Accepted Manuscript

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PII: S0168-8510(17)30229-4
DOI: <http://dx.doi.org/10.1016/j.healthpol.2017.09.001>
Reference: HEAP 3787

To appear in: *Health Policy*

Received date: 4-3-2015
Revised date: 5-6-2017
Accepted date: 3-9-2017

Please cite this article as: Gerry Christopher J, Kaneva Maria, Zasimova Liudmila. Reforming voluntary drug insurance in Russian healthcare: does social solidarity matter?. *Health Policy* <http://dx.doi.org/10.1016/j.healthpol.2017.09.001>

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Reforming voluntary drug insurance in Russian healthcare: does social solidarity matter?

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Highlights

- The healthiest and wealthiest Russians do not support risk pooling in the delivery of health-care.
- Only a quarter of Russians are willing to pay higher taxes in exchange for improved health-care.
- Social solidarity is stronger among the young, more educated and those outside of big cities.
- The Russian government should raise awareness of insurance schemes and improve their legitimacy.

Abstract

With low take-up of both private health insurance and the existing public drug reimbursement scheme, it is thought that less than 5% of the Russian population have access to free outpatient drug treatment. This represents a major policy challenge for a country grappling with reforms of its healthcare system and experiencing low or no economic growth and significant associated reductions in spending on social services. In this paper, we draw on data from a 2011 Levada-Center survey to examine the attitudes and social solidarity of the Russian population towards drug policies in general

and towards the introduction of a proposed voluntary drug insurance system in particular. In addition to being among the first to explore these important questions in the post-Communist setting, we make three important contributions to the emerging policy debates. First, we find that, if introduced immediately and without careful planning and preparation, Russia's voluntary drug insurance scheme is likely to collapse financially due to the over-representation of high-risk unhealthy individuals opting in to the scheme. Second, the negative attitude of higher income groups towards the redistribution of wealth to the poor may further impede government efforts to introduce voluntary drug insurance. Finally, we argue that Russia currently lacks the breadth and depth of social solidarity necessary for implementing this form of health financing.

Keywords: Voluntary drug insurance, social solidarity, risk pooling, health reform, health policy, willingness to pay, willingness to join, attitudes, Russia.

1. Introduction

From the 2010 (2017) ‘Obamacare’ (‘Trumpcare’) reforms in the United States (Elmendorf 2011), to the 2009 Health reforms in China (Yip and Hsiao 2009), to the ongoing reforms of the UK health system (Garber 2011) to the 2009 reforms in the Russian Federation (Health 2020 Concept 2009), many countries are confronting the challenge of managing social and health risks and balancing those risks against socioeconomic and health inequalities. As austerity and economic slowdown has extended from the 2008 global economic crisis, the challenges have become greater still as the reduced financial scope for health care provision confronts the reality of changing demographics, deteriorating health behaviours and rising costs.

In this context, achieving adequate ‘Health Care for All’ (World Health Report 2000) faces obstacles which health financing policies must seek to address. Ultimately, if risks are to be pooled, the healthy must be willing to (at least) subsidise the health care consumed by the less healthy and, if the pooling mechanism is to be progressive and sustainable, then the wealthier must be prepared to subsidise the poor (James and Savedoff 2010). There is a wide-ranging literature that examines the attitudes of the population to redistribution of this kind. Much of it stems from interest in the typologies of Western European welfare regimes (‘social democratic’, ‘liberal’ and ‘conservative’), their relationship with population attitudes to redistribution (Jaeger 2009) and the extent and nature of social solidarity. While the results of this strand of research remain disputed, Russia provides an interesting experiment in which a mixed and rapidly evolving history of socializing forces has served to shape the population’s political and ideological beliefs.

As Russia moves forward with the reform of its health care system, the responsiveness of the population to different risk pooling mechanisms becomes critical and yet little is concretely known concerning the population’s ideas of fairness or attitudes towards redistribution. Our research question directly addresses this gap in the literature by investigating the attitudes and social solidarity of the Russian population towards drug insurance policies in general and towards the introduction of a proposed voluntary drug insurance system in particular. This is important because, not only are social

drug insurance schemes seen by many experts as a promising potential tool for enhancing the breadth, depth and coverage of the pharmaceutical market for outpatient care in emerging economies, but these schemes have also recently been piloted in two Russian regions and a drug insurance bill has been promised (Reznik 2016).

The *a priori* expectation of the bill's proponents is that the population's approval of *and* therefore willingness to join (WTJ) a drug insurance scheme will be high. However, in emerging and rapidly reforming countries, the distinction between the WTJ a risk pooling scheme and the willingness and/or ability to pay becomes decisive because the WTJ is likely to exceed both the willingness and the ability to pay.

We find that, if introduced immediately and without careful consideration of the context, Russia's voluntary drug insurance scheme is likely to collapse financially due to the over-representation of high-risk unhealthy individuals opting in to the scheme (adverse selection). Second, within the framework of insurance schemes, we find that the negative attitude of higher income groups towards the redistribution of wealth to the poor will impede government efforts to introduce voluntary drug insurance. Finally, we argue that Russia currently lacks the breadth and depth of social solidarity necessary for implementing this form of health financing.

