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The role of subsidies in microfinance: evidence from the Grameen Bank

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Abstract

The Grameen Bank of Bangladesh has been in the vanguard of the microfinance movement, showing the potential to alleviate poverty by providing credit to poor households. Part of this success has been built on subsidies. In 1996, for example, total subsidies evaluated at the economic opportunity cost of capital amounted to about US$26–30 million. The evidence helps to explain why institutions like Grameen have not just sprung up on their own as private commercial ventures, and it underscores the value of openly addressing the costs and benefits of subsidization. The paper also describes recent difficulties in maintaining high repayment rates. © 1999 Elsevier Science B.V. All rights reserved.

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1. Introduction

The Grameen Bank of Bangladesh has triumphed against long odds to help spark an international movement that heralds new approaches to poverty alleviation. The movement emphasizes market-based institutions that provide credit to poor households to generate new opportunities through self-employment. Until recently, Grameen has reported repayment rates of 98% and modest profits while serving over two million functionally landless borrowers. Particular attention has

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been paid to Grameen's pioneering use of group-lending contracts with joint liability, a mechanism that reduces problems of moral hazard and adverse selection where households are too poor to offer collateral. Given these apparent institutional successes, why have private commercial banks not followed Grameen's example and widely created similar programs for poor borrowers? Why have replicators required extensive donor support?

Much of the answer lies in a close examination of Grameen's financial performance. Despite reporting profits, Grameen is in fact subsidized on a continuing basis. Despite reporting very high repayment rates, performance has been uneven, with weaknesses only starting to come into public view. Optimism about the bank's performance over time has reduced the urgency to bring the tensions to the foreground, and, as a result, a serious conversation on the costs and benefits of subsidization has hardly started.

That conversation would have to begin with recognition of the myriad benefits that have been attributed to program participation. Grameen has been credited with addressing structural determinants of poverty, the economic and social status of women, and sources of vulnerability in ways that have eluded other approaches (e.g., Fugelsang and Chandler, 1993; Hashemi and Schuler, 1997). Non-governmental organizations on four continents have now replicated Grameen's model with hopes of spreading the vision.

The other side of the conversation begins with financial data showing the continuing challenge of pursuing this mission while containing costs. The results below show that effective subsidies sum to about US$175 million between 1985 and 1996. While the bank has made great financial progress in 15 years since its founding (membership expanded 12 times between 1985 and 1996), the bank remains constrained by high expenses per unit transacted and relies on the generosity of donors and socially conscious investors. Grameen is not alone in being substantially subsidized: the most careful and comprehensive recent survey shows that the microfinance programs that target the poorest borrowers generate revenues sufficient to cover just 70% of their full costs (MicroBanking Bulletin, 1998). [1]

While the average subsidy as a fraction of the loan portfolio fell from over 20% in the mid-1980s to 7% by 1994, the downward trend reversed itself in 1995 and

[1] The relevant groups are those whose clients maintain average loan balances under US$150 or loans as a percentage of GNP per capita under 20%; they include, for example, village banks like FINCA programs and exclude programs like BancoSol and the Bank Rakyat Indonesia *unit desa* system. The figures are after adjustments to account for subsidies on capital costs, the erosion of the value of equity due to inflation, and adequate provisioning for non-recoverable loans. As best possible, the figures are comparable to data for standard commercial enterprises. The included programs all have a ''commitment'' to achieving financial sustainability and voluntarily submitted the financial information, so they are already a self-selected group. Some of the programs are young and their financial performance will likely improve over time.

1996, with the subsidy rate increasing to 9% of the portfolio. There is little to indicate that Grameen will be able to survive in the medium-term without subsidies while continuing to serve clients as it does now. The question then is: would the world be better off without Grameen? What are the trade-offs between subsidies and social impacts?

The objective of this study is not to argue that the bank should necessarily transform itself into a commercial bank that operates free of subsidies. Instead, the narrow focus on costs and subsidies provides a context with which to view the growing microfinance literature that asserts (with limited evidence) the ''win–win'' possibility of poverty alleviation with full cost recovery. While cost–benefit analysis is beyond the scope of this paper, the conceptual bases of such an analysis are described in Section 5.

The analysis builds on earlier studies, beginning with Hossain (1988). Yaron (1994), for example, gives evidence of Grameen's subsidy dependence in 1987 and 1989, and the analyses of Khandker et al. (1995), Hashemi and Schuler (1997), and Schreiner (1997) run through 1994. The present study extends the analysis through 1996 and gives comparisons in constant dollars as well as current taka, providing evidence on the bank after a period of rapid membership growth. The base data are taken from Grameen's annual reports, but figures are adjusted to enhance comparability with accounts of typical commercial banks.

2. Repayment rates

For many, the most impressive of Grameen's achievements has been to show that, despite not requiring collateral, the vast majority of their poor clients repay loans on time. Until 1995, Grameen reported repayment rates around 98%. Both theoretical and policy discussions have focused on the joint-liability contract as the key to this success, but it is only one of several aspects that distinguish Grameen's operations from that of typical formal sector banks. Complementary mechanisms include innovative features like weekly repayment schedules, progressive increases in loan sizes, and a focus on female clients (Armendariz de Aghion and Morduch, 1998; Rutherford, 1998).

