

## ECONOMIC AND FINANCIAL SUSTAINABILITY ANALYSES

### I. ECONOMIC SUSTAINABILITY ANALYSIS

1. A cost-effectiveness analysis was conducted on the Credit for Better Health Care Project's (the Project's) interventions and its impact on mother and child health. The Project expects to reduce neonatal and maternal deaths, and through an intervention to increase childbirth at health facilities or under the care of health professionals. The Project costs are estimated from the proportion of that allocated for subprojects to small-scale providers, as these are directly aimed for such intervention (through midwives and obstetricians). The amount of this is \$10 million. The Project benefits are estimated in monetary terms that are accrued from averted deaths and averted morbidity due to reduced risk from childbirth under health facilities or under the care of health professionals. Further, the benefits are also accrued through averted illness days and averted labor productivity loss days, consequently gained earnings and reduced cost of health care.
2. The analysis has considered the following assumptions:
  - (i) percent deliveries attended by health professional increases from 60% in 2005 to 80% by 2015, given that population is still residing in rural and remote islands;
  - (ii) percent deliveries attended by midwives increases from 25% in 2005 to 40% by 2015;
  - (iii) percent deliveries attended by obstetricians increases from 34% in 2005 to 40% by 2015;
  - (iv) percent deliveries attended by health facilities increases from 38% in 2005 to 68% by 2015;
  - (v) that means that home deliveries attended by health professionals is 12% and home deliveries attended by non-professionals is 20%, i.e. still 32% of childbirths are at home by 2015;
  - (vi) as infant mortality rate (IMR) declines over time, so does the absolute number of neonatal deaths, however, the proportion of neonatal deaths to infant deaths (59% in 2005) also declines, as targeted health programs are introduced;
  - (vii) gross domestic product (GDP) per capita is \$1351 in 2007;
  - (viii) GDP growth rate is taken at 6% in 2007;
  - (ix) population growth is taken at 2% in 2007;
  - (x) discount rate is at 12%;
  - (xi) the Project investment costs has taken the amount for wholesale onlending and includes additional finances for civil works, equipment and reagents, but excludes increments in operating expenses (as these are not new investments, and operating expenses should already be part of the budget), interest repayment and taxes and duties. Depreciation is not taken into consideration. Civil works maintenance is taken at 1/40 of the cost of capital investment;
  - (xii) annual average per capita health expenditure is taken at \$35;
  - (xiii) annual pregnancy related expenses are an additional \$100 per capita;
  - (xiv) IMR per 1,000 live births is taken at 29 in 2006, and neonatal mortality rate (NMR) = 59% of IMR, therefore NMR = 17 in 2006;
  - (xv) maternal mortality ratio (MMR) is taken at 162 per 100,000 live births in 2006; and
  - (xvi) formula for neonatal deaths averted = {risk of dying<sub>i</sub> \* total births \* % attended by health professionals<sub>i</sub>}
3. The simulation shows that maternal and neonatal mortality can decline if percentage of

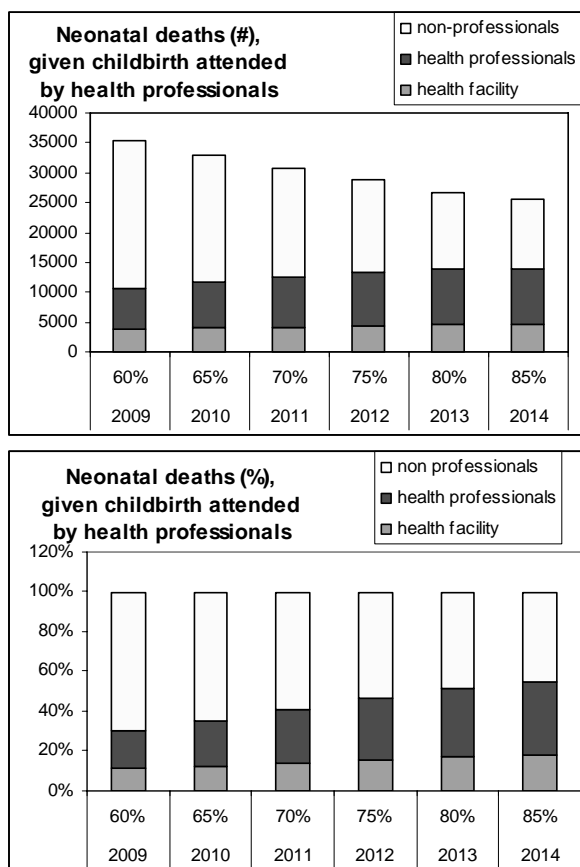
births is attended to by health professionals and by health facilities. The risk of dying among neonatal is assumed to be 0.5% if birth is attended by health facility, is 1.5% if birth is attended by health professional, and is 3% if birth is not attended to by any health professional. That is, risk of dying if birth is at home is 6 times greater than risk of dying if delivered at health facility.

