

COPING WITH THE COSTS OF SEVERE ILLNESS IN RURAL CHINA*

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Summary

Few studies have researched the impact of large medical expenditures on household livelihoods and well-being. This article provides a conceptual framework for understanding how households cope with the costs of severe illness and high medical fees. The aim is to identify possible strategies to enable households to cope better. The utility of this framework is demonstrated by presenting the findings of a follow-up study of a household health expenditure survey in rural China. The study used qualitative methods to examine how 24 households which had spent large proportions of their annual income on medical fees had mobilised resources to cope with the costs of a major illness episode, and investigated the hypothesis that large medical fees lead to impoverishment. The study found that most households were able to finance medical fees without incurring catastrophic opportunity costs, and were able to maintain production and income. Resources outside the household, particularly those accessed through social networks, were important sources of labour and financial support. Many households were able to finance subsequent unanticipated expenditures. A small number of households were less able to cope. These tended to be constrained in the options available. Households which disposed of core assets or lost access to social networks were less able to protect themselves against the impact of subsequent crises. The findings suggest several possible mechanisms for protecting households against the risk of impoverishment which support households' own strategies.

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1. INTRODUCTION

Most studies of user fees for healthcare services have focused on the impact of fees on utilisation. While some studies have reported a low price elasticity of demand (Akin *et al.* 1986; Heller 1982), others suggest that utilisation by the poor is affected by increased charges (Gertler and van der Gaag 1990; Mbugua *et al.* 1995; Ensor and San 1996). Some recent studies of the strategies adopted by households to mobilise cash resources to pay for medical care suggest that many households experience difficulty in paying user fees, even for relatively minor treatments¹ (Waddington and Enyimayew 1989; McPake *et al.* 1992; Abel-Smith and Rawal 1992). The payment of large medical fees may affect a household's other expenditure decisions and, in extreme cases, may trigger a vicious circle of asset depletion and impoverishment (Corbett 1989).

Few studies have systematically researched the impact of large medical expenditures on household livelihoods and well-being. Gaps in empirical knowledge and theoretical understanding of household coping strategies and their effectiveness have been discussed in a recent paper by Russell (1996). There is a need for a better understanding of how households cope with high medical fees in order to design appropriate strategies for protecting against the risk of impoverishment.

This article provides a conceptual framework for understanding how households cope with the costs of severe illness and high medical fees. The utility of this framework is demonstrated by presenting the findings of a follow-up study of a survey of health service utilisation and expenditure in rural China. The follow-up study explored the hypothesis that households which spent large proportions of household income on medical fees would become impoverished. In China, government subsidies often account for a small proportion of rural health facility budgets.² Many rural health facilities now finance more than three quarters of their expenditures from payments by patients. The aim of this article is to describe how households cope when government does not subsidise hospital services highly, and to identify possible strategies to enable them to cope better.

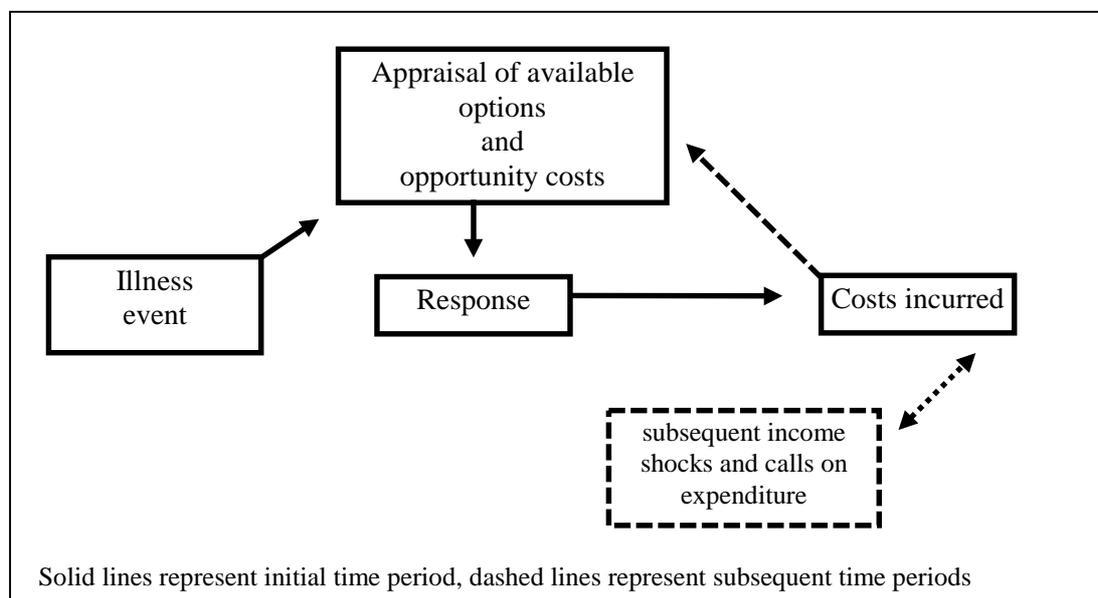
2. CONCEPTUAL FRAMEWORK

An episode of severe ill-health imposes both direct and indirect costs. Direct financial costs in the form of increased household expenditure may be incurred if treatment is sought. These costs, including treatment and travel expenses, must generally be met in cash, imposing additional burdens on household cash budgets and other assets holdings. If the individual is economically active, sickness can result in loss of current income. Other household members may also be required to devote time to the care of the

ill household member, leading to loss of income.³ The opportunity costs of expenditure decisions and income foregone are indirect costs of the illness event.

Figure 1 presents a simplified framework for understanding how households respond to an acute or chronic illness, and the potential costs incurred. The nature of the illness event determines the range of responses a household will be forced to consider. Households' responses are based on their consideration of available options and their expected opportunity costs. The initial costs incurred may lead a household to reappraise available options and adopt further responses. The responses adopted may increase a household's vulnerability to subsequent shocks.

Figure 1 Relationship between illness event and costs incurred



2.1 The contingency of ill-health

The nature of the contingency faced depends on several factors: (a) Who in the household is ill or injured? (b) How long is the household member unable to perform their usual roles in the household division of labour? (i.e. is the illness a one-off event or does it lead to long-term incapacitation?) (c) How much does one-off or recurrent treatment cost?