In section 2 we provide a brief background to Russian drug reimbursement policies. Section 3 summarises our methodological approach, by situating our key variables within the context of the relevant literature and then identifying our main empirically testable hypotheses. Section 4 describes our main results and we then summarise our findings and discuss the policy implications in section 5.

2. The Russian drug reimbursement programme

The health reform debates in economically more advanced countries (Mossialos *et al.* 2004; Tesler and Zweifel 2006) tend to concentrate on curbing the rising costs of existing health provision. In contrast, in the post-communist region, new insurance schemes are being introduced or proposed to

increase the participation in and affordability of medical treatment. It is this motivation – to increase uptake – which dominates current discourse within Russian drug insurance reform (Reznik 2016).

Unlike the drug reimbursement systems with universal coverage prevailing in Europe and other western countries, most Russians can rely on drug reimbursement only when staying in public healthcare institutions or, if eligible, through the drug reimbursement program (DRP). The DRP was introduced in 2005 as part of a broader social benefit reform to replace the existing complex practice of state provision of free drugs to people with certain diseases and in certain eligible categories (e.g. war veterans). Those eligible within the DRP had the right to choose between receiving drugs free of charge and the alternative of receiving monthly cash benefits. In 2007-08, this system was developed to encompass two distinct sub-programs. First, the ‘7 nosologies’ sub-program is targeted at patients suffering from 7 specific diseases which require particularly expensive treatment. This program covers a small number of beneficiaries, with estimates suggesting approximately 100,000 participants (DSM group 2012). The second sub-program is the essential drug reimbursement program (EDRP) which targets others eligible for state aid. As of 2014, around 12 million Russians are eligible for drug coverage within the EDRP, but only 3.7 million elect to receive drugs free of charge, with the remaining 8.3 million opting instead for cash benefits. Overall, it is thought that just 3-4% of the Russian population is in receipt of free outpatient drug treatment (Denisova 2012).

Private drug insurance is not widespread in Russia. Some insurance companies provide drug insurance as an option within a voluntary health insurance agreement, however private medical insurance itself is not yet widely held by individuals and is mostly purchased only by large and successful companies to offer as part of their remuneration packages to staff. Currently only about 4.5-6.2% of Russians, mostly in large cities, are insured under different private insurance plans and not all of these plans necessarily incorporate a drug insurance option (Potapchik *et al.* 2011; Britnell 2015). In part, this reflects an underdeveloped insurance culture in Russia (Kalinin 2012; Britnell 2015) where, outside of compulsory motor vehicle insurance, trust in private insurance remains low but in part it also reflects issues of affordability.

In this context, of seemingly low levels of engagement within the DRP and limited private insurance coverage, it is not unexpected that the affordability of drugs remains problematic for a large proportion of the Russian population. Indeed, according to a VCIOM (Russian Public Opinion Research Center) poll conducted in 2010, the majority of drug consumers (88%) pay for their medications out-of-pocket, with 58% stating that expenditures on drugs are an ‘important part of their budget’ and a further 19% reporting that they are unable to afford the drugs that they need (VCIOM 2010). It comes therefore as no surprise that necessary medications are difficult to obtain and/or sustain for most of the population and that therefore the level of drug consumption in Russia is low by international standards. Of course, there are legitimate concerns that there is over medicalization in many countries but nevertheless, the low consumption of pharmaceuticals is considered to be a serious problem in Russia, with recent studies (Zasimova & Kossova 2016) arguing both that the average level of expenditures on medicine is low and that it is positively correlated with income. Currently Russia is, respectively, 3 and 5 times behind the average European and US drug consumption rates, while a recent study of 11 middle-income countries found that only Brazil and China have lower per-capita drug consumption than Russia (140 Dollars) at 115 and 38 Dollars, respectively (DSM group 2012).

It is under these circumstances that the Compulsory Medical Insurance (CHI) Fund prepared a draft concept for drug insurance in 2008, proposing a scheme intended to cover all Russian citizens. Although the draft concept was widely criticized, it served as the starting point for further development of the idea of universal drug insurance in Russia. In 2012 the Strategy for Drug Provision of the Russian population until 2025 outlined a transition towards a drug insurance programme for Russia, envisaging a number of pilot voluntary insurance projects in selected Russian regions, during 2015 (Drug Insurance 2015). Despite the fact that, as of late 2016, only 2 pilot programmes (in Kirov and Omsk) had been launched, in March 2016, the Russian Ministry of Health announced further plans to initiate a drug insurance programme for children below the age of 18. Although, at the time of writing, the precise details of the co-payment arrangements remain unclear

(Nevinnaya 2016), the estimated cost of this drug insurance programme is \$4billion – an amount that is unlikely to be affordable in the current economic climate.