4. In case 1 (base scenario for 2009), 38% of births are attended to by health professionals at health facilities, and an additional 22% by health professionals at home. Therefore, 40% of births are delivered at home under a non-professional. The overall NMR is 17 per 1,000 live births, although neonatal mortality rate is 5 for health facility births attended, 10 for births attended by health professionals, and 30 for births not attended by health professionals. Figure SAG.1 shows the reduction in neonatal deaths over the years, as number of childbirths attended by health professionals increases from 60% to 85%. It is expected that as births attended to by health professionals increases to say 80%, NMR would reduce from 17 to 13.7 (and this would save 9,500 lives saved in 5 years).

**Table SAG.1: Neonatal deaths for Philippines**

case=1 (2005)	health facility attended	health professionals		Total
		attended	not attended	
% childbirth	0.38	0.22	0.40	
risk of dying	0.005	0.015	0.03	
total births	820965	475296	864174	2,160,435
Neonatal deaths	4105	7129	25925	37159
Neonatal mortality rate	5	15	30	17.2

**Figure SAG.1: Neonatal deaths between 2009 and 2014**



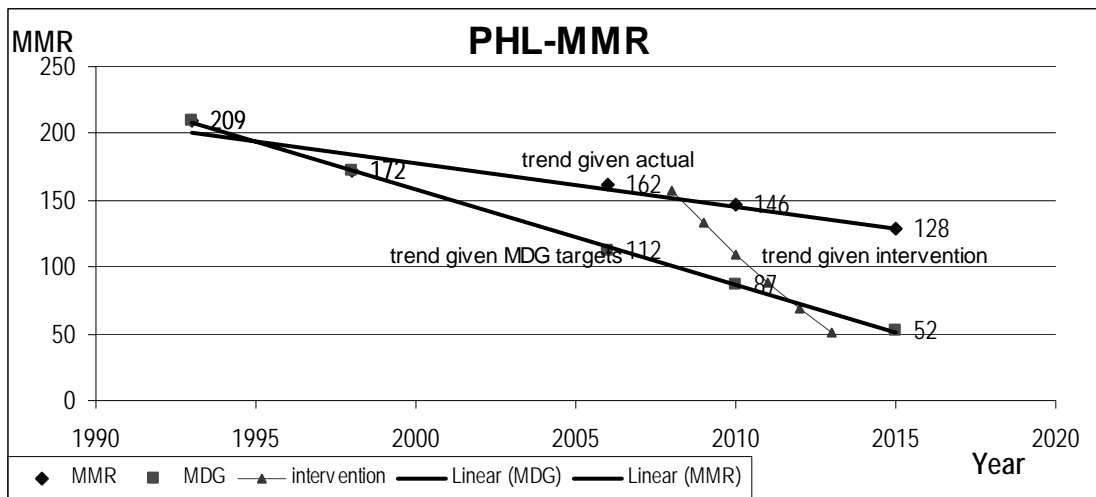
5. A similar simulation was conducted for maternal deaths. MMR in the Philippines is not expected to meet its Millenium Development Goals (MDG) targets. If it follows the current trend, MMR will be 128 per 100,000 live births in 2015, instead of 52 per 100,000 live-births. In order for MMR to reach its MDG targets, many more childbirths must take place in health facilities and under health professionals. The simulation shows that MMR can meet its MDG targets, if special interventions are introduced whereby at least 80% childbirths are under health professionals.

