

# **Household participation in formal and informal institutions in rural credit markets in developing countries: evidence from Nepal<sup>?</sup>**

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## I. Introduction

This note examines the structure of the credit market in Nepal, in particular the relative importance of formal and informal sources of credit. We use household data collected in 1995/96 as part of the Nepal Living Standards Survey, one of the World Bank's Living Standards Measurement Surveys, conducted under the aegis of the Central Bureau of Statistics of Nepal. While we focus on the rural credit market, the data also allows us to draw some comparisons with urban credit. The purpose of this largely descriptive analysis is to establish some basic 'stylized facts', and to examine whether some of the central hypotheses that undergird the literature on rural credit find some empirical support.

The choice of Nepal for this analysis is driven by several factors – for one, there exist remarkably few analyses of the Nepalese rural credit market. There is now a large literature on credit markets in various Asian countries - see, for example, two large-scale studies conducted by the Asian Development Bank (ADB), on informal finance by Ghate et al. (1992), and more recently, on rural financial markets, by Meyer and Nagarajan (2000)). However, neither of these studies examined Nepal, except in passing, and detailed information on credit markets, especially in rural Nepal, is difficult to find.<sup>1</sup>

What little is known about the informal sector in Nepal is usually based on anecdotal accounts or anthropological studies of particular indigenous financial institutions such as the *dhukuti* (on which more below). Hence, a second objective is to try to gain some sense of the quantitative importance of 'self-help' group-based financial institutions, whether indigenous or NGO-initiated, and the extent to which they are significant sources of rural credit. The availability of high-quality data in this survey, in the form of several detailed questions on credit activities, constitutes a third important factor. Fourth, given that Nepal is still a primarily rural society, with agriculture constituting the primary sector of the economy, both in terms of output and employment, questions regarding rural credit are particularly germane in this context. Finally, as Meyer and Nagarajan (2000, p. 102) point out, countries with poor communication and transport networks, such as Nepal, face special challenges in developing their rural financial markets.

The paper is organized as follows. We examine six major sets of issues in each of the next six sub-sections. After categorizing lenders as 'formal', 'informal' or 'other' (this last category to include indigenous financial institutions, self-help groups, etc.), we first try to get some sense of the main source of funds for Nepalese borrowers. Next, we consider a factor often cited as an important consideration in borrowers' decisions to use the informal sector, viz., proximity to the source of the loan. Sub-section 3 then considers the purpose of the loan – is it the case that 'personal' loans (as opposed to 'business' loans) are more likely to be financed by the informal sector? We find some evidence in support of that. Further, loans from the formal sector appear to be larger than those from the informal sector, a finding we report in sub-section 4. Next, we study the degree of

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<sup>1</sup> The set of countries studied by Ghate et al. (1992) included: India, Bangladesh, Thailand, Indonesia and the Philippines. The rural financial markets examined by Meyer and Nagarajan (2000) included: Bangladesh, India, the Kyrgyz Republic, China, Indonesia and Thailand.

‘segmentation’ in the credit market – is it the case that borrowers exclusively use one sector or the other, or are they simultaneously active in more than one sector? A large body of recent theoretical literature suggests a number of reasons why the latter might be the case, and our findings indicate that, in fact, Nepalese households are often borrowing simultaneously from both sectors. Finally, we check whether richer borrowers are more likely to be able to access the formal sector for credit. While the theoretical arguments for this are well understood, empirical verification still tends to be somewhat sparse, since many household credit surveys are unable to obtain detailed information about the household’s standard of living. Fortunately, the Living Standards Survey data we use allows us to construct household consumption aggregates to measure the standard of living of the households in our sample. Interestingly, while better off rural households do appear to be better able to access formal credit, a similar pattern is not apparent for urban households. Finally, section 3 concludes.

## **II. Rural credit in Nepal**

We begin by classifying the source of the credit into three categories. ‘Formal’ lenders include commercial banks and agricultural development banks. ‘Informal’ sources include moneylenders, landlords, shopkeepers, and friends and relatives, and ‘Other’ sources include Grameen-type banks, other financial institutions, local groups (such as *dhukuti*, a kind of community or group-based indigenous financial institutional akin to a rotating savings and credit association (ROSCA)<sup>2</sup>), NGO or relief agency, and other unspecified sources.