3. Empirical methods and data

A major potential drawback to voluntary drug insurance schemes is that they are likely to be plagued by problems of adverse selection, in so far as those at greatest risk of making a claim will be more likely to join the scheme. In this regard, health status is likely to be an important predictor of WTJ and WTP. Wang *et al.* (2006), studying a voluntary rural mutual health care insurance scheme in China, confirmed this concern, finding that the less healthy were more likely to join. Mathiyazhagan (1998) and Mataria (2006) find similar results in the case of India and Palestine respectively.

The level of education is often used as a proxy for familiarity with the health system and, as such, is usually associated with higher WTJ and WTP for medical improvements (Zhang *et al.* 2006). However, Mathiyazhagan (1998), though observing a significant impact of education on WTP, did not find the same for WTJ and Mataria *et al.* (2006) failed to find evidence of a positive correlation with either WTP or WTJ. Meanwhile, Dror *et al.* (2007) report a positive but modest association between education (of the household head) and the WTP for health insurance in India.

From our review of the relevant empirical literature and considering the Russian context summarised in section 2, we develop two categories of research hypotheses which we can explore empirically with our data.

- (i) We expect **support for drug insurance schemes** in Russia to be significantly related to health status and income, and a range of individual characteristics including gender, age, level of education, attitudes towards general taxation and regional affiliation.
- (ii) We expect that **WTJ a voluntary drug insurance** system will be significantly related to income, health, and a range of individual and household characteristics, including age, level of education and individual willingness to pay to improve the health care system.

The Data

The data for this study comes from a survey on health behaviour undertaken by the Levada-Center (an independent Russian sociological polling and research organization established in 2003) in November 2011 (this survey was funded by National Research University Higher School of Economics). The survey provides an opportunity to examine the socioeconomic and health forces that shape individual attitudes towards drug insurance. The survey involves voluntary face-to-face interviews conducted by professional interviewers at the homes of respondents, outside of normal working hours and following best international practice in ethical protocol. Households themselves were selected through the random route method, while individual respondents were selected according to the distribution of gender, age and education level. The survey and data generated were subject to further multi-level quality controls, including: control for route lists, for interviewers (spot checks of interviewers' work) and coded data (by special software programs). The response rate was 30% and the final full sample, of 4,001 persons aged 15 years and above, is representative at both the country level and at the Federal District level (excluding the North Caucasus district, which is not surveyed) adjusting for the size of settlement, the residence type (urban/rural), age and sex. As is often the case with Russian household surveys, there is a suggestion of a slight over-sampling of females which gives rise to a corresponding marginal oversampling of the elderly (who are disproportionately female in some regions).

To explore the hypotheses summarized above we draw on the socioeconomic, demographic and health characteristics in our data. After removing missing data, our sample consists of 3,169 individuals. We have examined the distribution of characteristics within and between the missing and complete data and find no evidence of a systematic difference. The reduced sample is marginally older than the full sample but the gender, region and settlement type characteristics are indistinguishable. Appendix 1 presents the definitions and summary statistics for the key socioeconomic and health factors typically utilized in studies of individual preferences in health care (Baji *et al.* 2013; Dong *et al.* 2006; Kerssens and Groenewegen 2005; Mathiyazhagan 1998; Zhang *et al.* 2006). These variables provide information on sex, age, income, education, location, residence

type, health status (whether in bad health; whether suffering from a condition that requires regular medication) and willingness to pay (WTP) higher taxes to increase the quality of (free) health care in the country.

Two questions in the survey specifically address the question of drug insurance. In the first, respondents are asked whether Russia needs a system of drug insurance and, if yes, whether such insurance should be mandatory or voluntary. For those that respond in favour of a voluntary system (or those that ‘cannot answer’), a second question then enquires as to whether they would be willing to join (WTJ) a voluntary drug insurance scheme. Over 50% of the population is in favour of the introduction of drug insurance in Russia but support for a mandatory scheme is extremely low (8%). Of those asked the second question, regarding WTJ, 48% indicated that they would either certainly (16%) or probably (32%) join. As explained, health insurance is not widely used in Russia and so there is a risk that respondents’ awareness of the underlying financing mechanisms is underdeveloped, though familiarity with the principles has increased with the introduction of compulsory car insurance. Nevertheless, to attenuate the risk, prior to the delivery of these two questions, the field workers read out a clear, formal definition of voluntary health insurance for drugs.

Combining these two drug insurance questions provides us with a binary variable capturing the attitudes to the introduction of any kind of drug insurance scheme (1 = support; 0 = not support) in Russia. Specifically, if a respondent answered (i) that Russia needs a drug insurance system and it should be mandatory (the first question) *or* if s/he answered that s/he would be WTJ a voluntary drug insurance system in the second question, our first dependent variable (*drugs_pro*) equals 1 (otherwise zero). Our second dependent variable is a binary dependent variable capturing the individual’s WTJ a voluntary drug insurance scheme, and it was not asked to those individuals that support the introduction of mandatory insurance. This variable, of which we have two versions (see below) takes the value 1 if the respondent indicates a definite or very likely intention to join the scheme, and 0 otherwise.