**Table SAG.2: Philippines MMR between 1990 and 2020**

Years	MMR	target MMR
1993	209	209
1998	172	172
2006	162	112
2010	146	87
2015	128	52

MMR = maternal mortality ratio.  
 note: italicized figures are estimated MMR.  
 Source: National Demographic and Health Survey (1993 and 1998)  
 and Family Planning Survey (2006).

**Figure SAG.2: MMR with Actual Versus Predicted Rates**



6. The effectiveness from the intervention was estimated with disability adjusted life years (DALY) and years of life gained (YLG) on neonatal and infant deaths averted due to the intervention, with the cost per DALY at \$20 and cost per YLG at \$10 (Table SAG.3). Further an expected least-cost condition was applied. The net present value (NPV) and internal rate of return (IRR) results suggest that the subproject accrues a maximum benefit to the country in year 15, as NPV is positive and IRR is above discount rate. Therefore, the Project is viable (Table SAG.4).

**Table SAG.3: Project Effectiveness**

Year	Childbirth Attended by health professionals	Averted Neonatal Deaths	Averted Infant Deaths	Number of Life Saved	YLG (NPV)	YLG sum (NPVsum)	DALY (NPV)	DALY sum (NPVsum)
2008	60%	total	total	project	project	project	project	project
2009	60%	2292	1146	688	43,592		22,328	
2010	65%	4340	2170	1990	126,130		64,605	
2011	70%	6399	3199	3909	247,821		126,936	
2012	75%	8383	4192	6424	407,254		208,599	
2013	80%	10294	5147	9512	603,018	916,851	308,871	469,618

DALY = disability adjusted life years, NPV = net present value, YLG = years of life gained.

Source: author's estimates.

**Table SAG.4: Project Sustainability Analysis for Maternal and Neonatal Child Health portion of the Project**

Year	Averted for child		Averted for mother		Total	Project	Project Net	Discount	Discounted	NPV	IRR
	Productivity	Illness	Productivity	Illness	Benefits	Costs	Benefits	Rate	Net Benefits		
	Loss, \$	Cost, \$	Loss, \$	Cost, \$	\$	\$	\$	12%		\$	\$
2008					0	750,000	(750,000)	1	(750,000)		
2009	25,533		64,341	7,144	97,018	1,500,000	(1,402,982)	1.12	(1,252,663)	(2,002,663)	
2010	76,095		131,520	14,603	222,218	2,000,000	(1,777,782)	1.25	(1,417,237)	(3,419,900)	
2011	153,998		197,515	21,930	373,443	2,750,000	(2,376,557)	1.40	(1,691,587)	(5,111,487)	
2012	260,663		257,559	28,597	546,819	2,500,000	(1,953,181)	1.57	(1,241,282)	(6,352,769)	
2013	397,541		230,787	25,624	653,951	500,000	153,951	1.76	87,356	(6,265,413)	
2014	540,002		306,848	35,091	881,940		881,940	1.97	446,818	(5,818,594)	
2015	688,185		290,525	34,221	1,012,931		1,012,931	2.21	458,199	(5,360,396)	
2016	827,565		298,700	31,930	1,158,195		1,158,195	2.48	467,776	(4,892,620)	
2017	974,689		307,661	32,888	1,315,238		1,315,238	2.77	474,288	(4,418,332)	
2018	1,129,895		316,891	33,875	1,480,660		1,480,660	3.11	476,733	(3,941,599)	
2019	985,585	1,293,536	326,398	34,891	2,640,409		2,640,409	3.48	759,055	(3,182,545)	
2020	2,851,725	1,465,978	336,189	35,937	4,689,830		4,689,830	3.90	1,203,763	(1,978,782)	7%
2021	5,603,088	1,647,603	346,275	37,016	7,633,982		7,633,982	4.36	1,749,512	(229,270)	12%
2022	9,207,777	1,838,807	356,663	38,126	11,441,373		11,441,373	4.89	2,341,132	2,111,861	16%

IRR = internal rate of return, NPV = net present value.

Note: averted productivity-loss takes into consideration the children's contribution in the informal labor market by age 10 years, and mother's contribution from year 1.

Source: author's estimates.