The definition of repayment rate varies widely over microfinance institutions, however, and Grameen's definition is not standard (Christen, 1997). Grameen's annual reports (Grameen Bank, 1985–1996) give two measures. The first measure is the amount not repaid for more than a year as a fraction of the amount *currently* outstanding (but not due yet). For example, consider a hypothetical US$1 million lent to Grameen borrowers in January 1992 and due in January 1993. By January 1994, it is determined that US$100,000 of the original principal has not been recovered. The Grameen calculation then divides the overdue US$100,000 by the amount of loans outstanding in 1994, not 1992. The second measure follows the same principle but applies to loans overdue more than 2 years.

While having the advantage of simplicity, the calculation method turns out to obscure evidence on repayment difficulties when the scale of lending increases steadily over time (von Pischke, 1991). In the example above, if the amount of loans outstanding in January 1992 is the same as that in January 1994, the rate of overdue loans (by more than 1 year) will be 10%. But if 10% of loans are always not recovered and portfolio size grows rapidly, the denominator of the ratio will increase and the overall ratio will fall below 10% (although 10% of the portfolio remains in default). If growing at 40% per year, for example, the volume of loans nearly doubles every 2 years, so after 3 years of 40% growth per year the reported rate overdue would be about 5.1%, masking nearly half of the problem loans.

This appears to be what has happened. The third and fourth columns of Table 1 show that loans outstanding increased substantially over the period, from 225.3 million taka in 1985 to nearly 10.5 billion taka in 1997, implying an annual average growth rate of 32% (and 40% between 1985 and 1994). Fig. 1 shows that average loan balances per member were increasing even faster than the number of members.

The recalculations in Table 1 attempt to get closer to standard accounting principles by calculating the portion of the portfolio that was delinquent in retrospect. That is, overdues are calculated using the amount of loans outstanding at the time of disbursement as the denominator. [2] The first two columns of Table 1 show the numbers on which Grameen's reports are based. Between 1985 and 1994, reported overdues beyond 1 year averaged 1.57% of the portfolio of general loans, the main loan category. Overdues beyond 2 years averaged 1.12%.

The recalculations show that instead repayments averaged 92–95% for loans made between 1985 and 1994, with a slight worsening trend. These are seen in the final two columns of Table 1. The (weighted) average overdue more than 1 year is 7.76% and that overdue more than 2 years is 5.87%. [3] These average rates remain impressively low, especially relative to subsidized public credit programs of the past. From a social perspective, the overdues could be acceptable, particularly given the risks faced by Grameen's clients.

[2] The adjustments are best thought of as upper bounds on the effective quality of the portfolio. It is not uncommon to hear about bank staff who roll over loans in order to keep their repayment numbers up and give struggling borrowers breathing room. One branch manager in Tangail told me that he ''re-schedules'' about 5% of his portfolio by extending seasonal loans to struggling borrowers. Rahman (1998) ethnography from a village in Tangail also documents this tendency, but system-wide data on the extent of rolled over loans are of course not available. A similar issue is raised by official suspensions of payments due to regional difficulties (e.g., cyclone damage). Data on the timing and extent of suspensions is not publicly available and no adjustments could be made here to enhance transparency.

[3] The overdues reported by Grameen pertain just to general and collective loans. General loans are the standard loan category. Collective loans are much less frequent and are made for joint undertakings. Grameen has also introduced seasonal loans, housing loans, and a number of other more specialized instruments. The averages are weighted by nominal loans outstanding at the end of each year. The recalculations use the fact that these loans are all 1 year in length.

Table 1
Reported repayment rates on general and collective loans as of December 31, 1985–1997
Source: Various Grameen Bank annual reports. Averages are weighted by loans outstanding. Final two columns and bottom row calculated by author.

Year	Reported percent overdue (as a fraction of loans currently outstanding)		Loans outstanding (disbursements less repayments)		Percent of current loans outstanding that were not repaid on time	
	Overdue 1 year or more	Overdue 2 years or more	Level, in million taka	Increase over previous year (%)	Not repaid after more than 1 year	Not repaid after more than 2 years
1985	2.78	0.70	225.3	–	3.78	4.66
1986	2.87	1.25	301.2	33.7	3.84	3.97
1987	1.86	1.72	457.4	51.8	3.97	3.44
1988	1.60	1.45	723.6	58.2	5.76	4.78
1989	1.82	1.20	996.6	37.7	7.51	5.82
1990	3.28	1.24	1270.5	27.5	6.19	4.81
1991	4.72	2.18	1585.1	24.8	3.19	3.14
1992	2.48	1.83	3168.6	99.9	1.89	1.87
1993	0.82	0.99	6167.0	94.6	3.86	5.25
1994	0.76	0.63	7893.4	28.0	15.02	9.03
1995	2.89	0.72	8239.1	4.4	11.99	–
1996	13.85	3.78	8560.4	3.9	–	–
1997	9.45	6.82	10450.7	22.28	–	–
Weighted average, 1985–1994	1.57%	1.12%	–	40%	7.76%	5.87%