These two survey questions were designed to explore population support for any kind of insurance scheme (mandatory or voluntary) and, among those who support the introduction of voluntary insurance, the extent to which they are, hypothetically, WTJ such a scheme. We are trying to differentiate firstly, between three options: no insurance, mandatory insurance and voluntary insurance; and thereafter, between the stated preferences and the stated behavioural intention of those professing to support voluntary insurance.

Turning to our independent variables, the survey provides standard controls to be included for sex, age, education, location and residence type (see appendix 1) as well as proxies for income, health status and ‘solidarity’ (WTP higher taxes to improve health care). The latter 3 proxies, merit further discussion. For income, respondents were asked to choose between five responses reflecting their income status. The responses ranged from the lowest income category (‘we can hardly make ends meet’) to the highest (‘we can afford lots of things, including apartment, dacha, etc.).

The variable *badhealth* captures whether the respondent is suffering from a condition that requires regular medication; it is constructed from two survey variables: *chronic* (a dummy variable that equals 1 for those who suffer from a chronic illness) and *invalid* (a dummy that equals 1 if a person has a disability officially recognized by the authorities through issue of a disability certificate). In either case, the respondent is assigned *badhealth* status. Within Russia’s current healthcare configuration some of these (largely those in the invalid category) respondents are already in receipt of ‘drug benefits’, either because they are covered through the EDRP or because they qualify through the ‘7 nosologies’ programme. We argue that this distinguishes them from other respondents to the survey.

Finally, a common argument forwarded to explain cross-country variation in welfare state provision relates to the presence of social solidarity (Goudge *et al.* 2012). The bulk of this discussion typically centres on the European-US dichotomy and the higher degree of willingness to cross-subsidise individual risk in Europe than in the US. There is very little known about the willingness of the

residents of the post-communist world to cross-subsidize public services, such as health. We use a proxy, similar to that used by Lavetti et al. (2014) in the United States, for social solidarity (*medtax*), which is derived from a question asking respondents whether they would be ‘willing to pay additional taxes to improve the quality of health care’ for the Russian population. We argue that, conceptually, the decision to support or to join specific drug insurance schemes is independent of a willingness to pay higher taxes in support of general improvements in public services, but acknowledge that it is possible that the relationship is endogenous. These data however demonstrate a very low correlation between our solidarity proxy and our two dependent variables (respectively 0.2432 and 0.2193) and support our assumption that solidarity is distinct from an individual WTJ an insurance scheme.

We are aware that caution should be exercised in interpreting these proxies. First, regarding the drug insurance questions, it is probable that even those supporting mandatory insurance would enrol in a voluntary scheme whether mandatory insurance was introduced or not. Second, WTJ may be underestimated in our survey, to the extent that the respondents’ lack faith in the capacity for Russian institutions to deliver a good value for money service. Our survey does not allow us to explore these potentially important dimensions any further but, regarding solidarity, in following the James and Savedoff (2010) definition of “people’s willingness to participate in these kinds of redistributive schemes” we believe we are capturing an important proxy indicator of the Russian populations’ sense of solidarity. We return to these caveats briefly in our final discussion.

Econometric Method

We follow a two-stage econometric approach. Firstly, using a simple probit regression, we estimate a model examining the socioeconomic, demographic and health factors which influence the attitudes of the population to the general idea of drug insurance (*drugs_pro*). We then move on to explore our second set of research questions (relating to the WTJ a voluntary drug insurance scheme). However, because the first question is designed in such a way that only people who explicitly state that they favour voluntary insurance or who cannot make up their mind, answer the second question, there is a potential selection problem that may bias the simple probit model estimation. This being so, we apply the Heckman two-stage sample selection framework, in a similar spirit to that employed by Van de

Ven and Van Praag (1981). The results are qualitatively similar with and without the Heckman estimator but, since the likelihood-ratio test indicates a selection effect, we choose to present the results based on the Heckman estimator.

The selection equation must include identifying variables which govern the selection process but that are not relevant to the second stage process (WTJ). Such instruments are typically difficult to identify within survey data but our *badhealth* indicator provides an appropriate instrument. First, from the literature on social solidarity, it is well known (James and Savedoff 2010) that individuals with health problems are more inclined to recognise the importance of adequate health care provision and so tend to sympathize more with those in need of care. However, their attitudes are also affected by ‘loss aversion’ (the tendency for people to value the same quantity of income more when it is framed as a loss than as a gain (Kahneman *et al.* 1990; Gill and Prowse 2012)). Their endowment with current benefits and the ambiguity of the new drug insurance design therefore gives rise to fears that under a new system their benefits might be cancelled. We argue that individuals already in bad health are likely to support voluntary insurance as a remedy for ‘newcomers’ in the belief that this will sustain their own current endowment. Thus, our variable *badhealth* helps explain the answer to the selection question. Correspondingly, with regard to the second stage equation (WTJ), *badhealth* should not be expected to influence the response because those individuals already in *badhealth* perceive voluntary drug insurance as an option for those not currently eligible for benefits and therefore answer the question from a non-personal perspective. Looking at the distribution of WTJ a drug insurance scheme for those in good and bad health is reassuring since it shows no significant difference (51% and 49% respectively).