## II. FINANCIAL SUSTAINABILITY ANALYSIS

### A. INTRODUCTION

7. The financial analysis of the proposed expansion of Hospital A assessed the potential for full cost recovery of the services and facilities that would be provided. Investments would be on land development, building construction, and purchase of equipment. Net sales would be generated from fees for professional services, nursing services, and daily patient services. There are fixed operating costs such as personnel expenses, professional fees, utilities, provision for repairs and maintenance. Variable operating costs comprise of drug supplies, medical and surgical supplies, dietary supplies, oxygen consumption, general services and office supplies.

8. Cost allocation was applied to the Development Bank of the Philippines (DBP) as the bank has opted to pay interests expenses as they come due in lieu of capitalization. In the projections, it was assumed that the funder, DBP will pass on the loan to the subborrowers at an indicative rate of 9.14% per annum. Term of the loan is 15 years with a grace period on principal of 3 years.

9. The financial sustainability of the project was established with the comparison of projected cash inflows from the payments for health services rendered to the beneficiaries' and recovery by the health facility of its costs of operations. Two scenarios on income generation were computed. First, the revenues based on the bed occupancy and both surgical and non-surgical cases were considered. On another run, these revenues were subjected to 15% reduction representing the subsidy to charity cases. Aside from the estimation of the weighted average cost of capital (WACC), the financial internal rate of return (FIRR) was computed at base scenario and subjected to sensitivity runs (i) 10% increase in investment; (ii) 10% decrease in benefits; (iii) 10% increase in operating and maintenance costs; and (iv) 1 year delay in income generation. NPV was likewise computed for base cost and sensitivity scenarios.

10. A major assumption is the inclusion of the hospital's income from patients' contribution or out-of-pocket expenses (OPE) in the cash flow projections. The OPE figures are indicative of the patients' expenses which are not covered by the Philippine Health Insurance Corporation (PHIC), and represents approximately 30% of total expenditures on health.

**Table SAG.5: Comparative PHIC Allowable Claims and Hospital Fees (P)**

Item	PHIC Ceiling	Hospital Charges
Major surgery	14,290.00	10,000.00 package price
Minor surgery	6,610.00	2,500.00 package price
Caesarian	7,450.00	6,000.00 package price
Physician's care	150.00	60.00
Laboratory and Radiology	850.00 up to 2,000.00	210.00

PHIC = Philippine Health Insurance Corporation.

Source: Asian Development Bank estimates.

11. Other basic assumptions used for the projections include:

- (i) Population growth was assumed at 2%.
- (ii) Number of In-Patients was estimated using the bed occupancy rate per day. With the project, the occupancy rate ranged from 75% in years 3 and 4, to 80% of 150 beds from year 6 (when project ends) and to 85% from year 10 onwards. As projected the number of patients could reach much higher levels in comparison to previous figures. On the 10<sup>th</sup> year of the subproject, it was assumed that bed

occupancy rate would have reached the 85% level and was maintained for the rest of the loan term.

- (iii) Out-Patient inflow growth was taken at 2% for the first 4 years, increasing to 3, 4, and 5% for the next 3 years, and stable at 5% annual growth rate from year 8 onwards.
- (iv) Growth rates of in-patients who would undergo minor and major surgery are approximately 2% and 3% of total number of in patients. Growth rate per annum was assumed at 0.007%, 0.008% respectively. The number of mothers who will undergo caesarian section was estimated at 0.005% of the number of in-patients. The 92% balance on the number of in-patients represents those who were confined but did not require surgical services.
- (v) Average length of stay per patient was derived from the trend in 2001-2005, or 3.2 days/patient. The PHIC reimbursement of P300/day was applied.
- (vi) The professional fees for in-patients are within PHIC ceilings. A comparison of PHIC reimbursable amounts and the hospital's charges is evident of the subsidized rates accorded to patients.
- (vii) An annual increase of 5% was assumed for the professional and service fees.
- (viii) Personnel and maintenance and other operating expenses (MOOE) were assumed to increase by 5% every 3 years starting 2011.