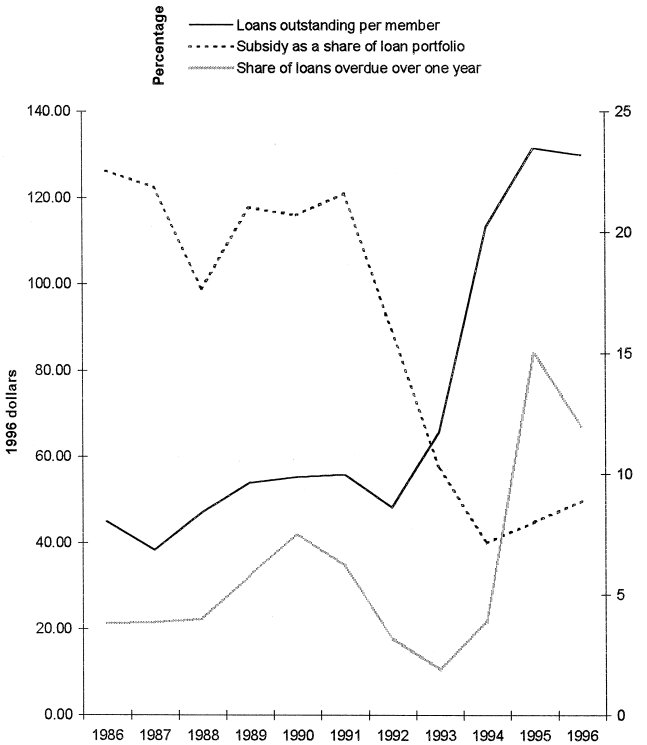

Fig. 1. Scale, subsidy, and overdues.

From the perspective of full financial sustainability, however, seemingly small increases in default rates can easily send programs into the red when profit margins are modest. For example, a default rate of 5% leads to direct losses equal to 21.4% of total expenditures. An extra 2% of loans outstanding would lead to additional losses equal to 8.6% of total expenditures.

Repayment problems have worsened in recent years. In the 3 years between the end of 1991 and end of 1994, loans outstanding increased four-fold. Reported overdues in 1994 are correspondingly muted: 0.76% greater than 1 year overdue and 0.63% overdue greater than 2 years. But the adjusted figures reveal a weaker performance: 15% of the loans outstanding in 1994 remained overdue 1 year after the contract date. [4] One more year later, 9% still remained unpaid. By 1997, it also became clear that 12% of the loans outstanding in 1995 also remained overdue 1 year after the contract date.

[4] The number is calculated by taking the 1996 overdue rate of 13.85% and multiplying it by the 1996 portfolio size of 8560.4 million taka. Dividing by the 1994 portfolio size, 7893.4 million taka, yields the adjusted rate.

Interviews with staff at the bank suggest that the rapid increases in disbursements helped to weaken the average quality of the portfolio. Table 1 shows that the current value of general and collective loans outstanding doubled in 1992 — and very nearly doubled again in 1993. The sharply upward trend is also shown in Fig. 1 (in constant dollars). Pushing to achieve a large scale can help to reduce average costs if there are sufficient scale economies, but it can also jeopardize performance if done too fast. The figure shows that subsidies per 100 units outstanding have fallen impressively from 22–23% in 1986–1987 to 7% in 1994, but the rate leveled at about 8 per 100 units in 1993–1996, with no indication of further progress toward zero. At the same time, the increase was also associated with a weakening in portfolio quality: increasing rates of overdue loans tend to follow increasing average loan sizes. [5] These data do not nail down the causal relationship, but they are suggestive and match the views of Grameen staff that I interviewed.

Other factors contributing to the weakening portfolio include sharply falling inflation, which pushed the real rate on borrowing up from about 5.5% before fees are added in to 20% in 1993 and 15.8% in 1994. Political upheaval can also explain some of the timing and location of the trouble. Dhaka and Tangail regions were particularly disturbed by political disruptions surrounding the parliamentary elections announced in 1994 and held in June 1996. This is an explanation highlighted in Grameen's annual reports, but some officials within the bank see the role partly as a catalyst, not an isolated cause (Syed Hashemi, interview, Dhaka, June 1997).

3. Profits and subsidies

Almost every year since its inception, Grameen has posted a profit. The exception was 1991–1992 when the bank was hit with an unexpected salary increase connected to an increase in government pay scales. Grameen accounts are monitored and completed by certified public accountants, but they do not conform strictly to international accounting standards and there is often just a loose justification for why some expenditure categories are above or below the line (i.e., why some disbursements are treated as expenses before profit is calculated, while others are treated as allocations after profit is calculated).

When Grameen's accounts are followed over time, a clear pattern emerges: categories and expenses are moved around to ensure that Grameen posts a modest

[5] The village studies of Matin (1997) offer a complementary perspective from the ground. The problems that emerge after 1993 are echoed by Martin's study of 254 households in four villages in Madhupur district in the Tangail region between 1994 and 1996. His emphasis is on problems faced by staff with limited time and growing responsibilities. A result is that average repayment rates fell in his study area from 89% in 1993 to 41% in 1996, with the largest fall occurring in 1994–1995 (from 82% to 49%).

profit. Most notably, loan loss provisions are made only to the extent that the bank can still report positive profits, putting it at least US$25 million behind on provisioning between 1985 and 1996. Doing so is at odds with standard accounting practices for commercial banks, but the delay has allowed the bank to funnel surpluses into the expansion of operations, and the bank has been catching up in recent years. While the action is understandable, it diminishes the transparency of accounts.

More fundamentally, it is not clear what ''profit'' really means when a large fraction of inputs are subsidized. Table 2 gives income statements for 1985–1996. The bottom row shows that reported profits sum to US$1.5 million over the period, US$1.3 million of which arose in 1991–1996. But direct grants are counted as income, and the value of soft loans is not fully reckoned (Khandker et al., 1995). Profits are then just an accounting notion; they have little meaning without a close look at subsidies. [6]

Table 2 shows adjustments to profits for under-provisioning of loan losses. Grameen has been slow to write off non-performing loans and slow to make provisions for expected losses. On average, the bank made provisions at the rate of 2.2% of loans outstanding over the period 1985–1996, but most of the reserve was accumulated between 1994 and 1996, a period of relatively high surpluses. Provisions on housing loans did not begin until 1993, and provisions on general and collective loans averaged about 1% through 1993. By 1996, total reserves for loan losses amounted to over 10% of the loan portfolio, but the reserve would have been far lower had bad loans been written off in a timely fashion. Instead, Grameen wrote off general and collective loans at an average rate of just 0.1% of the portfolio — and wrote off no housing loans.