4. Results

Support for drug insurance schemes

Table 1 presents the results of the probit model estimating the general attitude towards the introduction of drug insurance. There are three specifications respectively including both age and

income by categories (model 1); an imputed income variable instead of the income categories (model 2); and interaction terms between ‘age and higher education’, and ‘age and gender’ and thus including age as a continuous rather than categorical variable (model 3).

The most basic prediction in the literature relates to the adverse selection effect of poor health. We find support for this hypothesis in our data. In particular, those already identified as regular consumers of drugs are strong supporters of drug insurance, while there is some (albeit statistically weak) evidence that respondents in otherwise bad health seem to support the introduction of drug insurance. Consistent with other literature, we also find some evidence that the effect of income is positive. Specifically, the richest quintile is more likely to support drug insurance (models 1 and 3). This is consistent with theories suggesting that better off respondents are more ‘pro-choice’.

[TABLE 1 ABOUT HERE]

We find that women and younger categories of respondent are more likely to support the idea of introducing drug insurance. As predicted by economic theory, the elderly have less incentive to invest in health, whereas the younger, with longer to live, face higher expected drug related costs over the course of their remaining life span. In model 3 we include age as a continuous variable along with an interaction term to explore the gender-age relationship further. Our results suggest that the impact of age on males is less (negative) than on females. This may reflect existing concerns about health among elderly males and a willingness to support drug insurance as a measure that would allow them to mitigate against the negative health effects experienced by the cohort of over 60s. Indeed, the large gender effect is approximately cancelled out by the time males reach age 65.

We find some evidence suggestive of an education gradient for support of drug insurance, particularly with regard to vocational education and to the highest category of education. As with gender, in model 3, we include an interaction effect of age and higher education and find that having higher education reduces the negative ageing effect and specifically, for any respondent over the age of 20

there is a strong positive effect which increases with age, from 0.005 at age 20, to 0.145 at age 40 and to 0.285, at age 60. This finding provides strong support for the idea that education is a proxy for knowledge and understanding of health risks and the effectiveness of insurance schemes.

The place of residence has a statistically significant inverse effect on the support for drug insurance: the smaller the town the more likely its residents will support drug insurance. This result is not captured by the existing literature, but in the Russian context we argue that those living in small towns and rural areas tend to share the idea of “a strong state” and offer greater support for all federal government measures. Our WTP variable further explores dimensions of solidarity in finding that those willing to pay extra tax, to improve the quality of health care, are correspondingly more likely to support the introduction of drug insurance, regardless of income.

WTJ a voluntary drug insurance scheme

Table 2 presents the results of our second set of research questions examining the determinants of WTJ drug insurance schemes in Russia. We estimate two specifications for each sample detailed in section 3 but since we find the selection effect to be significant we present only the, qualitatively similar, Heckman equations. Dealing first with the selection equation, we find that people in worse health are in favour of the introduction of drug insurance and agree that this type of insurance should be voluntary.

[TABLE 2 ABOUT HERE]

In terms of the factors that determine the stated WTJ a voluntary drug insurance scheme (second stage) we find further evidence of adverse selection. That is, those relying on regular drug consumption report a strong likelihood of joining a voluntary scheme. While this result is consistent with the literature, our findings on income are less clear. According to a body of literature (Allin and Hurley 2009) and evidence from multiple surveys of the Russian population (Levada-Center), individuals earning higher incomes can more easily afford out-of-pocket expenses, regardless of

whether they have existing general health insurance protection. This gives rise to the possibility that more affluent citizens are less interested in buying voluntary drug insurance. We find that our income category based specifications are weakly suggestive of the expected inverse relationship.

Among our other important results, we find that those WTP to improve the health care system are also more WTJ a voluntary drug insurance scheme. Contrary to the findings in table 1 regarding general support, and in the first stage of table 2 concerning the support of voluntary or mandatory schemes, we find no effect of education on WTJ. We find no evidence that there is a gender based tendency towards WTJ (unlike in the case of general support) but do find some evidence that younger people are more WTJ. We also found that residents of Moscow and St Petersburg are the least WTJ compared to all other settlement types. The more affluent residents of the two capitals may be more confident that they can pay for drugs out-of-pocket or can rely on coverage through voluntary medical insurance, which is more widespread in the two megalopolises.

5. Discussion and policy recommendations

Russia faces health challenges relating to the reform and finance of its health system as it seeks to deliver universal coverage. This paper has presented evidence concerning the attitudes of the Russian population to the provision and finance of pharmaceutical care and has focused on the underpinning fundamentals that should necessarily shape the emergent health system: (i) the rationality of individuals (adverse selection); (ii) the relationship between health and income; and (iii) beliefs and attitudes about social solidarity in health care financing.