### **II.1 Source of loan**

How important is the informal sector as a source of credit? We examine this question by looking at the proportion of loans that were taken from informal sources rather than formal ones. By looking at the number of loans, rather than the total amounts borrowed, one can avoid the potential skewing of the data that might happen due to outliers in the size of the loans. Below, we also look at the size of the loans separately.

The findings are reported in Table 1 and in the corresponding Figure 1. Of the 2720 loans reported in the rural part of the data set, over 80% came from informal sources. Formal sources, among whom agricultural development banks are the major source, constitute only about 12% of loans. All other sources, and these include a number of sub-categories, constitute half of that, with local groups being negligible. Thus, rural Nepalese households appear to still be reliant upon predominantly informal sources for their credit needs. By way of contrast, the formal sector appears to be a little more important in urban areas. A chi-square test of independence offers some support for the hypothesis that the

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<sup>2</sup> See Besley, Coate and Loury (1993), Ardener and Burman (1995), and Bouman and Hospes (1994).

importance of each sector is not the same across rural and urban areas, albeit only at a 10 percent level of significance.<sup>3</sup>

A comparison with the evidence from a similar analysis done for Thailand, based on a 1984-85 survey of rural borrowers by Siamwalla et al (1990) is instructive. Siamwalla et al (1990) find that approximately 75 per cent of those active in the credit market used the informal sector, even after the rapid government-sponsored expansion of rural credit via the BAAC (Bank for Agriculture and Agricultural Cooperatives).<sup>4</sup> “[W]e draw the implication that mere injection of funds into the rural areas does not lower informal sector interest rates or drive informal lenders out of business..” (Siamwalla et al. (1990, p. 272). Thus, not only is the high share of informal credit in rural Nepal consistent with evidence from elsewhere in Asia, but in addition, there is unlikely to be a steep reduction in that share anytime soon.

**Table 1: Source of borrowing**

	<b>Urban</b>	<b>Rural</b>	<b>Total</b>
Formal	56	329	385
Informal	263	2218	2481
Other	25	173	198
<i>Total</i>	<i>344</i>	<i>2720</i>	<i>3064</i>
In percent of total			
Formal	16.3%	12.1%	
Informal	76.5%	81.5%	
Other	7.3%	6.4%	

Notes:

The chi-square test of independence yields a p-value of 0.0602.

< Insert figure 1 here >

## II.2 What does the informal sector offer?

It is often suggested in the literature on rural credit markets that the net cost of credit from informal sources is often lower than that from formal, once one takes into account the transactions costs (including greater ‘convenience’ and flexibility). This appears to be borne out in the data, summarized in table 2. The bulk of informal lending appears to be

<sup>3</sup> The test is for whether the source of borrowing is independent of the region of residence (rural or urban) of the borrower. The null hypothesis is that they are independent, hence a low p-value would lead us to reject the null. In this case, the null hypothesis cannot be rejected at a 5 percent level of significance, but if the looser standard of a 10 percent level is adopted, then the results of the test suggest that the source of borrowing is not independent of the type of location.

<sup>4</sup> For an extensive discussion of BAAC, see Yaron, Benjamin and Piprek (1997), who cite it as one of three examples of successful formal rural financial institutions.

done with lenders who are less than an hour away, in terms of physical distance. By contrast, the proportion of loans from formal lenders that are taken from lenders further away is higher for every distance above that.<sup>5</sup>

A chi-square test of independence found that, for rural borrowers, the type of the lender is not independent of distance to the lender, even at the 1% level of significance. Interestingly, a similar test of independence cannot be rejected for urban borrowers. This supports the idea that the transactions costs of borrowing (e.g., transportation costs) are likely to be more onerous when borrowers and lenders are geographically separated. In urban environments, by contrast, the higher population density suggests that distance, as a determinant of sectoral choice of loan source, is likely to be less important.

**Table 2: Distance to the lender**

	Urban				Rural			
	Formal	Informal	Other	Total	Formal	Informal	Other	Total
One hour or less	52	210	21	284	144	1662	135	1941
Two to three hours	0	18	2	20	107	256	26	389
Four to six hours	0	5	0	5	32	82	3	117
Seven hours to one day	1	6	0	7	2	38	2	42
More than one day	3	23	2	28	44	180	7	231
<i>Total</i>	56	262	25	344	329	2218	173	2720

Notes:

The chi-square test of independence yields a p-value of 0.4635 and 0.000 for urban and rural, respectively.