If instead, Grameen had created a loss reserve equal to a modest 3.5% of loans outstanding each year, it would have had to have put aside US$49.4 million between 1985 and 1996, rather than the US$22.9 million that it did put aside (an average US$1.9 million per year between 1985 and 1996). The result would have been continual losses. The losses sum up to US$17.8 million between 1985 and 1996 — and sum up to nearly US$12.6 million in 1991–1996 alone. [7]

This measure of profits includes income from direct grants. Grameen received US$16.4 million of grants between 1985 and 1996, with US$12.2 million arriving

[6] Much of this section builds on conversations with chartered accountants in Dhaka and with Muzammel Huq, General Manager of Monitoring and Evaluation, and M. Shajahan, Chief, Central Accounts Department, Grameen Bank (June 1997).

[7] Provisioning for and writing off 3.5% of loans outstanding each year allows for the possibility that 30% of the loans overdue longer than 2 years will be eventually collected (assuming that, 5% of debts remain unpaid after 2 years). If, instead, it is assumed that few of the overdue loans will ever be collected, implying the necessity for a 5% provision, the bank would have had to incur losses of nearly US$39 million.

Table 2
Revised profits and loan loss provisions, 1985–1996, millions of taka
Source: Various Grameen Bank annual reports and calculations by author. Yearly data are in millions of current taka. The final column is the weighted average in millions of 1996 US dollars (profit data are sums), or, where in percentage form, the average weighted by the loan portfolio. The revised net profit figures replace actual loan loss provisions with provisions at rates of 5% and 3.5%.

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1985–1996 (US$)
General and collective loans													
Outstanding portfolio, December	225.3	301.2	456.7	724.2	992.7	1266.9	1584.2	3113.2	6159.7	7854.7	8184.2	8546.7	86.8
Net loan loss taken	0.6	0.0	0.0	2.1	4.4	6.1	3.3	3.9	7.3	10.0	7.5	6.4	0.1
Loan loss provision	0.6	0.0	2.4	10.2	5.8	9.9	13.0	38.7	45.2	191.5	316.7	271.6	1.9
Reserve for losses, December	0.0	0.0	2.4	10.5	11.9	15.7	25.4	60.2	98.1	279.6	588.7	853.9	4.0
Portfolio less reserve, December	225.3	301.2	454.3	713.7	980.7	1251.2	1558.8	3052.9	6061.6	7575.1	7595.1	7692.8	82.8
Net loan loss taken (%)	0.3	0.0	0.0	0.3	0.4	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1%
Loan loss provision (%)	0.3	0.0	0.5	1.4	0.6	0.8	0.8	1.2	0.7	2.4	3.7	3.1	2.2%
Housing loans													
Outstanding portfolio, December	0.0	0.0	154.5	289.9	460.7	588.7	788.5	1162.7	2572.4	3376.2	3485.4	3147.3	35.0
Net loan loss taken	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loan loss provision	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	133.6	35.7	9.5	0.6
Reserve for losses, December	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	233.6	269.2	278.7	1.8
Portfolio less reserve, December	0.0	0.0	154.5	289.9	460.7	588.7	788.5	1162.7	2472.4	3142.6	3216.2	2868.5	33.2
Net loan loss taken (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Loan loss provision (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	4.1	1.1	0.3	1.8%
Revised provisions													
Portfolio if 5% write-off	225	290	597	984	1404	1785	2273	4162	8524	10,805	11,129	11,138	117.7
5% loan loss provision	11	15	30	49	70	89	114	208	426	540	557	557	5.9
Portfolio if 3.5% write-off	225	293	601	993	1419	1806	2299	4195	8585	10,930	10,848	11,290	117.3
3.5% loan loss provision	8	10	21	35	50	63	80	147	300	383	380	395	4.1
Reported net profit	0.4	0.4	0.4	1.2	2.3	3.1	−8.3	−5.7	9.6	21.7	15.0	19.1	1.5
Revised net profit, 5%	−10.3	−14.1	−27.0	−37.8	−62.1	−76.3	−109.0	−175.0	−271.5	−193.5	−189.1	−256.7	−38.7
Revised net profit, 3.5%	−6.9	−9.9	−18.2	−23.4	−41.6	−50.2	−75.8	−113.8	−145.8	−35.8	−12.4	−95.2	−17.8

in the final 6 years (middle of Table 3). The grants help to pay for Grameen's training programs, research and development, and programs of particular interest to donors. If direct grants are further subtracted from profits, the losses would sum up to US$34.2 million between 1985 and 1996. Christen et al. (1994) and Khandker et al. (1995) calculate that Grameen was operationally self-sufficient by 1993, but the evidence here shows that the bank is short of covering its operating costs in any year.

In order to assess how Grameen would fare if forced to obtain capital at ''market'' rates, it is necessary to value implicit subsidies through soft loans (Yaron, 1992). Valuing the implicit subsidies requires first estimating the capital costs that Grameen would incur without loans on concessional terms. [8] The exact sense in which the funds are considered to be subsidized is particular to the present exercise. The calculations here are consistent with the narrow aim of shedding light on a specific hypothetical scenario privileged by advocates of microfinance ''best practices'': how would a bank like Grameen fare in a world without subsidies and where the only available funding reflected the economic opportunity cost of capital?