First, we find strong evidence that adverse selection operates in Russia, in so far as poor health and reliance on drug consumption serves to shape both individual support for the scheme as well as the WTJ such a scheme. The standard solution to the adverse selection problem is to recommend a mandatory insurance scheme (Pauly and Zeng 2004), but in Russia and other emerging economies the feasibility and popularity of this solution is low. Indeed, Russia's program of social welfare monetization in 2005 represents a salutary lesson in this regard (Besstremyannaya 2009). Second,

while the evidence is relatively weak, the data does suggest that more affluent residents of the country are against joining voluntary drug insurance schemes for reasons which may reflect their existing private insurance or simply their confidence concerning the affordability of treatment in the event of illness. Taken together, these two results alone are striking for Russian health reformers: those in the worst health condition may well be supportive of a voluntary drug insurance scheme, but the healthier and the wealthier, on which voluntary systems depend, are not in support of or willing to join such a scheme.

Reflecting on the reasons for this, we turn to a more general question about social solidarity and its importance for health and welfare reform. Solidarity, in this context, is employed as a term to describe people's WTP and WTP to participate in redistributive schemes such as health insurance. Our data show that those individuals stating that they are willing to pay additional taxes (our proxy for solidarity) are also more willing both to support and to join voluntary insurance schemes. Unfortunately, these individuals represent a minority (less than 25%) of the population. To build up support for voluntary (or mandatory) drug insurance the government must build on the core of the population committed in one way or another to social insurance. Aside from the direct solidarity proxy (WTP higher taxes), we present evidence that the supportive population is younger, female, more educated, typically located in smaller communities, or is specifically older and male with well-grounded health concerns.

The finding that the young are potentially more willing to join insurance schemes is interesting. On the one hand, there is some evidence that the young are of generally poorer health and are unable to afford private health care, which is comparatively expensive and for which geographical coverage is limited (Ohana 2008). On the other hand, it is also likely (and consistent with human capital theory) that younger cohorts make a direct connection between staying fit and healthy and being productive in the future while, as age sets in, the incentive to protect health capital diminishes accordingly. However, we also find that the expected negative effects of age are attenuated by having higher education, thus reminding us again that education has broad based social benefits, whether these stem

from teaching reciprocity based notions of solidarity, from propagating different understandings of social justice (Goudge *et al.* 2012), or simply from spreading understanding of the purpose of insurance systems as a means of offsetting risk.

While we are confident that the broad tenor of our results is robust, we acknowledge several caveats. First, the structure and format of the survey itself limits the power of our analysis because only those who indicate a preference for voluntary drug insurance or who cannot decide in response to the first drug insurance question, were asked the second question concerning whether they are actually WTJ the voluntary insurance system. That is, individuals who have a preference for mandatory insurance (in the first question) are not asked whether they would be WTJ a voluntary one (the second question), even though they might well be, given the absence of a mandatory system. Second, our research is reliant on the responses of the Russian population to hypothetical questions about voluntary insurance, but the respondents give their answers in the prevailing institutional and policy context which provides for relatively low levels of understanding in the population about insurance schemes or their implications and, moreover, is characterized by very deep-rooted mistrust within the population of government policies and initiatives. For example, under the current system, there are strong incentives to become an inpatient (so that drug needs are covered) or to take on official disability status. In addition, the questions in our survey are entirely generalized, without taking account of the specific drugs, the length of time for which they are required or the severity of the illness which they are treating. Either or both of these caveats could mean that we underestimate the degree of social solidarity within our sample. Therefore, while we believe that the absence of sufficient social solidarity presents an obstacle to the introduction of drug insurance schemes in Russia, other explanations, relating to trust and understanding, are also consistent with our findings.

We finish with a brief set of policy recommendations that are relevant prior to the details of any drug insurance scheme being confirmed. First, to enlist support of the middle and upper- middle class, a limit should be set to individual contributions towards the Compulsory Health Insurance Fund (Denisova 2012). For example, in Germany, where social health insurance is statutory and

compulsory for most employees, the contribution assessment ceilings (i.e. the maximum amount of monthly income to which the contribution rates apply) was set at €4,125 per month in 2015, which equates to upper limits for the employer and the employee of approximately €300 (Gemeinsame Berichtserstattung des Bundes, 2017). Second, special conditions, such as lower premiums for males over 50 and discounts for household heads with three and more children, can be included in insurance agreements to target the seemingly self-identifying group of older males identified in our study as potential supporters of drug insurance. Third, to change public attitudes in favour of the introduction of mandatory drug insurance the government needs to initiate awareness raising campaigns, including within the formal education system.