### II.3 Purpose of loan

What is borrowing from the informal sector used for? Are formal loans used to finance different projects than informal loans? Table 3 appears to indicate that this is indeed the case. We classify as ‘Business/Farm loans’ those loans for which the reported purpose of the loan was to finance purchases of animals, building, equipment, inputs, lands and other business, and as ‘Personal loans’ those loans that were used to finance consumption, purchases of durables, dwelling, or for marriage or other personal purposes. As table 3 indicates, there is a striking contrast in the kinds of activities financed by the two kinds of loans, with over two-thirds of formal loans being used for business or farm purposes, while over three-fourths of informal borrowing is for personal purposes, in both rural and urban areas. A chi-square test of the hypothesis that the source of loan is independent of the purpose of the loan is easily rejected, which offers confirmation of the findings above. Taken together with the data in table 1, this suggests that formal lenders may be ‘rationing’ their lending by limiting it to ‘productive’ purposes, rather than for

<sup>5</sup> Distances are measured in travel time, rather than in actual geographic distance, a reasonable approach in a country with poor transportation networks, and relatively rugged terrain.

consumption. For those latter types of loans, there appear to be few alternatives to the informal sector.<sup>6</sup>

**Table 3: Purpose of the loan**

	Urban				Rural			
	Formal	Informal	Other	Total	Formal	Informal	Other	Total
Business/Farm	37	64	12	113	234	417	90	741
Personal	19	198	14	231	95	1801	83	1979
<i>Total</i>	<i>56</i>	<i>262</i>	<i>26</i>	<i>344</i>	<i>329</i>	<i>2218</i>	<i>173</i>	<i>2720</i>
	<i>In percent of total</i>							
Business/Farm	66.1	24.4	46.2	32.8	71.1	18.8	52.0	27.2
Personal	33.9	75.6	53.8	67.2	28.9	81.2	48.0	72.8
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Notes:

Business/Farm loans include: animals, building, equipment, inputs, land, and other business loans.

Personal loans include: consumption, durables, dwelling, marriage, and other personal loans.

The chi-square test of independence yields a p-value of 0.0000 and 0.000 for urban and rural, respectively.

## II.4 Loan sizes from different sources

Table 1, above, examined the source of all loans. A related question is whether formal sector loans tend to be larger than those from informal sources. This would be consistent with the idea that the transactions costs of formal sector loans tend not to vary too much with the size of the loan, hence these costs are less prominent when spread over a relatively large loan.<sup>7</sup> Table 4 suggests that loan amounts from informal sources tend to be relatively small – for example, about 68% of rural informal loans were of Rs 5000 or less, and almost two-thirds of those were of amounts less than Rs 2500. The corresponding figure for rural formal loans was about 36%, and the bulk of those were of amounts between Rs 2500 and Rs 5000. This is not to say that there are no large loans from informal sources – in fact, 148 of 2218 informal loans (or about 6.7% of the total) are of amounts above Rs 20,000. Thus the figures in table 4 appear to support the usual presumption in the literature that the informal sector is far more effective at being able to finance small borrowers than is the formal sector. The chi-square test confirms this finding for both rural and urban areas, rejecting the hypothesis that the source of funding is independent of the size of the loan. A two-tailed t-test also suggests that formal sector

<sup>6</sup> While a policy of restricting formal loans (made by government-owned agricultural development banks, for example) to only ‘productive’ purposes might appear sensible at first blush, nevertheless the efficiency arguments for such a policy are unclear. First, the rigid restrictions on lending activities of agricultural development banks are at least partially responsible for the parlous state in which they are today (Seibel (2000)), and Nepal’s is no exception (Meyer and Nagarajan (2000), p. 62). Second, as Dasgupta (1993) argues, for the poor, “At the margin, consumption of basic needs amounts to investment.”

<sup>7</sup> For example, Braverman and Guasch (1989) suggest that the costs of filing and processing loan applications may be as high as 40 percent of the loan. For a general discussion, see the survey by Besley (1995).

loans are significantly larger than loans from informal or other sources, and there appears to be no significant difference in the size of loans from informal and other sources.