Estimating the economic opportunity cost of funds is tricky since Bangladesh's capital market is rife with intervention. Following the advice of accountants in Dhaka, I use a benchmark rate between those of Khandker et al. (1995) and Hashemi and Schuler (1997). Like Hashemi and Schuler, I begin with the Bangladesh Bank deposit rate and add 3% for transactions costs (data are from International Monetary Fund, 1997). The 3% adjustment is modest given that through much of the period the spread between deposit and lending rates was 4% (International Monetary Fund, 1997). [9]

[8] I assume that Grameen would maintain the same volume of borrowing if interest rates were raised. In practice, the bank would likely adjust to depend less on borrowing and, possibly, more on deposit mobilization. Accounting for subsidies while holding all else constant thus overestimates Grameen's burden were it to push for immediate self-financing.

[9] The 3% adjustment here can be seen as a reflection of transactions costs, as well as the value of implicit subsidies via government guarantees on bonds and exemptions from taxes and reserve requirements. The guarantees and exemptions would be lifted if the bank was to operate as a standard commercial entity. See Benjamin (1994) on ways of calculating market rates. The benchmark rate here is a market opportunity cost, not a social opportunity cost. Hashemi and Schuler (1997) in contrast derive their benchmark as 3% plus the maximum of the rate Grameen pays its own depositors (8.5%) and the deposit rate reported in International Monetary Fund (1997). Instead, I allow the rate to fall so as not to penalize Grameen for paying generous interest rates to their depositors. Khandker et al. (1995) instead use the rate on 3-year deposits, and they make no transaction cost adjustment. Their rate takes a sharp plunge to 6% in 1994 as a result of liquidity troubles and broader distortions in the banking system. That rate is thus too low to serve as a meaningful benchmark capital cost. It can be noted that during this period, the general public could get interest rates of 13% per year on post office time deposits, a figure in line with my choice of benchmark interest rate (Stuart Rutherford, personal communication, November 1998).

Table 3
Break-even interest rates and subsidy dependence, 1985–1996
Source: Various Grameen Bank annual reports and calculations by author. Yearly data are in millions of current taka. The final column gives averages in millions of 1996 US dollars, except for the subsidy data, which are sums. Fixed assets are net of depreciation. Implied rates of interest on loans are based on the SDI calculated with the 3.5% loan loss provision.

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1985–1996 (US$)
Average loan portfolio	212	288	486	856	1356	1929	2233	3295	6539	9866	11,115	11,065	108
Interest income	36	44	65	113	162	214	316	522	1056	1646	1976	1756	17
Average nominal lending rate	16.8	15.2	13.4	13.2	11.9	11.1	14.1	15.8	16.1	16.7	17.8	15.9	15.9%
Average real lending rate	5.9	4.3	3.8	3.8	2.0	3.0	6.9	11.6	16.1	13.1	12.0	10.1	10.1%
Direct subsidy via grants	0	0	0	0	60	76	73	62	87	76	83	86	16.4
Implicit subsidy via loans	23	64	105	139	191	233	244	215	285	345	504	529	80.5
Implicit subsidy on equity	0	1	1	12	35	91	165	249	295	284	304	367	47.3
Total subsidy to bank	23	65	106	151	285	399	482	526	668	705	891	982	144.2
Subsidy per 100 taka outstanding	11	23	22	18	21	21	22	16	10	7	8	9	11%
SDI (with 5% provision)	89	179	167	146	243	279	207	116	75	54	59	75	83%
SDI (with 3.5% provision)	80	168	155	133	228	263	194	106	65	45	51	65	74%
Zero profit Interest rates implied by SDI (with 3.5% provision)													
Nominal rate on all loans (%)	30.2	40.8	34.1	30.7	39.2	40.2	41.6	32.6	26.6	24.2	26.9	26.2	25.7%
Nominal rate on general loans (%)	28.8	42.8	40.8	37.4	52.5	58.0	58.9	41.1	33.0	29.0	30.2	33.0	31.8%
Real rate on general loans (%)	17.9	31.9	31.2	28.0	42.5	49.9	51.7	36.8	33.0	25.4	24.4	30.3	28.0%

Grameen gets its funding from many sources, and the main contributors have shifted over time. In the beginning, donor agencies provided the bulk of capital at very cheap rates. In the mid-1990s, Grameen got most of its funding from the Bangladesh Bank, the central bank, with some marginal funding coming from money markets. More recently, Grameen has sought financing through bond sales.

The Bangladesh Bank rate is not explicitly concessional for Grameen specifically. However, the money is rationed. Grameen's high profile and social mission, though, guaranteed it a source of funding at an attractive rate (about 5–5.5%). As shown in Table 4, the 1993–1995 rate is lower than the official deposit rate (about 6–8%) and much lower than the lending rate available elsewhere in the market (14–15%). Using a benchmark cost of capital of the deposit rate plus 3% yields that the Bangladesh Bank had been offering Grameen about a 40% discount on interest.

In recent years, Grameen has made a major shift to financing via bonds, and these too are subsidized in the sense used here. The rates on the bonds are 4% for 3-year bonds, 5% for 5-year bonds, and 6% for 10-year bonds (the bonds carry an additional implicit subsidy in being guaranteed by the Bangladesh government). [10] These rates are, if anything, more favorable for Grameen than the Bangladesh Bank lending rate, and the bonds have been sold to nationalized banks within Bangladesh. [11] Assuming an average cost of 5% on bonds and a rate of 9% in alternative safe investments, Bangladeshi nationalized banks (or the government through its guarantee) implicitly subsidized Grameen in the amount of 258 million taka (US$6.4 million) in 1994–1995 — about US$3.10 for each of Grameen's two million members.

