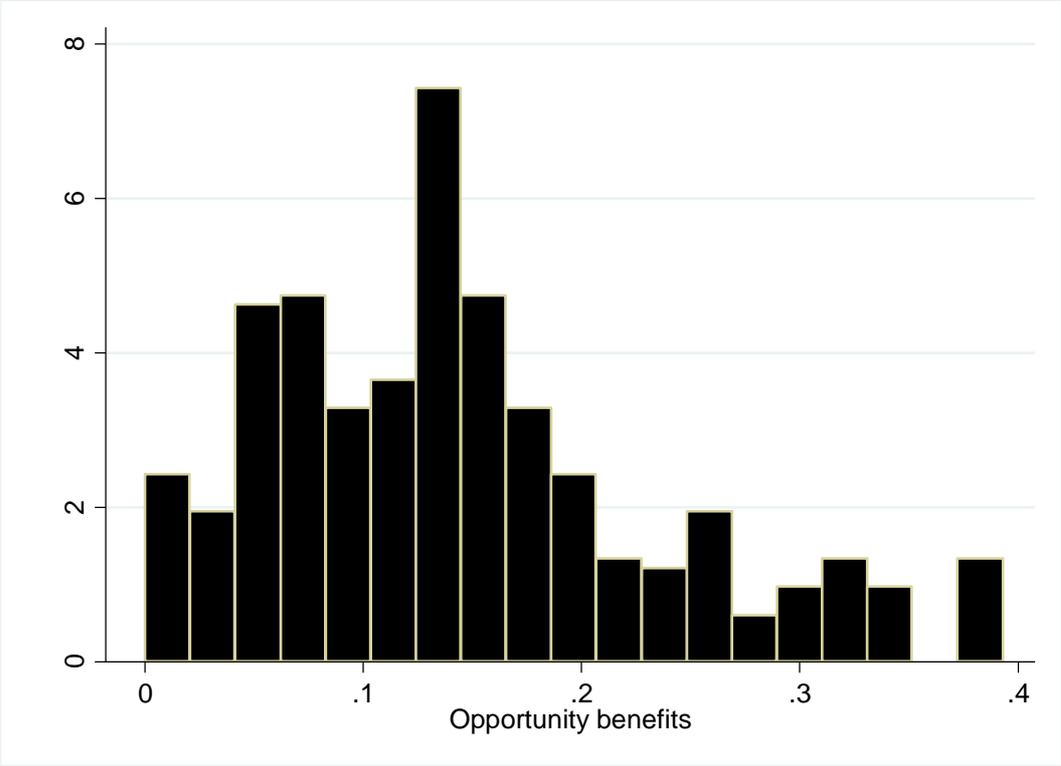


Figure 4. Distribution of direct merchants' benefits: % of the transaction

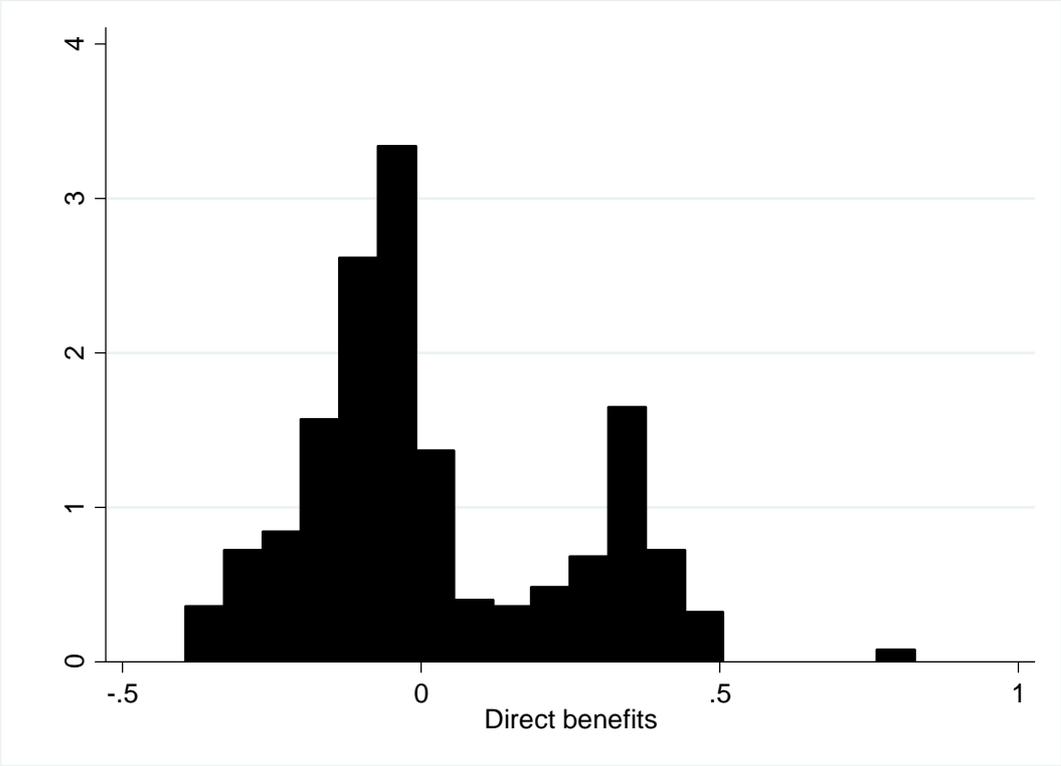


Table 1. Two-step Heckman selection model for merchant benefits size.

Panel A presents the results of the analysis for the total merchants' benefits. Panel B represents the results for opportunity benefits and panel C presents the results of analysis of the direct benefits determinants. Figures in parentheses denote standard errors. * - denotes significance at 10% level, ** - at 5% and *** - at 1%.

Variables	Panel A		Panel B		Panel C	
	Total benefits	Selection equation	Opportunity benefits	Selection equation	Direct benefits	Selection equation
Merchant type						
Hypermarket, Supermarket	0.0139 (0.0446)	0.464 (0.310)	-0.00316 (0.0184)	0.475 (0.309)	0.0283 (0.0497)	0.474 (0.311)
Specialized food store	-0.0374 (0.0509)	0.00295 (0.230)	-0.00738 (0.0209)	-0.0196 (0.230)	-0.0295 (0.0547)	-0.000398 (0.230)
Specialized non-food store	0.0399 (0.0409)	0.258 (0.188)	0.0103 (0.0166)	0.263 (0.186)	0.0367 (0.0446)	0.253 (0.188)
Kiosks, Stalls	-0.0262	-0.0891	-0.0228*	-0.0725	0.00122	-0.0963

	(0.0315)	(0.133)	(0.0126)	(0.131)	(0.0345)	(0.133)
Pharmacy	0.00696	0.367*	-0.0171	0.368*	0.0242	0.336
	(0.0446)	(0.218)	(0.0183)	(0.217)	(0.0481)	(0.219)