The nature of the contingency is crucial in determining the range of responses households will be forced to consider. The incapacity of an adult labourer as opposed to a child or elderly household member can be expected to impose different opportunity costs in terms of income foregone. These opportunity costs may be reflected in decisions (not) to allocate resources to the treatment of different household members. Once a decision to seek treatment has been made, the distinction between acute or

prolonged episodes of ill-health may be crucial to both the impact on a household's labour endowment and calls on household expenditures in the longer term.

2.2 Available options

A household's response to an acute illness event will be limited by available options. Household surveys typically collect net income or expenditure data as an indicator of household economic well-being. Recall problems affect the reliability of income and expenditure estimates (von Braun and Puetz 1993), and some items of income and expenditure are likely to be omitted. Rural households' incomes are often seasonal, so a measure of annual income will not reflect the resources available to a household at any given point in time. Furthermore, such a measure does not value claims which a household can make on other households, community or government (Wallman 1984; Wallman and Baker 1996). To analyse households' responses to the costs of ill-health, a wider definition of a household's resources is required.

Rural households face a wide variety of risks and fluctuations in the sources of their livelihoods and calls on household resources. Many fluctuations are regular and can be anticipated, being associated with seasonal variability in agricultural incomes or off-farm labour opportunities, or periodic calls on household resources, such as expenditures for fertiliser, taxes or school fees. Households adopt a variety of mechanisms for coping with anticipated fluctuations. Diversification of farm or off-farm income sources is one way households seek to reduce the variability of incomes (Agarwal 1990). When incomes are variable, households may employ savings mechanisms in order to smooth consumption intertemporally. Common examples of these mechanisms are accumulation and disaccumulation of cash, grain or livestock, formal or informal credit transactions, and making claims for transfers on kin.⁴ Similar mechanisms are available to a household when faced with an unanticipated shock such as acute illness or injury. Table 1 presents a typology of tangible and intangible assets which can be drawn upon or liquidated in times of need.

Table 1 Household asset types

<p>Labour</p> <ul style="list-style-type: none">• labour endowments: structural variables such as household size, composition, age and gender• human investments in education, skills and health which determine labour capacity of a household• labour roles within the household, both of the ill or injured household member and of carers <p>Productive assets</p> <ul style="list-style-type: none">• private productive assets, e.g. land, livestock, farming equipment, houses, domestic utensils• collective assets, e.g. access to common property resources <p>Stores of value</p> <ul style="list-style-type: none">• stores of food and cash crops• small or large livestock• stores of real value, e.g. gold, jewellery• cash savings in household or bank accounts <p>Claims</p> <ul style="list-style-type: none">• claims on other households, including kin, neighbours and friends, for productive resources, food, labour, livestock, or cash. Claims may be in the form of loans or gifts.• claims on local community organisations e.g. village committee• claims on government, e.g. poverty alleviation and social relief assistance, medical fee exemptions

Based on Swift (1989) and Moser (1996)

An important characteristic of assets is their liquidity. The mix of assets currently held by the household is one determinant of resources available to meet urgent expenditures. This will depend on past investments in, calls on, and management of various types of asset (Siamwallah 1993). Faced with an unanticipated consumption shock, some assets may be more useful than others in making short-term adjustments.

If many asset stocks held by a household are relatively illiquid, making claims on resources held outside the household allows a household to meet current expenditures while restructuring its asset portfolio over time. Borrowing to pay medical fees has been reported in a number of studies (see Russell 1996). Formal credit institutions employ screening devices to overcome information and incentive problems (Hoff and Stiglitz 1990), often resulting in the exclusion of poor households from access to formal credit. Informal credit, accessed through social networks, is available to many households which are excluded from formal credit. This is because the relationships in which the informal credit market is embedded are able to overcome information asymmetries and incentive problems between borrower and lender through mechanisms unavailable to formal lenders (Udry 1990; Fafchamps 1992). But, as with tangible assets, investment in social networks through which to make claims for loans or gifts incurs opportunity costs.

2.3 Opportunity costs of household responses

How are decisions between different options made? The adoption of specific short-term responses to crisis events (e.g. sale of livestock to pay medical fees) incurs opportunity costs with consequences for the longer term. Households therefore make decisions which reflect trade-offs between competing objectives. Research on households' responses to drought and famine suggests that households often adopt coping strategies which aim to protect the viability of future livelihoods, demonstrating an "awareness of a future beyond the current crisis when assets [may] be needed for [other] purposes" (Devereux 1993: 54). Table 2 presents possible specific responses to an illness event, and relates them to the objectives of coping strategies. The responses listed may be undertaken simultaneously and/or sequentially, as available options and opportunity costs are continuously reappraised.

Table 2 Household strategies and responses to cope with severe ill-health

Trigger event	Behavioural sphere	Strategy (generic)	Response (specific)
health care costs beyond routine budgets	Consumption	maintain current consumption	sell stores of food or cash crops sell livestock borrow cash from kin or friends obtain loan from formal credit institution postpone debt repayment
		modify consumption	reduce consumption of food or other essential goods purchase inferior substitutes (e.g. foods, seeds or fertilisers) change household composition through migration <i>delay consultation or admission</i> <i>early discharge from hospital</i> <i>shift demand to other providers</i> <i>do not seek treatment</i> <i>defer payment</i>
loss of labour power	Production	maintain current incomes	intensification of effort by other household members labour substitution within household asking neighbours for help labour exchange hiring labour
		protect future incomes	diversification of income sources investment in labour saving capital goods

Source: adapted from Devereux (1993) and Russell (1996). Strategies relating to health care seeking behaviour are in italics.

In general, choices between specific responses will reflect a least-cost alternative given the household's appraisal of current available assets and their expected opportunity costs. Because most crops and animals produced are central to households' annual cash-flow planning, the sale of assets incurs opportunity costs. For assets which both serve as stores of value and have productive uses, it is important to distinguish between 'core' assets, which are essential to maintaining current and future

incomes, and 'surplus' assets which are primarily a store of value. The disaccumulation of 'surplus' assets does not incur catastrophic opportunity costs through a decline in subsequent incomes, and is more easily reversible. The disposal of 'core' productive assets may lead to a 'poverty ratchet' (Chambers 1989; Corbett 1989) in which a household is unable to protect future livelihoods from subsequent shocks.

