Myopic preferences or subsistence income?
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* Chr. Michelsen Institute (CMI), P.O. Box 6033, 5892 Bergen, Norway. Tel: +47 47 93 80 00.
Fax: +47 47 93 80 01. magnus.hatlebakk@cmi.no.

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Contents

Abstract

One year rent is sufficient to buy a rickshaw in the plains of Nepal, while a rickshaw will last many years, so purchase appears very profitable. Still most cyclists rent the rickshaw. Based on choices made by rickshaw pullers between hypothetical financing schemes for rickshaws we investigate whether the explanation is a high time-preference rate or a high elasticity of the marginal utility of consumption, which in turn can be explained by preferences that are formed by consumption near a subsistence level. We find that subsistence constraints are more important than myopic preferences.

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1.Introduction

A classical explanation for poverty, favored by the wealthy, has been that the poor are myopic, that is, they do not plan for tomorrow. This explanation was out of fashion for some decades, while the focus was on structural causes for poverty, but appears to be back and within the field of economics is covered by the sub-field of behavioral economics, which is basically a set of economic models that attempt to explain, or describe, deviations from rational economic behavior. Parts of this literature redefine rationality or preferences. An early example of the latter was to allow preferences to incorporate social status, which in turn depends on the income, consumption, or assets of others, as in Veblen's (1899) model of conspicuous consumption, and Frank (e.g. 2005) has more recently made important contributions to this strand of the literature. Another approach is to develop models that summarize behavior, in stead of being based on underlying assumptions, including on preferences. An early example of this is Kahneman and Tverskys' (1979) prospect theory, where behavior depends on a reference point, in their case zero, with people responding very differently to losses and gains. The definition of the reference point is here essential, and the literature that followed showed that framing of the decision problem will affect behavior. One part of the literature is related to the present paper, that is, the literature on inconsistent time-preferences, where hyperbolic preferences is a commonly used subset, see for example Ashraf, Karlan and Yin (2006), and for broader overviews of this literature, see Cardenas and Carpenter (2008), Frederick, Loewenstein and O'Donoghue (2002), and in particular the collection edited by Camerer, Loewenstein and Rabin (2003).

However, the present paper attempts to stay within the realms of classical consumption theory as described in Deaton (1992). We study what may appear to be irrational behavior within a particular group of poor people, rickshaw cyclists in the plains of Nepal. For some of these cyclists we are not able to find rational explanations for their choices, but for others we find an apparently rational explanation for choices that at first sight appear irrational. Two-thirds of the cyclists in our study area rent the rickshaw, despite that if they rather took a microcredit loan and bought the rickshaw they would be debt free after one year. Then for the rest of the lifespan of the rickshaw they would not have to pay the daily rent.

Microcredit is a relatively recent phenomenon in this area, and without access to microcredit poor people rely on local lenders who charge high interest rates, and to some extent are rationed, see Hatlebakk (2009). So historically this may explain why people are renting. But even with a 36% interest loan, or even 60%, a second-hand rickshaw will cost in the range of 12000 rupees, that is, 250 rupees per week for one year, which is in the range of the rental cost. So it appears that we have to look for other explanations, and as we shall see it appears that individual preferences play a decisive role.

We present the theoretical foundation for the empirical investigation in the next section, then we describe the empirical methodology and the empirical context in the following section. Next comes details on the data collection, followed by results and conclusions, which also include a discussion of possible policy implications.

2. Theory

We keep to classical consumption theory and frame hypothetical choices between loans and savings programs in an attempt to separate rickshaw cyclists with high pure time preference rates (myopic preferences) from rickshaw cyclists with a high elasticity of the marginal utility of consumption. We have discussed elsewhere, in Hatlebakk (2002), how the elasticity of the marginal utility of consumption is likely to increase as the permanently sustainable consumption level declines towards a subsistence level. This result is implied by Deaton (1992) presentation of consumption theory, and is also implied by equation (7) in Ogaki and Atkeson (1997).

A consumer who maximizes intertemporal utility will have the consumption growth rate *g* determined by $g = \sigma(r - \delta)$, where *r* is the interest rate that the person meets in the market, δ is the pure time preference rate, and σ is the intertemporal elasticity of substitution, which in turn is the inverse of the elasticity of the marginal utility of consumption. This is equation (1.10) in Deaton (1992). Now we argue that as the permanently sustainable consumption level goes towards subsistence level it is reasonable to assume that the marginal (dis-) utility of further reduction in consumption goes towards infinity, and thus the intertemporal elasticity of substitution towards zero. So at an income level that can only sustain subsistence level consumption the poverty trapped is not willing (or let us just say not able) to reduce consumption today to consume more in the future. As a result we have defined the subsistence level.