**Table 4: Loan source for different loan sizes**

	Urban				Rural			
	Formal	Informal	Other	Total	Formal	Informal	Other	Total
less than 2500	5	56	4	65	44	1011	61	1116
2501-5000	5	51	3	59	75	515	45	635
5001-7500	0	19	2	21	36	154	11	201
7501-10000	2	31	2	35	63	194	24	281
10001-12500	3	8	0	11	18	41	3	62
12501-15000	5	13	3	21	20	76	5	101
15001-17500	0	2	0	2	5	17	3	25
17501-20000	2	13	1	16	20	62	5	87
more than 20000	34	69	11	114	48	148	16	212
<i>Total</i>	<i>56</i>	<i>262</i>	<i>26</i>	<i>344</i>	<i>329</i>	<i>2218</i>	<i>173</i>	<i>2720</i>
<i>In percent of total</i>								
less than 2500	8.9	21.4	15.4	18.9	13.4	45.6	35.3	41.0
2501-5000	8.9	19.5	11.5	17.2	22.8	23.2	26.0	23.3
5001-7500	0.0	7.3	7.7	6.1	10.9	6.9	6.4	7.4
7501-10000	3.6	11.8	7.7	10.2	19.1	8.7	13.9	10.3
10001-12500	5.4	3.1	0.0	3.2	5.5	1.8	1.7	2.3
12501-15000	8.9	5.0	11.5	6.1	6.1	3.4	2.9	3.7
15001-17500	0.0	0.8	0.0	0.6	1.5	0.8	1.7	0.9
17501-20000	3.6	5.0	3.8	4.7	6.1	2.8	2.9	3.2
more than 20000	60.7	26.3	42.3	33.1	14.6	6.7	9.2	7.8
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Notes:

The chi-square test of independence yields a p-value of 0.0051 and 0.000 for urban and rural, respectively.

The two tailed test t-test of equality in means yields the following p-values: 0.0015 for formal and informal; 0.0059 for formal and other; and 0.5490 for informal and other.

## II.5 Are households active in more than one sector?

There is by now a considerable literature that examines the interaction of the informal and formal credit sectors. This interaction can take a number of different forms. For one, borrowers may be simultaneously active in both markets, either because they are unable to get all the credit they need from one sector alone, or because formal lenders might condition their lending on the borrower's obtaining co-financing from other (presumably informal) sources.<sup>8</sup> The interaction could also take the form of 'layered' credit, in which borrowers from the formal sector onlend informally to other borrowers.<sup>9</sup>

<sup>8</sup> For an example, based on a model of asymmetric information about borrowers' project quality, see Jain (1999).

<sup>9</sup> See, for example, the papers by Floro and Ray (1997) and Fuentes (1998).

Empirically, Kochar (1997) reports that 8% of the borrowers in her rural north Indian sample had loans from both formal and informal sources. Bell, Srinivasan and Udry (1998) report similar participation in both sectors in their study of the north Indian state of Punjab. Sinha and Matin (1998) find that participants in NGO-operated microcredit schemes in Bangladesh are often also active borrowers in the informal sector. Jain and Mansuri (2000) also report supportive evidence for this. Carpenter and Jensen (2000) find that it is not unusual for rural Pakistani households to have a bank account and simultaneously participate in informal roscas (called *bisis*).

The data from Nepal appear to support these recent findings from elsewhere, especially in the South Asian region. As table 5 reports, there appear to be numerous households, both urban and rural, who participate in the credit markets in both sectors. The upper half of each section of the table reports the number of households that took loans from formal, informal, and other sources.<sup>10</sup> As the lower half of the table indicates, about 8% of rural households were active in both the formal and informal sector, in addition to those that obtained loans from both informal and other sources.

**Table 5: Households active in more than one sector**

	Urban	Rural	Total
Formal	53	301	354
Informal	185	1456	1641
Other	23	150	173
From both formal and informal	15	136	151
From formal and other	1	7	8
From informal and other	4	59	63
From all three	0	10	10
Total number of households	241	1683	1924
<i>In percent of total number of households</i>			
Formal	22.0	17.9	
Informal	76.8	86.5	
Other	9.5	8.9	
From both formal and informal	6.2	8.1	
From formal and other	0.4	0.4	
From informal and other	1.7	3.5	
From all three	0.0	0.6	

While the current analysis does not permit us to conclusively establish which of the various models of interaction is the appropriate one in this context, it does suggest that the credit market, in both rural and urban Nepal, is not completely ‘segmented’ between formal and informal sectors.