## B. WACC and FIRR

12. The WACC was estimated at 3.84% as shown in Table SAG.6 below:

**Table SAG.6: Computation of WACC**

Source of Funds	% of project cost	Interest rate in current prices	Corporate Tax Rate	Tax Adjusted Nominal Rate	Inflation Rate	Cost of funds in constant prices	Weighted average
ADB Loan	90.00%	9.14%	0.5%	9.09%	5.00%	3.90%	3.51%
DBP/Client	10.00%	8.50%	0%	8.50%	5.00%	3.33%	0.33%
	<b>100.00%</b>						
						<b>WACC</b>	<b>3.84%</b>

ADB = Asian Development Bank, DBP = Development Bank of the Philippines, WACC = weighted average cost of capital.

Source: Asian Development Bank estimates.

**Table SAG.7: Computation of FIRR and NPV**

Base Cost	FIRR	NPV
<b>Total Revenues</b>		
Projected Net Cash flows	31.8%	153,249.08
Discounted Cash flows	24.4%	59,161.04
<b>Total Revenues Net of Charity</b>		
<b>Projected Net Cash flows</b>	<b>16.4%</b>	<b>41,021.00</b>
<b>Discounted Cash flows</b>	<b>9.9%</b>	<b>(12,619.24)</b>

FIRR = financial internal rate of return, NPV = net present value.

Source: Asian Development Bank estimates.

13. Considering that the hospital facility already exists and presently operating, income flows from the first year of project implementation were recognized. At base scenario, the FIRR (gross revenues) was at the level of 31.8% with a net present value of P153.0 million. Assuming the

expenditures on charity services to be at 15% of gross revenues, the FIRR slid to 16% and NPV reached a low level of P41.0 million. Still shows viability, because FIRR is above WACC.

14. To obtain discounted cash flows, an inflation or domestic price adjustment factor was applied to both the total income and expenditure accounts and resulted to discounted cash flows. The FIRRs based on these discounted cash flows decreased to 24.4% at gross revenues and dipped to 9.9% at revenues net of charity expenses. Positive net cash flows moved down from the 5<sup>th</sup> to the 8<sup>th</sup> year onwards with charity expenses being deducted from the hospital's gross revenues.

15. The 15% of gross revenues allocated to cover expenses on charitable cases may be deemed as the non-collectible portion of hospital income or a collection efficiency rating of approximately 85%. Collections will be sourced from PHIC benefits and out of pocket expenses of the patients. Although, the charity expenses are reimbursed to the hospital at a later date, but the amount and time of relocation depends on the local government units (LGUs), hence, there is uncertainty by hospital if they count this as a revenue collection.

16. In the succeeding sensitivity tests conducted, only the revenues, net of expenditures on services to charity patients were assumed and the FIRRs obtained are shown in Table SAG.8 below:

**Table SAG.8: Sensitivity Tests for Net of Charity Estimates**

Sensitivity Tests (At Revenues Net of Charity)	FIRR			
	+10% Investment	+10% O/M	-10% benefits	delayed revenues (1 year)
<b>Total Revenues Net of Charity</b>				
Projected Net Cash flows	0.17%	6%	10.2%	8.34%
Discounted Cash flows	losses	-0.3%	3.9%	2.21%

FIRR = financial internal rate of return, O/M = operating and maintenance costs.

Source: Asian Development Bank estimates.

17. The revenues and costs were subjected to increases in investments and MOOE, decrease in benefits, and even a 1 year delay in realization of income streams. Assuming the application of the price adjustment factor the subproject will not be viable should the level of investment be increased by 10% and this is supported by the 0.17% FIRR of the project cash flows. An increased MOOE level would render the project non-viable with an FIRR of -0.3%. With a 10% decrease in benefits, the subproject remained viable as the FIRR of 3.9% is above the WACC of 3.84%. Delayed revenues would affect subproject sustainability with an FIRR of 2.21%, slightly lower than the WACC.

18. The projected cash flows reflect that positive net cash flows will be attained by the subproject starting year 5 which is parallel to the growth of patient inflow, and is expected to continue to rise until year 15 of the subproject term. In this subproject, the use of the FIRR as a tool to measure risks arising from increase or decline in factors such as MOOE, income, and investment as assumed in the sensitivity runs indicate the need to veer towards evaluation of the projected cash flows and determination of the factors which have led to the projected losses and non-viability of the subproject.