The impact of disposal of assets or borrowing (which requires repayment) is not clear *a priori*, since the *ex post* opportunity costs of such responses to a particular household are not disclosed. The effectiveness of specific responses should be assessed by investigating their longer-term consequences and opportunity costs. Focusing on 'lumpy' expenditures made over a period of time can reveal *ex post* opportunity costs, and the consequences for the subsequent vulnerability of a household.

3. COPING WITH COSTS OF SEVERE ILLNESS IN RURAL CHINA

The remainder of this article presents the findings of a follow-up study of a health service utilisation and expenditure survey in rural China, reported in Yu *et al.* (1997). The survey, undertaken in 1994, included 2722 households in three poor rural counties. One survey county, Donglan county in the Guangxi Zhuang nationality Autonomous Region, was selected for the follow-up study in 1996. This study used qualitative methods to examine how households which had made large expenditures on medical treatment in 1993 mobilised resources to cope with the costs of major illness episodes, and investigated the hypothesis that large medical fees lead to impoverishment.

Following a description of the background to the study, Section 3 discusses the methodology used in the follow-up study. Sections 4 and 5 draw on the conceptual framework outlined above to explain the reasons behind the responses adopted by households which made large medical expenditures, and to assess the effectiveness of households' coping strategies.

3.1 Background to the study

Since the early 1980s, average incomes in rural China have grown rapidly. However, by the mid-1990s the government estimated that there were still 80 million people living in poverty, mainly concentrated in 592 nationally designated poor counties (State Council 1994). Donglan county is a nationally designated poor county. Recent trends in average per capita incomes are presented in Table 3 (column 1). In 1990, average net per capita income in Donglan was only one third of the national rural average (SSB 1995). Incomes have grown rapidly in recent years. Deflated by the provincial rural consumer price index (GSY, various years), average net per capita income grew at a rate of 6.5 per cent per annum,

much faster than the average of 3.4 per cent for rural China as a whole (SSB 1995). Average incomes in 1995 were ¥712 (approximately US\$ 85), less than half the national rural average of ¥1578 (People's Daily 3/7/96). The majority of households were therefore very poor.⁵

Table 3 Rural incomes and healthcare costs, Donglan County

	1 Net p.c. income, current prices ^a	2 Index of nominal net p.c. income	3 Index of average charge per inpatient admission ^b		4 Ratio of charge per admission to annual p.c. income	
			County hospital	Township health centres	CH	THC
1990	¥268	100	100	100	.79	.26
1991	¥299	112	111	96	.79	.22
1992	¥326	122	117	139	.76	.29
1993	¥443	165	167	197	.80	.31
1994	¥574	214	204	290	.75	.35
1995	¥712	266	258	378 ^c	.77	.37

Notes:

a: Source: DCSB (various years). Long (1995) suggests that official data tend to understate actual incomes.

b: Calculated as (total revenue from inpatient services / number of admissions), stated in health facility annual financial reports to the County Health Bureau. Travel, food and other costs are not included.

c: 1990-1994 figures are the average for all THCs in Donglan County, cited in Gu (1996: 62). 1995 figure is the average of THCs in the three townships surveyed in 1994 and 1996.

Much of Donglan county's land area is mountainous. Poor production conditions are frequently cited by villagers as a reason for their poverty. Many households, particularly those in remote mountain villages, do not produce sufficient grain to meet annual requirements. Villagers commonly eat corn gruel and purchase grain or borrow from relatives to see them through three or four months' grain shortage each year. Small livestock are a key source of cash income for most households. There are few wage employment opportunities in rural areas, but remittances from temporary migrants to the county town and outside the county are the main source of cash income in some households.⁶

Government subsidies to health facilities in Donglan cover less than one quarter of their expenditures (Gu 1996). The burden of financing health facilities is borne by patients. Although average incomes have risen in Donglan, health care costs have also been increasing. Between 1990 and 1995, average charges for an outpatient consultation have risen by around 75 per cent in the county hospital and township health centres. These increases are lower than the rise in average rural incomes and in general consumer prices, suggesting that outpatient treatment at these facilities has become relatively more affordable for the average rural inhabitant. However, Table 3 (columns 3-4) suggests that the increase in the average cost of an inpatient admission has been much greater. The rise in the average cost of an admission to the county hospital in Donglan was similar to the growth in nominal incomes, while the average cost of an admission at the township level has become relatively more expensive.

The 1994 survey of three poor rural counties (Yu *et al.* 1997) found only small differences in the utilisation of outpatient services between the highest and lowest income groups.⁷ However, among those referred to hospital, members of households in the lowest income group were twice as likely to decline admission as those in the highest income group. The most common reason for not seeking inpatient treatment was financial difficulties.

The survey provided evidence that the cost of a hospital admission imposes a heavy burden on many rural households, particularly poorer households. Among households with at least one member admitted to hospital in 1993, the average expenditure per admission was ¥452, compared to an average net **per capita** income of ¥587 (approximately US\$ 70). Among households in the poorest income group average expenditures per admission were equal to 59% of net **household** income, compared to 18% for middle income and 8% for highest income groups. Substantial proportions of households in all income groups borrowed money to pay hospital fees. Other studies in rural China have also reported evidence of borrowing and sale of assets to pay medical fees (CHETRN 1995).

There is a belief that high medical fees are a major cause of poverty (CHETRN 1995; Zhang and Cheng 1991; Chen 1993), and a recent policy statement by the Chinese government declared that measures need to be taken to diminish the risk of impoverishment from high medical fees (Li 1996). However, no previous study has explicitly examined the impact of high medical fees on households.

3.2 Methodology of the follow-up study

3.2.1 Sampling method and sample characteristics

In both the 1994 and 1996 studies, net household income was estimated as the sum of cash income and the imputed value of farm produce less production costs and taxes. In order to focus the study on the hypothesis that households making large medical expenditures would become impoverished, ‘extremely poor’ households were excluded from the main study.⁸ The aim was to gain a better understanding of how the majority of households, which were poor but not ‘destitute’, cope with major medical expenditures. Focus group discussions using rapid appraisal methods and individual semi-structured interviews were held with people identified as ‘extremely poor households’ (*tekunhu*) by village officials in four of the villages visited (see Section 6).