<sup>10</sup> Some of these households were active in both sectors, hence their sum exceeds the total number of borrowing households.

## **II.6 Does the source of the loan vary with the borrowing household's income?**

Finally, an issue of policy importance is whether richer borrowers are able to access formal loans more easily than relatively poor borrowers, whose borrowing might be constrained, for example, by a lack of available collateral. While this is certainly likely to be the case for borrowing from commercial sources, it is also often argued that even lending from government-run development banks and agricultural banks tends to be skewed toward the relatively rich, especially when there are restrictions on the interest rates that banks can charge. For example, Braverman and Guasch (1989) argue that "...there seems to be a high correlation between credit recipients and size of land-holdings... The imposition of government interest rate restrictions (credit subsidies) has induced banks to ration credit in a manner that excludes the small farmers from formal credit markets. This is what Gonzalez-Vega (1977) has called the 'iron law of interest rate restrictions'."

The data in Table 6, and the chi-square test results reported therein, offer supportive evidence that rural households with higher per capita incomes are far more likely to be borrowing from the formal sector. Interestingly, a similar pattern is not as apparent for urban borrowers, and the high p-value of the chi-square test confirms this, although the small number of observations at higher incomes, and the generally higher share of the formal sector in urban loans, suggest a degree of caution in interpreting the findings. The hypothesis that there is a significant difference in the standard of living of borrowers from the formal sector on the one hand, and the informal or other lenders on the other, finds support in the results of the two-tailed t-tests reported in table 6. Informal and other sources of loans do not appear to differ significantly in their borrowers' standard of living, which echoes the findings in table 4 above.

**Table 6: Consumption per capita and source of borrowing**

	Urban				Rural			
	Formal	Informal	Other	Total	Formal	Informal	Other	Total
less than 2000	1	2	0	3	1	39	0	40
2,000-3,999	4	13	2	19	47	375	19	441
4,000-5,999	4	18	1	23	96	385	20	501
6,000-7,999	3	19	3	25	64	212	9	285
8,000-9,999	8	16	1	25	29	120	14	163
10,000-19,999	11	56	5	72	50	157	10	217
20,000-29,999	9	32	5	46	10	15	0	25
30,000-39,999	3	6	2	11	2	5	1	8
40,000-49,999	4	4	0	8	1	1	0	2
50,000-	5	4	0	9	1	0	0	1
<i>Total</i>	<i>52</i>	<i>170</i>	<i>19</i>	<i>241</i>	<i>301</i>	<i>1309</i>	<i>73</i>	<i>1683</i>
	<i>In percent of row total</i>							
less than 2000	33.3	66.7	0.0	100.0	2.5	97.5	0.0	100.0
2,000-3,999	21.1	68.4	10.5	100.0	10.7	85.0	4.3	100.0
4,000-5,999	17.4	78.3	4.3	100.0	19.2	76.8	4.0	100.0
6,000-7,999	12.0	76.0	12.0	100.0	22.5	74.4	3.2	100.0
8,000-9,999	32.0	64.0	4.0	100.0	17.8	73.6	8.6	100.0
10,000-19,999	15.3	77.8	6.9	100.0	23.0	72.4	4.6	100.0
20,000-29,999	19.6	69.6	10.9	100.0	40.0	60.0	0.0	100.0
30,000-39,999	27.3	54.5	18.2	100.0	25.0	62.5	12.5	100.0
40,000-49,999	50.0	50.0	0.0	100.0	50.0	50.0	0.0	100.0
50,000-	55.6	44.4	0.0	100.0	100.0	0.0	0.0	100.0

Notes:

The chi-square test of independence yields a p-value of 0.3299 and 0.000 for urban and rural, respectively.

The two tailed test t-test of equality in means yields the following p-values: 0.0000 for formal and informal; 0.0414 for formal and other; and 0.1023 for informal and other.

### III. Conclusions

This note finds some confirmatory support for a number of hypotheses that have been thrown up in the literature on rural credit markets. We believe that even the simple analysis offered here is helpful in establishing a body of stylized facts that contribute to our understanding of rural credit markets around the world.

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**Figure 1**