19. An examination of the projected cash flows of the subproject indicate the following major considerations:

- (i) The subproject will be financed through a mix of Asian Development Bank (ADB) subloan (90%) and 10% counterpart equity contribution from the proponent/subborrower, the LGU. The LGU equity share of the subproject is not

- a contribution that will not have a financial return, and may therefore be deemed as a LGU subsidy to the subproject.
- (ii) The comparative figures of PHIC ceilings on claims for in-patients and the fee structure of the hospital reflect the subsidized pricing of services for the target beneficiaries of the LGU hospital. This is indicative of the LGU's desire to enhance access to health care services for the poor through affordable pricing structure.
  - (iii) The LGU has a charity program for indigents and these costs comprise 15% of the projected income streams of the hospital.
20. The foregoing subsidy structure has strongly affected the cash generation activities of the hospital which is geared heavily towards the attainment of its objective of providing greater service to a higher number of patients in the locality.
21. It must be noted that the projected cash flows affirms the capability of the LGU to meet the debt service requirements of the proposed ADB subloan while maintain its plan to serve more community members' health care needs at affordable prices.
22. The LGU subsidized health program is focused on the generation of benefits which translate to lower incidence of illnesses in the communities. As the level and type of subsidies for health care services are subjected to upward or downward adjustments, the WACC and FIRR will likewise vary.
23. A significant partner in this venture is the PHIC, from which patients benefit through reimbursements on their claims, resulting in the much needed viability and sustainability of the subproject.

### **C. Rehabilitation/Upgrading of Rural Health Unit (RHU)**

24. RHU rehabilitation/upgrading for a subloan of P5.0 million pesos was evaluated. Major Assumptions include an equity share of P9.3 million for the LGU of which a cash outlay of P1.705 million will be disbursed in Year 1 and P2.864 million will be disbursed in Year 11.
25. User fees are at low prices of (i) P200 for minor surgery; (ii) P200 for delivery; (iii) P75 for dental services; (iv) P100 for immunization; and (v) P60 for laboratory; Starting 2011, all user fees will increase by 10% every three years. Charity services amount to about 15% of revenues.
26. Patients' average length of stay is only 1 day and they are charged P150 for room and board.
27. Total Investment cost of P14.3 million, comprise of 80% civil works, 5% detailed engineering and architectural designs, and 15% upgrading of equipment.
28. The subloan will enhance the facility's capacity to serve a greater number of patients with improved building, equipment, and other utilities. However, the RHU will rely greatly on the LGU's various fund sources for loan repayment, as profits will not be generated from operations. The subsidies in the operation of an RHU are in the form of low user fees and charity services which are not designed to recover costs of the subproject but rather to provide improved health care services to community members.
29. The financial projections show that the RHU gross revenue streams can cover the annual amortization requirements to fully repay the subloan. However, net cashflows indicate heavy reliance on the LGU's continuing budget appropriation to finance the deficits of the subproject and continue serving the poor.

#### D. Financial Analysis for Health-oriented Microenterprises

30. The financial analysis of the proposed Project microfinance for health-oriented products was undertaken with the preparation of projected financial plans, analysis of the subproject's financial sustainability, calculation of the FIRR, and evaluation of the targeted beneficiaries' affordable limits and willingness to pay for the proposed services.

31. Financial evaluation of four types of microfinance institution (MFI) subloans was undertaken, comprising of a P150,000 or \$3,750 subloan for expansion and establishment of a birthing clinic for midwives, \$10,000 loan for general practitioners, \$25,000 loan for OB-Gyns, and \$50,000 for *Botika ng Bayan* and other public-private partnerships in delivery of health services. The rural/ cooperative/ microfinance banks with microfinance operations may also onlend to the targeted Ob-Gyns and general practitioners.

32. **Loan Repayment.** The MFI subproject assumes 3 year grace period on the principal amount and an additional 10 years (13 years total term) to repay the total loan amount of \$89.0 million. The monthly amortization for this loan amount will be sourced by the MFIs from the fees charged for birthing services, family planning, other health care services, sale of family planning contraceptives, and drugs, and collection of claims from PHIC when applicable.