Product types						
Food products and beverages	0.0103	0.0755	-0.0111	0.0956	0.0256	0.0767
	(0.0307)	(0.137)	(0.0125)	(0.136)	(0.0336)	(0.138)
Durables	0.00139	0.362**	-0.00910	0.363**	0.00492	0.337*
	(0.0383)	-0.177	(0.0160)	(0.176)	(0.0416)	(0.178)
Clothes and shoes	0.0473	0.119	-0.00534	0.122	0.0548	0.0962
	(0.0324)	(0.166)	(0.0134)	(0.166)	(0.0361)	(0.168)
Merchant network	0.0473	0.810***	0.0131	0.774***	0.0500	0.792***
	(0.0573)	(0.133)	(0.0237)	(0.133)	(0.0632)	(0.134)
Merchant age	-0.00144	0.00118	0.000453	0.00388	-0.00186	0.00212
	(0.00177)	(0.00785)	(0.000708)	(0.00767)	(0.00192)	(0.00787)
More than half of competitors accept payment cards	0.00390	1.034***	-0.00870	1.010***	0.0360	1.029***

	(0.0741)	(0.118)	(0.0311)	(0.118)	(0.0824)	(0.119)
GRP per capita, logarithm	-0.0272	0.0714	0.114***	0.0883	-0.145***	0.0875
	(0.0369)	(0.189)	(0.0151)	(0.187)	(0.0405)	(0.190)
Retail turnover per capita, logarithm	-0.142**	0.276	-0.0962***	0.221	-0.0291	0.256
	(0.0711)	(0.350)	(0.0287)	(0.345)	(0.0772)	(0.350)
Constant	2.106***	-4.831*	-0.140	-4.434*	2.060***	-4.807*
	(0.676)	(2.646)	(0.275)	(2.619)	(0.744)	(2.647)
Region dummies	YES	YES	YES	YES	YES	YES
Observations	769	769	771	771	760	760
Degrees of freedom	20	20	20	20	20	20
Wald Chi2	45.76	45.76	140.01	140.01	84.9	84.9
