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Benefits of the retail payments card market: Russian cardholders' evidence☆

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ABSTRACT

This article evaluates cardholders' benefits resulting from the participation in the retail payments market. Using surveys and data simulations to obtain a representative sample of 1500 Russian individuals, the article finds significant, robust evidence in favor of positive cardholders' benefits. This study also examines the effect of the level of variable cardholders' benefits on the frequency of card payments. Results show that such effect is non-linear and forms a u-shape. 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.

1. Introduction

Payment cards have been in the center of global financial services and business innovation for the past few decades. During recent years market participants have experienced different shocks and interventions drawing from the argument that some groups of agents exploit benefits from the participation in the market at the expense of other agents. None of these interventions, however, has proven to be Pareto efficient yet (Schmiedel, Kostova, & Ruttenberg, 2012; Weiner & Wright, 2005). One of the main reasons for such results is the failure 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; 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 cardholders' benefits at the Russian retail payments market. After examining the literature, this is the first study to evaluate the benefits empirically rather than propose theoretical identification of them. Additionally, this study extends the growing empirical literature on the emerging retail payments markets (Reinartz, Dellaert, Krafft, Kumar, & Varadarajan, 2011) by providing the insights into the current market situation and deepening stylized facts of the retail payments market in Russia.

The empirical analysis of the benefits uses a representative sample of 1500 individuals from all Russian regions and the data simulations drawing on this survey. The study finds significant robust evidence in favor of the presence of positive cardholders' benefits at the Russian retail payments market. In addition, the value of benefits does significantly influence the frequency of using payment cards at the point of sale (POS). The results in this article highlight the importance of empirical evaluation of the benefits for explaining the market equilibrium formation and the cardholders' behavior.

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

2. Cardholders' benefits

Cardholders' benefits form the basis for the identification of the market equilibrium (Baxter, 1983; Bedre-Defolie & Calvano, 2013; Rochet & Tirole, 2002). In particular, these benefits allow determining the level of interchange fees to attain the equilibrium redistribution of costs among the two sides of the retail payments market (Baxter, 1983). Following the theoretical model of Bedre-Defolie and Calvano (2013), this study differentiates between the fixed (e.g., being able to pay larger sums of money than present in the wallet) and variable benefits (e.g., easier personal finance management) for cardholders.

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2.1. Sources and determinants of benefits

One of the most important sources of the cardholders' benefits is the presence of the network externalities (Carbó-Valverde, Linares-Zegarra, & Rodriguez-Fernandez, 2012; Rysman, 2007). With these externalities cardholders receive additional benefits when the number of merchants accepting payment cards increases.

Additional sources of benefits of the payment cards relative to the cash instruments originate from the quality of services at the particular POS, the easiness of personal financial management, the ability to defer the payment, the declined risk of fraud, and the monetary protection of the holdings in case of fraud (Arango, Huynh, & Sabetti, 2011). Besides, benefits originate largely as a result of the increasing transaction volumes (Arango, Huynh, & Sabetti, 2011; Bounie & François, 2006; Cohen & Rysman, 2013; Hayashi & Klee, 2003). Individuals prefer to use cards more often whenever their overall spending level increases, although the relationship is non-linear.

Finally, the major source of the cardholders' benefits is the existence of loyalty programs (Arango, Huynh, & Sabetti, 2011; Bedre-Defolie & Calvano, 2013; Bolt & Chakravorti, 2008; Ching & Hayashi, 2010). Stimulating programs compensate the participants with bonuses and monetary payments (e.g. cashback), which decrease net costs of using the card. However, researchers must pay special attention to the habit of paying with cash present in the Russian market (Krivosheya, Korolev, & Plaksenkov, 2015; Plaksenkov, Korovkin, & Krivosheya, 2015). Since cash is a convenient payment instrument to some groups of individuals, the level of benefits may be lower for them.

Proposition 1. Both fixed and variable benefits are positive and significant for the cardholders.

In addition to the above determinants of benefits, the literature finds significant evidence in favor of additional benefits of increased competition (Guthrie & Wright, 2007; Rochet & Tirole, 2003). Higher competition among issuing banks results in lower value of costs for the cardholders.