33. **Capital Investments and Recurrent Costs.** Capital investment costs will cover the microenterprise loans, social preparation, and interest during the construction period, all scheduled for disbursement from 2009 to 2011. These costs include a 5% physical contingencies on microenterprise loans and 5% price contingencies on baseline costs.

**Table SAG.9: Estimated Subproject Capital Costs  
Microfinance for Health-Oriented Enterprises (\$'000)**

Cost Item	Base Cost				Total
	2009	2010	2011	2012	
A. Microenterprise Loans	89.00	0.00	-1.00		<b>88.00</b>
B. Social Preparation	1.78	0.00	-0.02		1.76
<b>Total Baseline Costs</b>	<b>90.78</b>	<b>0.00</b>	<b>-1.02</b>	<b>0.00</b>	<b>89.76</b>
Physical Contingencies	4.45	0.00	-0.05		4.40
Price Contingencies	4.54	0.00			4.54
Interest during construction period		8.13	8.13	13.95	30.22
<b>Total Subproject Costs</b>	<b>99.77</b>	<b>8.13</b>	<b>7.06</b>	<b>13.95</b>	<b>128.92</b>

(1) social preparation is assumed at 2% of microenterprise loans

(2) Physical contingencies is 5% of microenterprise loans.

(3) Price Contingencies is at 5% of total baseline costs

(4) with interest during construction period

34. **Terms of Borrowings.** The ADB/DBP subloan was estimated at P88.0 million, with the maximum tenor of 13 years, inclusive of a 3 year grace period on principal repayment. An annual fixed interest rate of 9.14% was assumed for the ADB/DBP subloan and this was arrived at, as follows (i) 2.43% for ADB's yen Libor-based lending rate as of January 2008; (ii) 0.2% ADB spread; (iii) 0.15% commitment fee on undisbursed balance; (iv) Government of the Philippines sovereign guaranty fee of 1%; (v) Government of the Philippines foreign exchange risk cover at 3%; and (vi) a 2.5% spread for DBP. As a result, debt servicing of the subloan will require a financial outlay of P501.0 thousand, beginning 2010. (Table SAG.10)

**Table SAG.10: ADB Microfinance Subloan Amortization Schedule (\$'000)**

Year	Interest Payment	Principal Payment	Total Payment	Outstanding Loan Amount
2009	8	-	8	89
2010	8	-	8	89
2011	8	-	8	89
2012	8	6	14	83
2013	8	6	14	77
2014	7	7	14	70
2015	6	8	14	62
2016	6	8	14	54
2017	5	9	14	45
2018	4	10	14	35
2019	3	11	14	24
2020	2	12	14	13
2021	1	13	14	0
<b>Total</b>	<b>75</b>	<b>89</b>	<b>164</b>	

35. **Financial Sustainability Analysis.** The projected financial statements indicate that overall, funds received will exceed expenditures for the MFI subproject comprising of four subloans to clients. Except for the period 2009 to 2011 when the MFI will need the grace period on principal to rollover collections to finance greater volume of microfinance loans and meet the interest payments due for the period. Thereafter, positive annual cash flows are anticipated.

36. **Financial Internal Rate of Return.** Calculating FIRR entailed the preparation of individual projected income statements for the four microfinance enterprise subloans assuming lending terms granted by MFIs for non-collateralized and collateralized loans. The present value of these net cash flows reflect the return on incremental costs and must be equal to or greater than the WACC. The WACC for the MFI subproject is 3.84% (Table SAL.11)

**Table SAG.11: Calculation of WACC Microfinance Health-oriented Enterprises Subproject**

Source of Funds	% of project cost	Interest Rate in Current Prices	Corporate Tax Rate	Tax Adjusted Nominal Rate	Inflation Rate	Cost of funds in constant prices	Weighted Average
ADB Loan	90.00%	9.14%	0.5%	9.09%	5.00%	3.90%	3.51%
MFI equity	5.00%	8.50%	0%	8.50%	5.00%	3.33%	0.17%
Subborrowers Equity	5.00%	8.50%	0%	8.50%	5.00%	3.33%	0.17%
					<b>WACC</b>		<b>3.84%</b>

ADB = Asian Development Bank, MFI = microfinance institution, WACC = weighted average cost of capital.  
Source: Asian Development Bank estimates.