The health expenditure ratio (i.e. proportion of net household income spent on medical care in 1993) was calculated for each household. The four households with the highest expenditure ratios in each village were selected. Seven villages with the highest average health expenditure ratios among the four

households were chosen for the follow-up study. The 28 households selected are referred to as the ‘high expenditure household group’.⁹ Each household in this group was paired with another household which in 1993 had as similar net per capita income level as possible and an expenditure ratio of less than .25. These 28 households are referred to as the ‘low expenditure household group’.¹⁰

During 28 days of fieldwork in November 1996, 24 high expenditure households and 28 low expenditure households were interviewed.¹¹ Some characteristics of the high and low expenditure household groups in 1993 are given in Table 4. The median net per capita incomes of the two household groups are lower than the officially reported average per capita income for Donglan county in 1993 (Table 3, column 1). However, the range of incomes is large, suggesting that the sample of households interviewed was not atypical of the study area. Over one third of the high expenditure households had incomes below the World Bank’s nutritional poverty line in 1993. The low expenditure household group was on average poorer, with over half of households falling below the poverty line, and a quarter having incomes less than half the poverty line.

Table 4 Comparison of high and low expenditure household groups (1993, 1995)

	1993 ^a		1995 ^b	
	High expenditure households (n=24)	Low expenditure households (n=28)	High expenditure households (n=24)	Low expenditure households (n=28)
net p.c. income				
median	¥403	¥274	¥812	¥571
min.-max.	¥148-¥790	¥133-¥1101	¥181-¥2605	¥320-¥2210
mean health expenditure ratio	.88	.085	-	-
mean amount spent on healthcare	¥1544	¥120	-	-
mean net household income ^c	¥1868	¥1909	¥4053	¥4065
mean net household cash income	¥729	¥829	¥2020	¥2104
mean ratio of cash income to total household net income	.32	.33	.38	.41

Notes: a: Data collected in 1994. In 1993, US\$1 = ¥5.88.

b. Data collected in 1996. In 1995, US\$1 = ¥8.35.

c. Estimated as (cash income + imputed value of farm production). Cash income includes sale of farm produce and labour income.

The average health expenditure ratio of households in the high expenditure group was .88, compared to .085 for the low expenditure group. The average amount spent on medical care in 1993 by the high expenditure household group was more than twice average annual cash incomes, suggesting these medical bills were unlikely to have been met from routine cash budgets. Twelve high expenditure

households reported borrowing from relatives¹² to pay medical fees. These households borrowed an average of ¥567, or two fifths of their annual net household income.

3.2.2 Interviews and data reliability

Both high and low expenditure households were interviewed about past major illness events. Semi-structured interviews, following an interview schedule, focused on the financial and labour impacts of illness events, and coping strategies adopted. Households were also asked about other major expenditures in recent years, access to credit, and access to social relief and poverty alleviation programmes. Basic data were collected on household size and composition, incomes and expenditures in 1995, using the same definitions as the 1994 survey.

Interviews were held with whoever was found to be at home. Seven interviews were held with both male and female household members of the generation responsible for most household management. 46 interviews were held with either a female (21) or male (25) household member. Nine of these were members of the senior or junior generation of the household and were not responsible for household management. These interviewees were unable to provide detailed information on loans, incomes and expenditures. In the interviews with only one household member it was not possible to cross-check for biases of information or perspective, but the reliability of information provided was 'tested' by asking probing and cross-checking questions during each interview.

Interviewees were asked to recall events some of which had occurred three to four years previously. Of the 20 interviewees who could recall the amount spent on medical treatment in 1993, the amounts reported in 1994 and in 1996 diverged by more than 25 per cent in 15 cases. Six households which in 1996 reported having borrowed to pay medical fees had not reported doing so in 1994. The average loan reported in 1996 was two and a half times greater than the average amount reported in 1994. These divergences probably reflect some combination of recall problems, differences in information available to different household members (particularly the young and old within a household), and in some cases interviewees' desire to depict themselves as in greater distress. They may also reflect differences in interviewing technique employed in 1994 and 1996.

4 STUDY FINDINGS

Table 4 compares the median net per capita incomes of the high and low expenditure groups in 1993 and 1995. Households which spent a large proportion of their net household income on medical fees in 1993 have not, on average, done worse than households which did not. How should this finding be interpreted?

Firstly, a comparison with the average incomes reported by the County Statistical Bureau (Table 3) suggests that the 1995 figures may be biased upwards,¹³ so income growth rates over the period should not be given much credence. More importantly, however, there is no reason to suspect a bias towards one of the household groups. Given the context of continuous economic growth in the early 1990s, and in the light of the findings on household coping strategies presented in the remainder of this paper, it is plausible that the incomes of high expenditure households did not decline or grow less rapidly than average.

Secondly, the comparison between the two household groups does not 'control' for the occurrence of severe illness. Of the 28 low expenditure households, 18 had also experienced major illness events, before, after or both before and after the 1994 survey. This suggests that severe ill-health is a relatively frequent occurrence in the study county.¹⁴

Thirdly, averages obscure difference. Of the 24 high expenditure households, four experienced a decline in nominal net per capita income between 1993 and 1995, ranging between 43 and 77 per cent. Three low expenditure households experienced a decline in nominal net per capita income over this period, ranging between seven and 19 per cent, two of which could clearly be attributed to the impact of severe illness events. Since consumer prices had risen considerably between 1993 and 1995, these households' real incomes had declined substantially.

While many households in the low expenditure group also experienced severe illness episodes, they reported adopting similar responses to those adopted by the high expenditure households. The following sections therefore focus on the findings of the interviews with high expenditure households.

4.1 The 1993 illness events

All but one of the high expenditure households had one household member admitted to hospital in 1993 (Table 5). Many received treatment from more than one provider, most often at successively higher levels of referral. In addition to hospitalisations at government health facilities, one household also spent large amounts on the purchase of drugs from an outpatient clinic, and two households also consulted traditional healers (*tuyi*). Seeking treatment at successively higher levels or from different providers often reflects the severity of illness, but some interviewees indicated that it reflected the inadequacy of technical skills at local facilities.