Finally, the government was correct to propose extensive piloting of the drug insurance programs in different regions during 2015. However, due to the deteriorating economic situation, the planned piloting was scaled back dramatically and just two pilot projects, in the Kirov and Omsk regions, have been introduced. In 2014, a single district within the Kirov region launched a programme for a specific set of CVD patients aimed at raising their adherence to medication (Goncharova 2014). The scheme, which involved 7,269 patients, was based on a 10% coinsurance rate. The results were very encouraging, with a compliance rate of 87% and with cost savings from the programme reported to be three times the expenditure on the programme (Reznik 2016). The Kirov government plans to extend this pilot to patients with chronic obstructive pulmonary disease, while the Omsk government has also piloted a scheme, the results of which are not yet reported, for patients with heart disease. While the results from the Kirov region are encouraging, with a 10% coinsurance rate, they are perhaps closer to all out provision than to insurance and therefore further work, including in different disease categories, is necessary to understand how to design the most effective schemes. Indeed, if the pilots are to provide proof of concept, then they should be flexible to different approaches to copayment and exception mechanisms, while taking care to maximize access.

Finally, while our conclusions and policy recommendations stem from a survey in 2011, refer to policies announced in 2012 and draw on piloting that commenced in 2014, we are confident that the

attitudes to risk sharing and solidarity that our research reflects are sufficiently stable within the population for us to have confidence in both our findings and in the recommendations which stem from them.

Funding: National Research University Higher School of Economics, Moscow and St. Petersburg.

Conflict of Interest: The authors listed above confirm that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

Acknowledgements: We are grateful to participants in seminars and workshops in St Petersburg and Moscow for helpful comments on this paper, as well as to the referees for extremely constructive comments and advice during the review process. We are grateful also to National Research University Higher School of Economics for financing the data collection in 2011 and for facilitating later research on the paper within the project "Health economics: developing practical tools for making of decisions in healthcare".

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Table 1: Probit regression of general support for drug insurance (drugs_pro):

Variables	Model 1 <i>N=3,169</i>	Model 2 <i>N=3,169</i>	Model 3 <i>N=3,169</i>
Male age	-0.123** (0.050)	-0.103* (0.056)	-0.391** (0.131)
15-24	0.555*** (0.095)	0.576*** (0.096)	
25-34	0.434*** (0.094)	0.461*** (0.101)	
35-44	0.318*** (0.096)	0.341*** (0.104)	
45-54	0.312*** (0.089)	0.328*** (0.096)	
55-64	0.316*** (0.087)	0.328*** (0.088)	
Age			-0.012*** (0.002)
Secondary education	0.035 (0.098)	0.043 (0.099)	0.038 (0.097)
Vocational education	0.172* (0.088)	0.195** (0.090)	0.183** (0.084)
Incomplete higher or more	0.161* (0.093)	0.202** (0.098)	-0.135 (0.161)
Income Q2	0.084 (0.097)		0.081 (0.097)
Income Q3	0.114 (0.093)		0.117 (0.093)
Income Q4	0.120 (0.106)		0.124 (0.106)
Income Q5	0.598** (0.301)		0.600** (0.300)
Regular drug intake	0.215*** (0.061)	0.208*** (0.060)	0.223*** (0.060)
Bad health	0.096* (0.057)	0.086 (0.056)	0.102* (0.057)
Agreeing to pay higher taxes to improve health care	0.678*** (0.055)	0.684*** (0.055)	0.673*** (0.055)
Resident of a city greater than 300,000	0.318** (0.101)	0.289** (0.106)	0.330*** (0.102)
Resident of a town less than 300,000	0.376*** (0.095)	0.333*** (0.104)	0.385*** (0.095)
Resident of a village	0.404*** (0.102)	0.360*** (0.112)	0.420*** (0.102)
Natural logarithm of income (single imputation)		-0.052 (0.067)	
Dummy variable for imputation, =1 if income is imputed		-0.006 (0.053)	
Interaction effect age*sex			0.006** (0.003)
Interaction effect age*the highest education level			0.007** (0.003)
Constant	-1.449*** (0.168)	-0.853 (0.642)	-0.589** (0.187)

Notes: robust standard errors in parenthesis; ***,** and * indicate statistical significance at 1%, 5% and 10% levels; reference categories are 'aged 65+', 'incomplete secondary education', 'lowest income', and 'residence in metropolis'. Regional (federal level) controls are included but not reported (results available on request).

Table 2: Determinants of participation in voluntary drug insurance (with selection)