The remaining funds are derived from an array of sources including the International Fund for Agricultural Development (IFAD); the governments of Norway, Sweden, and the Netherlands; and the Ford Foundation. The cost of those loans vary from zero to 3% and, except for the Ford Foundation loan, are payable in taka. (No adjustment is made for the way that Grameen is thus insulated from foreign exchange risk.) Table 4 gives trends over time, and, overall, the (weighted) average interest rate paid by Grameen between 1985 and 1996 was 3.8%. [12] The

[10] Data is taken from Muhammad Yunus' comments in Khandker et al. (1996), p. 366. The Grameen Bank annual report for 1996 puts the cost of bonds at 4%.

[11] According to Khandker (1998) (p. 108): ''When Grameen Bank issued bonds in 1995 to generate market resources at the market interest rate, it had difficulty mobilizing market resources. In that year, all nationalized commercial banks had tremendous liquidity and were eager to buy Grameen bonds, but with the government's guarantee. The government had to step in, and Grameen Bank was rescued for its shortage of liquidity in that year.''

[12] The average rate is calculated as the expense on borrowing (less contributions to the Social Advancement Fund) divided by the December to December average of total borrowings, weighted by the amount borrowed (in 1996 taka), If SAF contributions are not subtracted, the average rate is 4.8%.

Table 4
Nominal interest rates (%)
Source: Bangladesh financial statistics are from International Monetary Fund (1997). The inflation rate and exchange rate correspond to December of each year. The benchmark alternative cost of capital is the deposit rate plus 3%.

	Bangladesh Bank deposit rate	Economic opportunity cost of capital	Grameen Bank: average cost of funds to re-lend	Grameen Bank: average interest rate charged borrowers	Inflation rate	Exchange rate (taka per US$)
1985	12.00	15.00	7.9	16.8	10.86	28.00
1986	12.00	15.00	4.0	15.2	10.90	30.41
1987	12.00	15.00	3.1	13.4	9.54	30.95
1988	12.00	15.00	2.3	13.2	9.36	31.73
1989	12.00	15.00	2.3	11.9	9.99	32.27
1990	–	15.00	2.2	11.1	8.11	34.57
1991	12.05	15.05	2.1	14.1	7.20	36.60
1992	10.47	13.47	2.1	15.8	4.29	38.95
1993	8.18	11.18	3.4	16.1	0.00	39.57
1994	6.40	9.40	5.5	16.7	3.58	40.21
1995	6.04	9.04	3.9	17.8	5.79	40.28
1996	7.28	10.28	3.4	15.9	2.69	41.79

real rate was negative at −1.8%. The nominal rate rose to 4% during 1991–1996, making the real rate −0.6% during the most recent period.

When loans received by Grameen are converted into year-long units, the sum of units borrowed from all sources amounts to US$1.23 billion between 1985 and 1996 (in 1996 US dollars). Assuming that Grameen would have paid an average interest rate of 3.8% per year instead of 11.3%, the implicit subsidy amounts to US$80.5 million between 1985 and 1996 (middle of Table 3). As argued throughout, there is nothing in principle wrong with using these subsidies. On the contrary, Grameen would have sacrificed part of its social achievement by turning down the subsidized loans (Khandker, 1998). Highlighting their opportunity costs, though, enhances the transparency of Grameen's accounts and helps put its performance into context.

A similar exercise can be completed with respect to the bank's equity. Formally, every member of the Grameen Bank pays a one-time fee of 100 taka (about US$2.50) for an equity share in the bank, but these equity shares can be thought of as initiation fees, rather than as subsidized equity per se. Like other fees, they present a simple way for Grameen to raise capital from its clients (who typically see equity payments as one-time transactions costs).

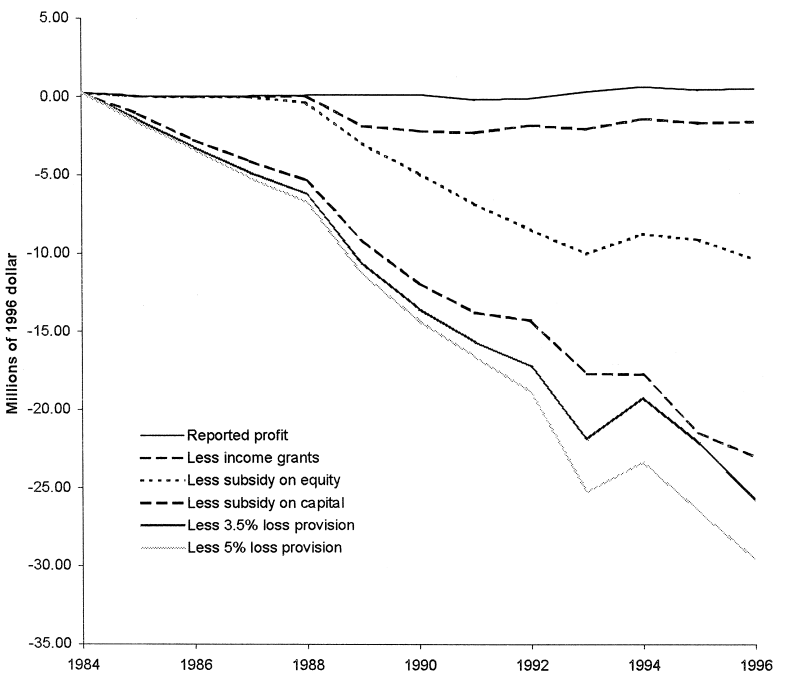

Fig. 2. Reported profit and adjusted profit.