Table 5 Treatment received and providers (1993)

Treatment and provider	no.of house-holds	no. of admis-sions
Outpatient consultation only:	1	
Inpatient admissions:	23	
single admissions:	10	
township health centre		2
county hospital		8
multiple admissions:	13	
township health centre		7
county hospital		13
prefecture hospital		1
provincial hospital		1
other providers		3

Table 6 Labour roles of ill household members (1993)

Sole economically active adult:	1
Main adult cash income earner:	6
Agricultural labourer:	10
Adult engaged in household chores:	3
Child (not productively employed):	4

Table 6 shows that in the majority of high expenditure households, an economically active adult was ill or injured. Thirteen of the 1993 illness events eventually led to the ill household member's full recovery. Eight left the ill person with reduced labour power either through full or partial disablement, or due to the frequent recurrence of the illness. While some high expenditure households experienced a transitory shock, several households suffered a longer-term impact due to the chronic incapacitation of a household member. Three of the illness events ended in the death of the household member.

4.2 Short-term responses to the costs of illness

4.2.1 Financing consumption of healthcare

Medical fees must be paid in cash. Inpatients at health facilities are generally required to pay a deposit of ¥50 on admission. Full fees are normally paid on the day of discharge. Table 7 describes the responses adopted by households to mobilise cash resources to pay medical fees.¹⁵

Table 7 Methods of payment (1993)

all fees paid by self from cash at hand or cash savings in household:	3
partly paid by self from cash at hand or cash savings in household:	7
additional sources:	
borrowing from relatives and friends:	12
borrowing from formal credit institution:	5
selling pigs	3
selling cash crops:	2
selling grain stores:	2
selling large livestock:	2
selling consumer durables:	1
part paid by relatives without expectation of repayment (gift):	2
all paid by relatives:	2

Notes: The total number exceeds 24 because some households used many methods. In addition to costs borne by households themselves, two households had part of the fees met by an insurance company and two were partly met by the employer of the injured person.

(a) Cash and current income:

Only three households met the full financial cost of medical treatment from current income or cash savings in the household. All three were in the middle-upper range of incomes among the sample in 1993, and had a major source of cash income. Many other households were able to partly pay from cash savings, and two households used income from the sale of cash crops to pay medical fees. The conjunction of the timing of the illness event and seasonal availability of this source of cash income were factors influencing the households' decisions to use this method of payment.

(b) Stores of value and productive assets:

Disaccumulation of asset holdings was not a common response, being adopted by only six households. Interviews suggested two reasons. Firstly, the illiquidity of many assets precludes households from adopting this response when faced with the need to finance urgent expenditures. In particular, assets such as livestock and stores of grain are less liquid in the more remote mountain villages. One household said that since it takes time to sell assets, they always had to borrow to pay for emergency medical treatment.

Secondly, the sale of some types of asset carries a high opportunity cost. Of the households which sold pigs, two did not sell their sow. Recovering the lost assets was easier for these households, and an important source of fertiliser was retained. Most households which sold assets also borrowed, or sold more than one type of asset, enabling them to protect 'core' stocks of particular assets.

Two households sold large livestock (horse and ox), whose productive value is greater than that of most other types of asset. Faced with the need to finance several thousand Yuan of medical fees, one of these households also sold all their small livestock as well as non-productive consumer durables. Both

households' ability to borrow credit was constrained well below the amount needed to pay for medical treatment.

(c) Claims

Formal credit: The main source of formal credit available to households in rural China is the Rural Credit Cooperative (RCC). Most RCC loans to households are short-term production loans. Consumption loans and medium or long term loans comprise a small proportion of RCC lending (Feder *et al.* 1989). Most loans are to be repaid within 12 months, at an interest rate of 1.3 per cent per month. 2 per cent is added on loans exceeding the repayment date. RCC officials stressed that loans are only made to those with the ability to repay, assessed by a credit officer on the basis of a household's marketable assets (especially livestock), labour power and 'competence'. RCC regulations prohibit a second loan to be made to a household with an outstanding debt to the RCC.

Many households interviewed - especially poorer households - have limited access to formal credit, or are excluded from the formal credit market altogether. Several had been unable to obtain RCC loans, because they were assessed as lacking the ability to repay, or because they had outstanding debts to the RCC when a household member fell ill in 1993. Even among households which thought they could have obtained a loan, many were themselves unwilling to seek formal loans to pay medical bills on the terms offered. Some considered the interest rate too high, being afraid they could not repay on the basis of their current assets and expected incomes, or given the expected risk of default. The interest added for loans exceeding the repayment period raises the expected cost of borrowing for households which fear they may be unable to repay.

Informal credit: Most loans to pay medical fees were obtained from relatives or friends. Interviewees concurred that informal loans bear no interest, repayment is generally flexible and contingent on need and ability to repay.¹⁶ Obtaining informal credit therefore incurs a lower opportunity cost, and was preferred by many interviewees to formal credit, particularly for medium or long-term, and consumption loans.

Relatives and friends lend with an expectation of reciprocity and some households considered the opportunity cost of selling assets to be lower than borrowing. For example, one man said that when he fell ill in 1993, with only his wife working the fields, he considered that they would be unable to repay a loan. Fearing the loss of credit worthiness, he paid the medical fees by selling pigs and grain stocks.

Not everyone is able to borrow through social networks. Some households said their close relatives were even poorer than themselves and did not have cash to lend. This is likely to be more common in

some seasons than others. Some households which are considered unable or unwilling to repay, were also denied informal loans. One household head said that his relatives were unwilling to help him. The village leader said of him that he is as capable as others but "he doesn't do what he should do...he likes to sing songs". Although unable to borrow from informal sources, this household was able to obtain an RCC loan.

Gifts: Some households had part of the medical bill or the full financial cost of treatment met by close relatives. In all these cases, fees were paid by either a sibling or adult child of the ill person, where the latter had married out or divided household some years before. Most households spend several hundred Yuan each year on social events, such as weddings or visits on festivals, in order to maintain these ties. One of the poorest households interviewed, who regularly received small gifts from relatives to purchase drugs, explained: "If you don't go to weddings, relations with relatives will become strained, so you've got to go no matter what".

Medical fee exemptions: No high expenditure household had fees exempted in 1993.¹⁷ If a patient is unable to pay, the health facility director has the authority to permit exemption. Patients seeking exemptions would be required to submit a statement of their situation verified by the village cadre. Before 1993, the Bureau of Civil Affairs provided ¥14,000 each year to the County Health Bureau to partially reimburse health facilities for patient debts. However, since 1993 no funds for medical exemptions have been allocated to the Health Bureau. Health facility staff said that exemptions continued to be given in exceptional cases of poverty.