So a rickshaw puller having income at (or below[1]), or just above this level will decide (within standard theory) not to save for the future (or save only marginally if income is marginally above subsistence level). Note that it is not important whether the available option is to save, either at home or in a credit institution, or take a loan. Also if they take a loan they will have to save every day to repay the loan.

We then go on to test the theory, by an attempt to separate the role of δ and σ on *g* for our particular population of rickshaw cyclists. We assume that rickshaw cyclists who rent have no other income possibilities and a constant income from rickshaw pulling (*g* = 0). The only way to save for the future is by way of investment in a rickshaw. In that case they pay slightly more today, by way of paying the installments on a rickshaw loan (or save to buy a rickshaw), to be able to earn more in the future (g > 0). As discussed above, lack of investment can be explained either by a high pure time preference, or by subsistence level consumption, and we frame hypothetical choices between rickshaw financing programs to separate these two explanations.

Before we go on to the details, we note that a related empirical approach is to study actual choices in a population that includes non-poor households and check whether the intertemporal elasticity of substitution, and not the pure time preference rate, varies with permanent income (or wealth) levels. This is the approach taken by Ogaki and Atkeson (1997), and they find that the intertemporal elasticity of substitution declines as wealth declines. They systematically study the variation in *g* between different wealth categories using panel data from India.

In our case we construct hypothetical choice that are framed in such a way that the rickshaw cyclist invests 30 rupees today to get 50 rupees after 30 weeks, which is a very profitable investment (with an implied payoff exceeding 100% interest)[2]. Those who do not choose the profitable investment are either very short-sighted (they have a high pure time-preference rate) or they are subsistence constrained. The choices are framed so that there is variation in how much they in fact have to pay, so the investment is in terms of an increase in the savings (or loan-payment) from 230 to 260, or from

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[1] We avoid the difficult issue of describing behavior among people who have a permanent income below the subsistence level, by assuming that they also will have an intertemporal elasticity of substitution of zero.

[2] Note that we make no attempt to estimate the exact time preference rate, in contrast to Pender (1996).

260 to 290. A truly short-sighted (myopic) person will be consistent between the two choices, while a person near subsistence level may make myopic choices only in the latter case.

After we have classified the rickshaw pullers based on their choices we go ahead and check whether this classification explains whether they rent or own their rickshaw[3]. As a robustness check we add other household characteristics that may explain the choice between rent and purchase. These characteristics may explain some of the variation in preferences, so when they are added we expect the explanatory power of the preference types to decline (which turns out to be the case).

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[3] Note that the standard objection of endogeneity due to unobservable characteristics does not apply here. We argue that it is in fact these characteristics that form the preferences that we characterize by use of the hypothetical choices in the survey, and these preferences, in turn, determine the rent versus purchase decision.

3.Methodology and empirical context

We believe it is essential to know the context in all empirical work, but in particular so in formulating hypothetical choices for a survey that are supposed to reflect a particular context. The author has been doing fieldwork in the eastern plains of Nepal since 1997, while the survey was conducted in the spring 2010. During interviews in villages over the years, where many are rickshaw pullers, and also as a frequent customer, the author has been puzzled by why rickshaw pullers rent the rickshaw for 40 rupees per day, in stead of taking a microcredit loan of 12 000 and pay 240 rupees per week on that loan[4]. The total cost will not be very different, and after one year you own the rickshaw.

We decided to investigate why. During informal interviews we found that the costs of registering a rickshaw are not high. We also found that there is some concentration in the profitable rental market, but still so many who own a few rickshaws that we do not consider market power to be an issue. If you want you can always find a new or second hand rickshaw for rent or sale. There is an issue of citizenship, as some rickshaw pullers are from India and may thus not be allowed to own a rickshaw. We will take this into account in the analysis, but in our sample only 5% are from India. We also found that in most villages there are microcredit programs that regularly are used to finance rickshaws. So credit availability appears not to be an issue. So our preliminary conclusion was that rickshaw pullers are able to pay the 40 rupees per day as a rent, but many are not able to save 240 rupees to be paid by end of the week as an installment on a microcredit loan. Is this due to pure myopic time-preferences, or myopic preferences explained by near subsistence level consumption (which makes it hard to save the extra rupees)? To investigate this we formulated a set of hypothetical choices as described below.

1. Suppose you get a loan of Rs. 11 500 to buy a rickshaw. What of the following weekly repayment schedules do you prefer? (circle A or B)

A.   230 Rs per week for 30 weeks   B.   260 Rs per week for 30 weeks

     190 Rs per week for 30 weeks   140 Rs per week for 30 weeks

Explain the choice:………………………………………………………………………..............