	Second stage: probability of participation in voluntary drug insurance			
	Specification 1.1.	Specification 1.2	Specification 2.1	Specification 2.2.
	<i>hk73</i>	<i>hk73</i>	<i>par73</i>	<i>par73</i>
Males	0.300 (0.056)	0.013 (0.060)	0.007 (0.061)	-0.018 (0.065)
15-24	0.308** (0.111)	0.263** (0.102)	0.123 (0.109)	0.076 (0.110)
25-34	0.367** (0.112)	0.328** (0.107)	0.272** (0.114)	0.226* (0.119)
35-44	0.253** (0.115)	0.213** (0.108)	0.109 (0.116)	0.061 (0.120)
45-54	0.263** (0.106)	0.228** (0.099)	0.117 (0.280)	0.074 (0.109)
55-64	0.236** (0.105)	0.217** (0.096)	0.124 (0.108)	0.106 (0.106)
Secondary education	0.022 (0.112)	0.020 (0.108)	-0.053 (0.129)	-0.058 (0.126)
Vocational education	0.069 (0.098)	0.053 (0.097)	-0.042 (0.115)	-0.063 (0.113)
Incomplete higher or more	0.023 (0.101)	-0.014 (0.104)	-0.124 (0.118)	-0.177 (0.119)
Income Q2	-0.095 (0.117)		-0.103 (0.135)	
Income Q3	-0.178 (0.121)		-0.181 (0.135)	
Income Q4	-0.286** (0.131)		-0.352** (0.143)	
Income Q5	0.106 (0.399)		-0.045 (0.398)	
Imputed natural logarithm of income		0.016 (0.071)		0.027 (0.076)
Agreeing to pay higher taxes to improve health care	0.341*** (0.066)	0.324*** (0.066)	0.315*** (0.072)	0.295*** (0.072)
Regular drug intake	0.256** (0.066)	0.265*** (0.061)	0.234** (0.069)	0.250*** (0.068)
Resident of a city greater than 300,000	0.321** (0.104)	0.366** (0.110)	0.274** (0.112)	0.341** (0.120)
Resident of a town less than 300,000	0.267** (0.099)	0.332** (0.108)	0.224** (0.106)	0.315** (0.117)
Resident of a village	0.235** (0.108)	0.301** (0.116)	0.152 (0.116)	0.243* (0.126)
Constant	0.228 (0.191)	-0.101 (0.671)	0.658** (0.197)	0.204 (0.730)
Artahn rho	-2.237 (1.533)	-2.472** (0.886)	-2.377** (0.971)	-2.526*** (0.640)
Wald test of [$p=0$]	$X^2(1)=2.13$ [0.1448]	$X^2(1)=7.78$ [0.0053]	$X^2(1)=6.00$ [0.0143]	$X^2(1)=15.56$ [0.0001]
	First stage: selection equation, support of drug insurance (voluntary vs. mandatory)			
	<i>hk72</i>	<i>hk72</i>	<i>par72</i>	<i>par72</i>

Males	-0.077 (0.048)	-0.049 (0.053)	-0.083 (0.050)	-0.049 (0.055)
15-24	0.205** (0.090)	0.250** (0.090)	0.314** (0.094)	0.363*** (0.095)
25-34	0.133 (0.090)	0.182* (0.094)	0.229** (0.094)	0.284** (0.099)
35-44	0.071 (0.092)	0.111 (0.095)	0.176* (0.096)	0.222** (0.100)
45-54	0.023 (0.085)	0.059 (0.086)	0.119 (0.089)	0.159* (0.091)
55-64	0.084 (0.083)	0.101 (0.083)	0.148* (0.087)	0.167* (0.088)
Secondary education	-0.027 (0.094)	-0.022 (0.094)	0.001 (0.099)	0.004 (0.100)
Vocational education	0.030 (0.083)	0.060 (0.084)	0.099 (0.088)	0.132 (0.090)
Incomplete higher or more	0.112 (0.088)	0.176* (0.091)	0.190** (0.055)	0.263** (0.097)
Income Q2	0.169* (0.096)		0.190* (0.101)	
Income Q3	0.257* (0.094)		0.268** (0.098)	
Income Q4	0.404*** (0.105)		0.440*** (0.109)	
Income Q5	0.888** (0.298)		0.978** (0.300)	
Imputed natural logarithm of income		-0.035 (0.056)		-0.042 (0.066)
Bad health	0.152** (0.048)	0.135** (0.046)	0.163** (0.050)	0.147** (0.050)
Agreeing to pay higher taxes to improve quality of health care	0.274*** (0.054)	0.294*** (0.054)	0.311*** (0.056)	0.332*** (0.055)
Regular drug intake	-0.021 (0.056)	-0.035 (0.063)	0.011 (0.060)	-0.006 (0.060)
Resident of a city greater than 300,000	-0.039 (0.096)	-0.097 (0.100)	0.016 (0.099)	-0.055 (0.104)
Resident of a town less than 300,000	0.106 (0.090)	0.019 (0.098)	0.148 (0.093)	0.050 (0.102)
Resident of a village	0.095 (0.096)	0.007 (0.106)	0.143 (0.100)	0.043 (0.110)
Constant	-0.398** (0.158)	0.190 (0.604)	-0.687*** (0.167)	-0.003 (0.630)
<i>N (Censored N)</i>	<i>3,169 (1581)</i>	<i>3,169 (1581)</i>	<i>2,966 (1581)</i>	<i>2,966 (1581)</i>
Wald χ^2 [$p > \chi^2$] whole model	103.48 [0.0000]	99.70 [0.0000]	69.87 [0.0000]	74.33 [0.0000]

Notes: as per table 1.