Social relief: Civil Affairs Bureaux in rural China provide social relief for several types of beneficiary (see Hussain 1990). Households impoverished by severe illness may be eligible for assistance as 'extremely poor households' (*tekunhu*). Beneficiaries are identified through investigations of household situations by village cadres and township civil affairs officials. In practice, many households identified by village cadres as 'extremely poor households' do not receive relief assistance. Village cadres and many villagers reported that applicants for relief have often been told that no funds are available. No high expenditure household received social relief between 1993 and 1995.¹⁸

4.2.2 Coping with labour loss

In Section 4.1 it was reported that, of the 24 high expenditure households, an economically active adult was ill in 17 households in 1993. Hospitals in rural China rarely provide non-medical care for inpatients. Patients are cared for by their relatives. Table 8 shows how the immediate burden of accompanying inpatients was distributed between household and non-household members in 15 households which recalled this information.

Table 8 Caring for hospitalised household members (1993)

Hospitalised person accompanied in hospital by household member:	7
Hospitalised person accompanied in hospital by non-household relative:	6
Hospitalised person accompanied by both household member and non-household relative:	2

Note: Information could be recalled by 15 households only.

In all cases where the ill person was accompanied by a household member, the latter were agricultural labourers. In most cases there was at least one other working household member left at home to continue to undertake agricultural and household tasks. In two households no economically active adult remained at home, but the periods of hospitalisation were short and occurred in the agricultural slack season. In a number of instances, the caring burden of hospitalisation on the household was reduced by drawing on other labour resources through social networks, enabling these households to protect current and future incomes. Two illness events coincided with the agricultural busy season. Although both households had one adult member still working the fields during the period of hospitalisation, they both asked relatives to help with agricultural tasks.

In the majority of high expenditure households, the ill household member was unable to work or do heavy tasks for long periods of time, often more than one year. Prolonged illness and recuperation could therefore influence production and incomes for the duration of the current production cycle. Table 9 shows that in the majority of households, the impact on farm labour was met by an adjustment of labour roles and the intensity of effort within the household. Most commonly this involved the spouse or adult children of an ill agricultural labourer substituting for them in farm work. This response is possible because, unlike some other cultures in South Asia and elsewhere in China (Agarwal 1990; Goody 1990), there is no strict gender division of labour in agricultural production in Donglan. Children, who are normally in school, were an important source of labour during the three-month long incapacitation of one household's sole adult labourer.

Table 9 Specific responses to loss of labour (1993)

Intra-household:	
household members substituted for the ill person and had to work harder (including adding caring duties):	15
bringing household members into labour force:	1
Inter-household:	
help with agricultural tasks from relatives or neighbours (mainly seasonal):	7
hiring farm labourers for seasonal work:	2

Note: Total responses exceeds 24 because one household adopted two responses.

Some households also drew on the labour resources of close relatives and neighbours. Labour assistance is made in a general expectation of reciprocity, the return of which may be delayed over an indefinite period. Often, when relatives or neighbours are invited to help, the host household must provide a meal, which is expected to include meat. Some households reported paying neighbours small amounts of cash in addition to feeding them for a day's work. One household mentioned not being able to afford to invite relatives to help for this reason.

5. LONGER-TERM CONSEQUENCES OF SPECIFIC RESPONSES

Section 2 argued that specific responses to consumption and income shocks incur opportunity costs. A household's vulnerability may be increased if the responses adopted restrict the options available to protect against subsequent shocks. This may be due either to the depletion of assets or claims which can serve as buffers against shocks, or to the loss of incomes resulting from the disposal of 'core' assets. This section examines the longer-term consequences of the responses adopted by the high expenditure households in 1993. Households were asked about major expenditures since the 1993 illness event. A small number of households mentioned major predictable or postponable expenditures, such as social expenditures, school fees, house building, and productive investments. 16 of the 24 high expenditure households mentioned subsequent major illness episodes. These were mostly large unpredictable expenditures. Households' responses to subsequent illness events are examined below, in order to assess the effectiveness of earlier responses and the implications of successive shocks for households' vulnerability to subsequent crises.

5.1 Consequences of financing consumption of healthcare

(a) Stores of value and productive assets

Most households which sold assets to pay medical fees in 1993 did not deplete all their assets, or were able to reverse the loss of assets. The households which sold grain were able to borrow grain to see them through the months before the next harvest, after which they repaid the loan. Both households again used the same method of mobilising cash to pay part of subsequent medical fees. Two of the households which sold pigs retained the sow, and were able to replace the lost assets. However, one again sold pigs to repay a loan for an operation in 1995. The household head said that if they had to make further large medical expenditures, they would have to sell their last pig, since with a serious illness they would be unable to repay a loan.

The disposal of 'core' livestock had an adverse impact on subsequent incomes of the households which adopted this method of payment. One household sold all their pigs and their only ox in 1993, and lost all sources of animal fertiliser. Production was low in the following two years and in order to meet their

food requirements they had to buy some grain and borrow some from relatives. Another household sold all their pigs to pay for medical care in 1995, and was unable to purchase fertiliser and new seed types, resulting in low grain production in the following year. Both households lacked or had only limited access to credit.

(b) Borrowing

The repayment of loans may also involve the depletion of assets accumulated as a buffer against unanticipated events, or which are essential to maintaining future consumption and incomes. Table 10 summarises the status of loans borrowed to pay medical fees at the time of the interviews.

Table 10 Repayment of loans by November 1996

Number of households which repaid debt in full:	4
<i>method of repayment</i>	
selling animals:	2
remittances from household members working outside village:	2
Number of households which had repaid debt in part:	5
<i>method of partial repayment</i>	
selling cash crops:	1
selling pigs:	3
off-farm cash income:	1
(no information	1)
Number of households which owe full amount borrowed:	5

Of the households which fully repaid their loans, none reported that the burden of repayment had severely depleted their assets. The households which repaid loans by selling animals both borrowed for other purposes in later years, including subsequent illness events, and also repaid these loans by selling animals. Both households still had farm animals in 1996.