Proposition 2. Increased competition leads to the higher value of net benefits.

2.2. Determinants of the card usage frequency

The frequency of using card at the POS depends on the transaction characteristics, merchant characteristics, social and economic characteristics of the individual, technology adoption, and participation in the loyalty programs, which links to the benefits (Arango, Huynh, & Sabetti, 2011; Bounie & François, 2006; Ching & Hayashi, 2010; Cohen & Rysman, 2013; Hayashi & Klee, 2003; Rochet & Tirole, 2003).

Proposition 3. In presence of positive variable cardholders' benefits, the probability to use card increases.

3. Empirical set-up

3.1. Data

Finance, payments, and e-commerce chair generously provide private data from the survey of Russian cardholders' profiles and their behavior in 2013–2014. Face-to-face survey of individuals includes all Russian regions to ensure sample representativeness for the Russian retail payments market. For the same purposes survey involves at least 18 years old individuals from the cities with at least 500,000 inhabitants. Three stage-probability sampling and quotas for age and gender ensure valid proportion of each distinct group of individuals (gender, income, age, and geographical area groups) corresponding to Russian demographics. The survey questionnaire focuses on the payment behavior and payment instrument choice of the cardholders. Also, the questionnaire includes sections on individuals' sociodemographic characteristics (age, gender, geography, income, education levels, and work and household characteristics).

The resulting sample consists of 1500 individuals. 44.4% of the sample individuals are women. Only 26.7% of individuals are from Moscow and 11.3% from Saint-Petersburg. About 73.5% of the individuals hold at least one payment card, 75% of which pay by card for goods and services.

In addition, this study investigates bank costs and revenues from the payment cards business in 7 of top 20 banks in Russia in terms of assets. This issuing banks sample covers more than 80% of the Russian payment cards market.

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

a) An increase in the payment and cardholding activity in Russia during the latest years originates from the change in behavior of the holders of salary cards. The employers pay the fixed and variable fees for such cards.
b) Salary cards comprise approximately 42% of all cards.
c) The demand for cardholding and paying with card of the holders of salary cards is close to absolutely elastic.

The survey of individuals includes a number of questions on the level of fixed fees that individual pays. One concerns the actual level of fixed fees paid for the card usage (self-report). Another one values the cut-off level of fixed fees (the level of fees under which the individual will abstain from holding the card). Self-reported value of the cardholder's fees combined with the cut-off value allows evaluating implicitly the attitude of the individual toward the payment cards and willingness to pay for being able to hold card. Asymptotic dataset for the cardholders' benefits allows performing such an implicit evaluation.

Following Nicolay (2014), this study uses the sample of 1 million observations over 1000 simulations to calculate the average net fixed benefits for cardholders. Such sample allows convergence to the asymptotic values and leads to the consistent estimate, close to the population parameters results. Robustness checks use 10 million observations. Both simulations are representative for the whole population of 122.7 million observations (entire Russian population legally eligible to hold payment cards as at 2014). Visual support follows the sample of 10 million observations, whereas the results section discusses findings for 1 million observation samples. The study uses the survey sample to estimate the variable benefits.

3.2. Method

3.2.1. Fixed benefits evaluation method

Distribution of the fixed cardholders' fees for the Russian market has the following descriptive statistics: the mean is 482.8 RUR, the variance is 178,132, skewness is 2, and kurtosis is 15. These figures form the basis for the simulation of fixed gross benefits for the cardholders. Consistency with the requirements of the law of large numbers allows using skewed normal distribution for simulations. Such distribution accounts for the stylized facts identified above. Particularly, probability of getting nearly zero benefit is higher than getting the high value of benefit, which corresponds to the proportion of holders of salary cards.

Fig. 1 presents the results of data generation for 10 million observations. The gray line shows the closest symmetric normal distribution. Histogram of gross benefits reports heavier tails, especially in positive region, than symmetric normal distribution as well as more observations around zero. This result supports the limitations of using conventional symmetric normal distribution for gross cardholder fixed benefits because those methods do not account for the stylized facts.

The next step is to identify the level of net cardholders' benefits. Issuing banks impose actual fees for the cardholders. In case of perfect

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