The bulk of ''subsidized'' equity comes from retained earnings and other funds that were built up with proceeds from soft funds. There is an implicit subsidy associated with the funds since the bank offers sub-market returns yet relies on continued access to these amounts. The funds can be treated like zero-interest loans, and the implicit subsidy for 1985–1996 sums to US$47.3 million. [13]

Fig. 2 summarizes the evidence above on profits and losses. The nearly horizontal line close to zero gives Grameen's reported profits. The next line down subtracts direct grants, and the line below that gives profits also net of the implicit subsidy on equity. The steep broken line below that gives profit net of subsidies on capital as well. The figure shows that the subsidy is relatively large, but it has increased less than the rate of increase of the loan portfolio. The bottom two lines give profits with additional adjustments for setting aside provisions for loan losses (at rates of 3% and 5% of loans outstanding per year). The figure shows that by the mid-1990s, the definition of profit based on prices reflecting full economic opportunity costs yielded losses around US$26–30 million per year.

4. Average interest rates and ''break-even'' rates

The full subsidy above amounts to around US$15 per member per year, an amount that may seem modest relative to the scale of Grameen's activities. Put another way, gross national product per capita in 1996 was US$342, and if typical Grameen borrowers are at half that level, the subsidy is 2% of annual income for a household of five. The trend in microfinance policy discussions, though, has been to take a hard line for full cost recovery, and this section considers what that would mean for the bank and its clients. The Grameen Bank has two ways to approach full self-sufficiency: to lower costs or to increase revenues. Staff argue that further cost reductions will be hard to squeeze out, especially given that salary costs are kept high by the commitment to paying staff according to government salary schedules, a restriction not felt, for example, by Grameen's (friendly) microfinance competitor, the Association for Social Advancement (ASA).

Assuming that costs are already minimized to the extent possible, attention turns naturally to increasing interest rates. Grameen currently charges borrowers 20% per year for a general loan, up from 16% before 1991. Housing loans cost 8% per year (up from 5% before 1991). The rate is calculated on the ''declining balance''; i.e., it takes into account that the loan is being steadily repaid over the year in weekly installments. As a result, the amount of interest recovered by

[13] Calculation of the implicit subsidy for 1996 includes a subsidy associated with 3471.8 million taka transferred to Grameen Kalyan from revolving funds on December 31, 1996. Grameen Kalyan is a part of the Grameen family that invests in a range of enterprises and activities related to the welfare of Grameen staff and clients.

Grameen for a given 1000 taka loan is roughly equivalent to a flat rate of 20% on 500 taka paid back in full 1 year later, not on the full 1000 taka. [14]

A series of other charges are levied on top of the direct interest charges, and it is thus helpful to consider average interest rates paid by borrowers, inclusive of fees. The third row of Table 3 gives the full series of average on-lending rates. The nominal rates average 15.9% between 1985 and 1996, while real rates average 10.1%. There has been much more variation in the real rates than the nominal rates (Yaron et al., 1997). The former fluctuate between 11.1% in 1990 and 17.8% in 1995. The latter vary between 2% in 1989 and 16.1% in 1993.

How much higher would the on-lending rates need to be in order for the bank to operate without subsidies? The break-even interest rate r^* solves the equation:

$$L(1+r^*)(1-d)+I=L+C+S,$$

where L is the volume of loans outstanding before adjustments are made for problem loans, $(1-d)$ is the fraction that is expected to be repaid, I is total investment income, C are total costs (including the cost of capital) and S is the total value of implicit subsidies. The left- hand side gives expected income and the right-hand side gives costs (in the absence of soft loans).

The break-even interest rate is thus:

$$r^*=\left[C+S-I+dL\right]/\left[L(1-d)\right],$$

and the percentage increase in the current interest rate required for the bank to break even is

$$(r^*-r)/r=\left[C+S-I+dL-r(1-d)L\right]/\left[rL(1-d)\right],$$

which can be rewritten as

$$\begin{aligned}(r^*-r)/r&=\left(S+K-\left[L(1+r)(1-d)+K+I-L-C\right]\right)\\&\quad/\left[rL(1-d)\right]=(S+K-P)/\left[rL(1-d)\right],\end{aligned}\tag{1}$$

where P corresponds to reported net profits and K to direct grants (K should also include the value of discounts on expenses). Reported profits are gross revenues from lending, grants, and investments — less repayment of principal and all associated costs.

The final formula is identical to Yaron's subsidy dependence index (SDI), given that appropriate adjustments are made to reported profits and to the volume of loans outstanding. In Yaron's formula, the default rate d is assumed to be folded into L through appropriate provisioning (Yaron, 1992). In Yaron's formula-

[14] While other microfinance programs also require repayments in weekly installments through the year, they often quote their rates on the ''flat rate'' basis. For example, the group lending program of the BRAC charges 15% and the ASA charges 12.5%, but the comparison is misleading. Put into the same terms as Grameen's calculations, ASA's interest rate is about 25% on the declining balance and BRAC's is about 30%.

tion, it is also assumed implicitly that nonpayment rates of interest are identical to nonpayment rates of principal.

The bottom of Table 3 gives the result of these calculations. The year-by-year snap shots show that the bank has improved its relative performance over time, but there is still distance to go. To reach full economic sustainability between 1985 and 1996, Grameen would have had to increase average interest rates by about 65% to a rate of 26% per year.