Interviewees reported that differences in access to and the conditions attached to formal and informal credit influenced their decisions to repay. Of the three households which borrowed from both relatives and the RCC, by November 1996, two had repaid the interest-bearing RCC loan but still owed their relatives. Another household which still owed the full amount borrowed from relatives in 1993 had in the meantime repaid an outstanding RCC loan from several years before.

Although three years after borrowing to pay medical fees some households had not fully repaid their debts to the RCC or to relatives, this should not necessarily be taken as an indicator of irrevocable indebtedness and severe stress. Informal loans bear no interest and have no fixed repayment period. The majority of households had since borrowed and repaid other loans from relatives for annual expenditures such as production inputs and school fees. One household still owed part of their loan

from the RCC, but later spent ¥3000 on getting remarried, choosing to postpone debt repayment. Two households which still owed all of their borrowing from the 1993 illness event were unsure whether their relatives required them to repay, because of their poverty.

Some households which had still not repaid the loans mentioned facing constraints on access to credit from specific sources. For example, one household had an outstanding debt to relatives from the 1993 illness event, and were subsequently unable to borrow from relatives to buy fertiliser. However, they had obtained a ¥3000 loan from the Poverty Alleviation Office to raise sheep, which then provided a source of cash for regular expenditure requirements as well as a subsequent severe illness.

The impact of a credit constraint was greater on the households which had sold 'core' productive assets to pay medical fees. For example, the household which had sold a horse in 1993 had not repaid the RCC loan used to pay medical fees in 1993. Without access to either formal or informal credit, they were unable to purchase fertiliser, and farm yields were low. In 1995, they had bought some piglets, intending to fatten and sell them, but the piglets had died, and the household was unable to repay their debt and re-establish credit worthiness.

The discussion thus far has concentrated on strategies to finance consumption. Table 2 suggested that an alternative strategy is to modify consumption. Several households reported that the payment of large medical bills in 1993 left less cash available for either daily necessities (e.g. salt and oil) or investment in production. For most of these households, reduced consumption or investment was only a transitory strategy, and by late 1996 was no longer being adopted.

However, three high expenditure households reported that they had sought to reduce the impact of subsequent medical expenditures on household resources. This involved not seeking treatment, purchasing drugs from cheaper sources, or seeking treatment at private clinics where they were able to defer payment despite higher charges. Both households which had sold 'core' productive assets to pay medical fees reported having adopted this strategy. Where treatment was not sought for an adult labourer, it is likely that this adversely affected labour productivity, although this could not be verified.

5.2 Longer term consequences of labour loss

The preceding section highlighted the importance of the preservation of productive assets and access to credit in maintaining future income and consumption. Labour is the primary productive asset possessed by agricultural households. Were the adjustments of labour roles and intensity and other responses reported Tables 8 and 9 sufficient to protect incomes?

Where an adult agricultural labourer's illness was a one-off event from which they recovered, most households interviewed reported that the responses adopted were sufficient to avoid a decline in production. However, four households reported that they had been unable to avoid a decline in farm production in 1993-94. These were all households where an adult normally engaged in agricultural production was either ill or accompanied another household member in hospital for several months. In one case, the interviewee said she had once asked relatives to help in the fields, but no-one would come. This and other households were able to borrow grain from relatives, which they repaid after the next harvest.

Some households with a chronically ill adult were able to call upon relatives to help work their fields when needed over several years, and avoid adverse impacts on production. However, sustained or successive illness episodes may strain the resources which are important in coping with isolated events. In one household, the sole adult agricultural labourer¹⁹ had suffered chest pains since 1991 and is unable to work for three or four months each year. In the first few years, villagers and relatives would come and help, and her children would come home from school to help at busy times.²⁰ However, more recently people had refused to help, and she said that: "If I can't finish the work, it just rots away". This household experienced a large decline in nominal net household income between 1993 and 1995, and received a month's supply of grain as social relief assistance in 1996.

Adopting short-term responses to meet one-off or repeated stresses is not the only form of coping strategy. Households may also adapt their livelihoods to secure the viability of future incomes and to protect against the risk of future income or consumption shocks (Davies 1996). Some households which had reduced labour power changed the mix of farm production in favour of livestock raising. This provided sources of income as well as stores of value which they were subsequently able to liquidate to finance unanticipated illness events. One household headed by an elderly woman transferred her land to an adult daughter who lived in the same village. The daughter gives the grain produced to her mother and, together with other adult children, purchases grain for the old woman during the grain-short months.²¹

6. EXTREMELY POOR HOUSEHOLDS

The poorest households sampled in the 1994 survey were excluded from this follow-up study. Focus group discussions and individual interviews were held with households identified by village cadres as 'extremely poor' (*tekunhu*). Many extremely poor households said they were unable to borrow from either relatives and friends, or from formal sources. Some reported that they were unable to make sufficient investments both in production inputs and in the health of household members. Unable to

afford agricultural inputs, grain production was too low to provide sufficient fodder crops to fatten livestock. Without livestock to sell or access to cash loans, a number of people reported that they had been unable to seek treatment for illnesses in the household. Others attempted to reduce the impact of seeking treatment on consumption by purchasing drugs or medical treatment from cheaper sources (e.g. market stalls and village doctors), or from private clinics which permitted them to defer payment. Many of those who modified their consumption of healthcare reported chronic or recurring illnesses over many years, leaving them frequently unable to work. Other studies suggest that ill-health, and particularly the chronic illness or disablement of one or more adult household members, is common among extremely poor households in rural China (Croll 1994; Zhang and Cheng 1991; Tang *et al.* 1996).

7. SUMMARY AND IMPLICATIONS

This article reported the findings of a follow-up study of a small sample of households which had spent large proportions of net household income on medical fees in 1993. These households were almost all poor, with incomes less than US\$ 140. However, the sample did not include extremely poor households. Most households were able to finance the consumption of healthcare without damaging loss, and avoided an adverse impact of illness and caring burdens on household production and incomes. Resources outside the household, particularly those accessed through informal social networks, were important sources of financial and labour support. For the majority of households, the opportunity costs incurred by borrowing cash or selling 'surplus' livestock to pay medical fees were not catastrophic. Many households continued to be able to meet subsequent anticipated and unanticipated expenditures. Claims made through social networks are likely to be a more widely available option in a context of sustained economic growth, such as Donglan, compared to areas in economic decline.