2. And what if the choice is the following:

A.   260 Rs per week for 30 weeks   B.   290 Rs per week for 30 weeks

     160 Rs per week for 30 weeks   110 Rs per week for 30 weeks

Explain, if the choice is different from 1: …………………………………………………………………….

3. Among the choices you have made, what is the overall best program (write number and letter)?…………………….

We also presented the same choices as savings programs, but for the sake of presentation we have left those out here. We note that by choosing B over A the respondent makes an investment of 30 rupees

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[4] The median rental price at the time of our survey was 40 rupees, while those who recently bought a rickshaw paid 15000 for a new one, and 7000 for a second-hand rickshaw (two-thirds bought second-hand). 96% of the cyclists work full time.

today to get 50 rupees 30 weeks later. This is a payoff of 67% after 30 weeks, so without compound interests an annual rate of 111%. So the pure time-preference rate has to be more than 111% to select A in stead of B. As discussed earlier, some people may consume near subsistence level, and for that reason they may consider the 260 rupees per week to be a non-feasible saving. That is, they may consider 230 per week to be more than enough given their income as a rickshaw cyclist. In this case we are not able to separate the two types of explanations for myopic behavior. However, if some respondent chooses B in 1 and A in 2, then it indicates that they do not have pure myopic preferences, but find 290 per week to be too much to save. So let us now summarize the potential types, by way of the choices they make:

1A and 2A: Myopic preferences (or subsistence consumption)

1B and 2A: Subsistence consumption

1B and 2B: Rational investment

1A and 2B: Irrational behavior

We are not able to explain the last combination of choices and any such combination of choices may indicate a level of confusion on part of the respondents. Hypothetical choices are never easy to make, and we shall expect that a proportion of the respondents just did not understand the choices we have formulated. This will add noise to our analysis.

We expected similar findings for the savings programs, but in the data we found that many had apparently rational preferences in loan programs, but myopic in the savings programs. We classify this as a fifth category of people who are myopic, but do not like debt, that is, subject to having a loan (which most people preferred to savings) they prefer to repay as fast as possible. So the five types are described below (where for example AAAA means that you choose A in all four choices).

AAAA: Myopic

BBAA: Myopic but do not like debt.

BABA: Subsistence

BBBB: Rational

ABAB: Irrational

Note that with four choices this is not the full list of possibilities. We include BAAA in the subsistence category (assuming that they do not like debt and want to choose BBAA, but are not able to choose B in the second choice due to subsistence level income). And we allowed for one mistake in the rational category (by including for example BABB). So we have reduced a full set of seven types into five types. In the regressions we also ran the full set of seven types, but that did not add much information, so we decided to keep it simple and report on the main five categories. The rest category of irrational choices is again including all choices that we are not able to explain (with different variations on ABAB, such as ABBA). Again we note that AAAA may also be the result of subsistence preferences, while BABA is clearly revealing subsistence preferences. The distribution over the five types is shown in Table 1 below.

4. Data collection

We did the survey in six towns of the eastern plains of Nepal[5]. Sample sizes for each town were approximately according to population size[6]. As a result we have a sample of 219 from the city of Biratnagar, and the remaining 231 from five smaller towns in Sunsari, Morang and Jhapa districts[7], in total a sample of 450 rickshaw cyclists. We considered sampling randomly from villages, but some rickshaw cyclists may be more active than others, and sampling from villages would also take longer as not all households will have rickshaw cyclists. And in the towns themselves, in particular Biratnagar, the proportion of rickshaw pullers will be low. So the approach taken was to stand in an intersection in town, and stop the third rickshaw that passed by. This is obviously not a completely random sample, as rumors may spread and some rickshaw pullers may have avoided those intersections while others came there to participate or observe. We have no indication that this happened, and we changed intersection every day, but we have no guarantee. The author observed interviews for some days in Biratnagar, while the survey was conducted by three experienced fieldworkers from National Labour Academy. The interviews also led to interesting discussion of why the rickshaw cyclists did not save to buy a rickshaw.

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[5] The survey took 21 days plus 3 days of rest and travel during March 2010.

[6] We planned for 21 interviews per day (3 enumerators times 7 interviews), which led to slight deviations from the census proportions. Each interview took less than one hour. The hypothetical choices took less than 10 minutes but we also collected data on land, loans, education and occupations of all household members. We paid them a normal rickshaw fare for interrupting their business.

[7] Inaruwa, Itahari, Damak, Bhadrapur and Mechinagar.

5.Results

All five types of preferences turned up in the data, as shown in Table 1.