The calculation implies that, holding all else the same, the rate charged on general loans would have to increase to about 33% (a real rate of 30% in 1996). The increase would constitute a substantial jump from real rates charged before 1991, when real rates varied between 5% and 8% per year. The projected break-even real rates had a downward slope in the early 1990s but started to point upward again in 1995 and 1996.

Earlier studies yield the conclusion that the subsidies are falling (through 1994), leaving the authors to conclude that break-even interest rates have been steadily converging to the rate that Grameen actually charges (Khandker et al., 1995; Hashemi and Schuler, 1997). The calculations here yield slightly larger break-even rates than the previous studies, but for the most part they are in a similar range through 1994. The evidence here shows that the downward trend has been broken, however.

While Grameen is reluctant, charging a nominal rate around 30% is not unprecedented in Bangladesh. The Bangladesh Rural Advancement Committee (BRAC) effectively charges a base rate of 30% on loans to a similar client base. Neither BRAC's repayment record nor outreach seems to have suffered as a result. BRAC's clients, however, tend to get more for their money than Grameen's, with more training and technical assistance than Grameen offers.

Whether or not Grameen should increase interest rates is another matter. Grameen's present strategy appears to be to add new financial instruments aimed at better-off clients, with the hope of making a profit on that sector in order to cross-subsidize their poorer clients. New instruments include leasing arrangements for mini-buses and cellular telephones. Cross-subsidization is typically only a short-term answer, however, since profitable sectors tend to eventually draw competition and profits eventually erode.

5. Socially optimal interest rates

In principle, where credit markets function imperfectly, interest rate subsidies may bring allocations closer to (second-best) efficiency. Even if not, they may be desirable on grounds of equity: if raising interest rates means losing clients or decreasing social impacts, subsidies may be justifiable, provided social benefits are commensurate and institutional efficiency can be maintained. Can subsidizing microfinance offer greater social returns than alternative uses of funds?

A natural first cut at cost–benefit analysis of subsidies is to compare costs to the present discounted value of benefits. The cost–benefit ratio can then be compared to that of other projects aiming to help poor households. Khandker (1998) provides a rough cut, comparing *current* benefits to current costs, finding that subsidizing Grameen yields more benefits per dollar than supporting alternatives like food-for-work programs.

Extending the analysis raises delicate issues surrounding counter-factual scenarios. Even if social benefits attributed to Grameen exceed their costs, it may still be that a shift to full cost-recovery could yield even greater social benefit (Morduch, 1999b, provides an extended discussion). The chief mechanism is via expanded scale, achieved through the untethering from donor budgets. This argument has been pushed forcefully by many donors (e.g., Consultative Group to Assist the Poorest, 1996), although the evidence is slim (Morduch, 1999). In the case of Grameen, it is not obvious that funding is a binding constraint. With roughly two million members, managing, training, and supervising staff loom at least as large.

If Grameen had to rely on the open capital market to obtain all funds for on-lending, the bank would be thrown into competition with all other businesses on the demand-side of the capital market. Breaking-even would almost certainly not be enough: given the risks involved in lending to a bank like Grameen, whose main asset is a loan portfolio not backed by collateral, it is hard to imagine that the returns that Grameen would have to offer investors would not be considerably greater than the returns to less risky investment options (unless, as is the case with Grameen's bond sales, the government is willing to step in as guarantor). This would have immediate repercussions for Grameen's clients. If, for example, Grameen had to pay 15.3% for loans in 1996, rather than the assumed benchmark of 10.3%, Grameen would have to charge its borrowers nominal interest rates on general loans of at least 40% per year. At a 20% interest rate for capital, the rate on general loans would need to rise to 46%.

Whether interest rates would have to rise to 33%, 40%, or 46%, there would be obvious trade-offs. From an institutional perspective, the set of states of the world in which typical borrowers cannot repay would be increased. As a result, default rates would likely increase (following, e.g., Stiglitz and Weiss, 1981). Moreover, while pushing for full cost-recovery might help ''tighten up the ship'', it might also undermine the morale of staff drawn in by the program's social mission, creating consequent management challenges.

From a social perspective, raising interest rates would cut into the net returns of borrowers and put credit out of reach for some. Evaluating the consequences requires an explicit characterization of social weights. If a dollar earned by a poor household is weighed sufficiently more than a dollar earned by a richer one, helping fewer but poorer borrowers can deliver greater social benefits than helping a larger number of poorer borrowers. Some poor borrowers, however, may be able to pay higher rates and still retain a meaningful surplus. The elasticity of credit demand with respect to the interest rate and the profile of expected surpluses

indexed by borrowers' initial welfare levels are key data on which the analysis must build.

A full evaluation would also consider the impacts on the welfare of non-participants who may be affected by direct spillovers and through general equilibrium impacts on prices and other interest rates. Credit programs like the Grameen Bank tend to have broad externalities. How great is the responsiveness of informal credit to the presence of a subsidized microfinance program in the same area? To what degree can subsidized and fully profit-making institutions coexist? [15]

The refusal to take seriously the benefits of continuing subsidization means that these questions are, for now, met with few hard answers. Pushing policy dialogue forward will require resisting the pull of compelling rhetoric and turning toward careful analyses of household-level data.

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[15] The evaluation would also assess prospects for further cost reductions, as well as the development of new products (for example, more flexible savings accounts) that may enhance both the bank's financial bottom line and the welfare of the poor households that it serves.

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