Some households were less able to cope. These households tended to be constrained in the options available to them. In particular, those which lacked access to credit were forced to rely on assets within the household to finance medical bills, often at the expense of investment in production. In the most extreme cases, the disposal of 'core' productive assets combined with a credit constraint to reduce subsequent incomes. Two years after having made a major medical expenditure, four high expenditure households still had lower nominal incomes than in 1993. Following successive illness events, a small number of households had significantly depleted their assets or lost access to social networks, through which to protect themselves against the impact of future crises.

The poorest eight percent of households surveyed in 1994 were excluded from the main study. Focus group discussions with 'extremely poor' households found that they had great difficulty in paying for health services. They had either to forego care or further deplete their productive assets. There is

clearly a need for more funding of hospital services for the very poor. This could either take the form of higher government subsidies for health facilities or greater funding for current systems of financing services for the poor, such as social relief or medical fee exemptions.

The study found that households employed a variety of strategies for coping with high medical expenditures. These included the use of savings, formal and informal loans and transfers from other households. This suggests that strategies for strengthening coping are likely to include one or more of the following. Saving into health accounts (as in Singapore's Medisave scheme), provision of emergency consumption loans to finance health care costs, and prepayment schemes to facilitate inter-household risk sharing.

The study suggests that none of these strategies alone is likely to provide full protection against catastrophic illness. They will not solve the problem of the destitute who will not be able to afford to contribute to a health fund or to repay loans. Present informal mechanisms do not protect them, partly because they are unable to reciprocate. Non-poor households may resist subsidisation of the poor from prepayment schemes. There is therefore a need for some form of safety net for extremely poor households.

The study also illustrates how a major illness can expose a household to risk of destitution. Informal arrangements do not provide full protection, and it may not be possible to provide it by formalising them. These households may also need some form of safety net support. It is very difficult to design and implement safety nets that protect those who need it without providing disincentives to others (Gilson *et al.* 1995). Some prepayment schemes already have established risk funds (e.g. Zhang and Cheng 1991), whose use is not determined by rules, but is disbursed at the discretion of the fund managers. Little is known about how they perform. This study identifies some of the factors that are likely to predispose households to need for a safety net: low initial income, sole earner, lack of assets, lack of social connections, prolonged and repeated illness. Further research should clarify types of household most at risk of impoverishment.

To conclude, a strategy to protect households against the risk of impoverishment should include measures to strengthen existing mechanisms for enabling people to cope with high medical expenses (coupled with measures to limit cost increases), and strengthen safety nets for the very poor and households exposed to unsustainable shock. Further research is required in order to better define an effective and feasible strategy.

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Notes

¹ Most studies of the impact of user charges examine outpatient contacts, while few look at inpatient charges.

² Government's share of total national health expenditure declined from 28 per cent in 1978 to 14 per cent in 1993 (World Bank 1996).

³ Estimations of the economic costs of illness in Burkina Faso suggest that time costs incurred by carers amounted to 45 per cent of total time loss (Sauerborn *et al.* 1995).

⁴ See Chaudhuri and Paxson (1994), Rosenzweig and Wolpin (1993), Kurosaki (1995), Eswaran and Kotwal (1989), Udry (1990) and Rosenzweig (1988).

⁵ The World Bank (1992) has estimated a nutritionally-based national poverty line at ¥275 in 1990 prices. Adjusting for increases in the provincial rural consumer price index (GSY, various years), gives a poverty line of ¥355 in 1993. The 1994 household survey in Donglan indicates that, in 1993, 37 per cent of households sampled had per capita incomes below the nutritional poverty line. 11 per cent of households had incomes less than half the poverty line.

⁶ The 1994 survey found that income from wage labour (including local employment and migrants' remittances) accounted for more than half of cash income in one quarter of households surveyed in Donglan.

⁷ The lowest income group was defined to include households with per capita incomes below ¥302, or 85 per cent of the nutritional poverty line. Households in the highest income group had per capita incomes over ¥732, just over twice the nutritional poverty line.

⁸ 'Extremely poor' households were defined as those with an adult equivalent net per capita income below ¥150 in 1993, giving a weight of 0.5 to household members 14 years old or less. The poorest eight per cent of households surveyed in 1994 were excluded.

⁹ This sampling method assumes that large medical expenditures in 1993 indicates the occurrence of severe illness. Households which suffered severe illness but did not make large expenditures would not be selected as high expenditure households using this method.

¹⁰ This sampling method was repeated in case some households in the first round sample could not be located or for other reasons refused to be interviewed.

¹¹ Five high expenditure households had moved away from their villages since 1994. Interviews with village cadres and neighbours gave no suggestion that these households had moved in response to the effects of a major illness event. Information from these interviews has not been included in the analysis.

¹² The 1994 survey did not ask about borrowing from formal credit sources.

¹³ Given the context of rapid price inflation between 1993 and 1995, a contributing factor is likely to be differences in the prices of agricultural products used to impute the value of farm production. This possibility is supported by the observation that the average proportion of total household incomes derived from cash sources did not increase greatly between 1993 and 1995 (Table 4).

¹⁴ Yu *et al.* (1997) found that the proportion of individuals reporting that they had to remain in bed due to illness during the two weeks prior to the survey was twice that for rural China as reported in a Ministry of Health study.

¹⁵ The relative importance of and households' preferences between various methods of payment could be examined by calculating the average proportion of total medical fees met through each method. A ranking of the methods according to this average score could be interpreted as a revealed preference, indicating the outcome of households' consideration of the cash generated by each method and the perceived opportunity costs (see Devereux 1993). However, due to recall factors and the small sample size, this is not attempted here.

¹⁶ Two loans were 'written off' by relatives. See Section 5.1 below.

¹⁷ One low expenditure household was exempted ¥100 at the township health centre for treatment in 1995 which cost several thousand Yuan.

¹⁸ One household whose sole adult labourer had been ill each year since 1991 received one month's grain supply as social relief in 1996.

¹⁹ Her husband had died in 1988. This illustrates the importance of a longitudinal perspective in understanding households' responses.

²⁰ It may be that future income was foregone by reducing investment in the childrens' education.

²¹ Members of several households sought wage-labour in towns and cities, but no interviewee said that this was explicitly in response to the impact of an illness event.