Table 1. Types of preferences, and ownership-share

Type	No	Owners
AAAA: Myopic:	85	28.2%
BBAA: Myopic, do not like debt	60	28.3%
BABA, BAAA: Subsistence:	73	20.5%
BBBB, with variations: Rational:	127	35.4%*
ABAB, and similar: Inconsistent:	105	34.3%*
Total:	**450**	**30.4%**

Already at this stage, before we control for other variables that may explain the variation in ownership, we see that cyclists with subsistence preferences are less likely to own the rickshaw. When we look into the background variables we find that the cyclists with subsistence preferences are more likely from landless households, they are also less likely to work in the city of Biratnagar, and they are more likely to be non citizens of Nepal. The two latter explanations are clearly linked to where they decide to work. Those who cross the border from India to work in Biratnagar are probably of a particular type, and those who come from villages in Nepal to work in Biratnagar are probably also of a particular type. Most important here is that the significantly higher percentage of subsistence preferences among the landless (20.1% as compared to 12.7% among cyclists with land) supports our interpretation of the BABA preferences, the landless are not able to pay the 30 rupees higher weekly payment, they need those 30 rupees for their daily expenses.

In the regression analysis reported below we will control for a number of background variables. In addition to land and citizenship we control for number of years of experience as a rickshaw cyclist, and also the age, literacy status, caste, and town of work (by using a town fixed effects model). Descriptive statistics for the control variables are shown in Table 2.

Table 2. Control variables

Variables	Mean
Terai-Dalit, %	23
Citizen of Nepal, %	95
Literate, %	41
Landless, %	48
Age, years	34
Experience, years	12

Table 3 reports the regressions, first without controls, then with town fixed effects, and finally with all controls.

Table 3. Regressions

VARIABLES	(1) owner	(2) owner	(3) owner
myopic	0.077	0.058	0.028
	(0.073)	(0.072)	(0.070)
myopnd	0.078	0.090	0.096
	(0.080)	(0.079)	(0.077)
rational	0.149**	0.141**	0.108*
	(0.068)	(0.066)	(0.065)
irrational	0.137*	0.088	0.035
	(0.070)	(0.069)	(0.068)
dalit			-0.096*
			(0.053)
citizen			0.152
			(0.095)
literate			-0.026
			(0.044)
age			0.007**
			(0.003)
land (kattha)			0.004
			(0.004)
start (years ago)			0.020**
			(0.008)
start-squared			-0.000**
			(0.000)
Constant	0.205***	0.221***	-0.238*
	(0.054)	(0.053)	(0.132)
Observations	450	450	448
R-squared-between		0.299	0.418
R-squared	0.013	0.011	0.081
Town fixed effects		6	6

Subsistence preferences as the reference category. Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

We find that the likelihood of owning the rickshaw (in stead of renting) increases with experience up to 21 years, and also with the age of the cyclist. The local Dalits are less likely than other social groups to own the rickshaw. Land ownership is not significant (this is also true for a landless dummy), possibly indicating that the effect of landlessness discussed above goes through subsistence preferences.

When it comes to the preference categories, the only robust finding is that cyclists with rational preferences are more likely owners than cyclists with subsistence based preferences, which thus supports our theoretical model. That is, cyclists who may have far-sighted pure time-preferences can still have myopic preferences in the sense that at low income levels they cannot find room for a reduction in consumption today as a means of increased consumption in the future.

6. Conclusions

We find that rickshaw cyclists in the eastern plains of Nepal to a large extent rent the rickshaw in stead of buying, despite that ownership is a very profitable investment. There can be different explanations for this, and the data indicates that most of the variation cannot be easily explained by observable characteristics. However, we find a systematic variation that is explained by underlying intertemporal preferences that we measure by use of choices made by rickshaw pullers between hypothetical rickshaw financing schemes. For example rickshaw cyclists with no land appear to be more likely to have preferences where they choose not to save for the future just because their consumption level today is too low to allow for such savings.

What are the consequences for policy? Microfinance will have no effect in this case, as even microcredit requires that you save every day to pay the weekly installment by end of the week. The only efficient policy will be to lift the rickshaw cyclists above subsistence level, and one direct measure will be to give the rickshaw for free. However, this may be problematic for the sub-sample with pure myopic preferences as they may sell the cycle, and thus lose the intended long-term benefits of ownership. An alternative is to subsidize rickshaw rental. However, both policies bring up a broader debate. Rickshaw cyclists are among the poorest in this area, but also other groups are poor, in particular farm laborers. So in stead of subsidizing rickshaw rental one may imagine a broader employment policy or social security net for the very poor, and the employment guarantee scheme from neighboring India easily comes to mind. Any such scheme may lift the poor above the subsistence level, and thus make them able to save some money for investments. In the present context of a gradually improving local economy, not only the government but also the private sector may contribute, as important alternative employments for rickshaw cyclists and farm laborers are found in factories in Biratnagar and other towns.

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