37. The FIRR for each type of subloan was computed. Further, sensitivity analyses on basic parameters concerning the subproject, such as 10% increase in investments and operating capital costs, and a 10% decrease in benefits were also calculated and the results are shown in the following tables:

**Table SAG.12: Calculation of FIRRs Microfinance Health-oriented Subloan to Midwives**

	<b>FIRR</b>
<b>Base Cost</b>	52%
<b>Sensitivity Tests</b>	
<b>+10% Investment</b>	39%
<b>+10% operating and maintenance</b>	24%
<b>-10% benefits</b>	32%
<b>delayed revenues (1 year)</b>	24%

FIRR = financial internal rate of return.

Source: Asian Development Bank estimates.

**Table SAG.13: Calculation of FIRRs Microfinance Health-oriented Subloan to OB-GYNs**

	<b>FIRR</b>
<b>Base Cost</b>	32%
<b>Sensitivity Tests</b>	
<b>+10% Investment</b>	9%
<b>+10% operating and maintenance</b>	2%
<b>-10% benefits</b>	8%
<b>delayed revenues (1 year)</b>	3%

FIRR = financial internal rate of return.

Source: Asian Development Bank estimates.

**Table SAG.14: Calculation of FIRRs Microfinance Health-oriented Subloan to General Practitioners**

	<b>FIRR</b>
<b>Base Cost</b>	45%
<b>Sensitivity Tests</b>	
<b>+10% Investment</b>	5%
<b>+10% operating and maintenance</b>	-6%
<b>-10% benefits</b>	5%
<b>delayed revenues (1 year)</b>	2%

FIRR = financial internal rate of return.

Source: Asian Development Bank estimates.

**Table SAG.15: Calculation of FIRRs Microfinance Health-oriented Subloan to Drugstore Operators**

	<b>FIRR</b>
<b>Base Cost</b>	20%
<b>Sensitivity Tests</b>	
<b>+10% Investment</b>	27%
<b>+10% operating and maintenance</b>	-8%
<b>-10% benefits</b>	26%
<b>delayed revenues (1 year)</b>	14%

FIRR = financial internal rate of return.

Source: Asian Development Bank estimates.

38. The foregoing FIRRs reflect the viability and sustainability of the four types of subloans. The midwives have been allocated an individual loan amount of \$3,750 and the FIRRs assuming base cost and the sensitivity test show that they can even avail of higher loans, and still remain viable through the sensitivity runs with reduced FIRRs ranging from 24% to 39%,

way above the 3.84% WACC. The subloans to OB-GYNs, general practitioners, and the drugstore operators also had positive FIRRs at base cost, at values of 32% to 45% respectively. However, the sensitivity tests have indicated that increased Operations & Maintenance costs and delayed revenues would render their operations non-viable as the FIRRs decreased to levels below the WACC.

39. A Composite rate covering the four types of subloans through the wholesale window was obtained using the investment amounts allocated to each type of subloan as weights against the corresponding individual FIRRs and results are presented in the table below:

**Table SAG.16: Composite Weighted Average FIRR Health-Oriented Microfinance Subproject (Four Types of Subloans)**

	FIRR
<b>Base Cost</b>	10%
<b>SENSITIVITY TESTS</b>	
+10% Investment	7%
+10% operating and maintenance	2%
-10% benefits	6%
delayed revenues (1 year)	4%

FIRR = financial internal rate of return.  
 Source: Asian Development Bank estimates.

40. The wholesale lending to MFIs will remain viable with a composite FIRR figure of 10% at base cost. The sensitivity tests showed that, it was only when operations and maintenance expenses were increased by 10% that the FIRR went down to the level of 2%, lower than the WACC of 3.84%.

41. **Affordability and willingness to pay of target subborrowers were analyzed.** The computed total monthly amortization for the proposed MFI subproject is approximately P765.0 thousand. This monthly amortization can be repaid from the projected income of the targeted end borrowers. Individually, the projected collections of the MFI are shown in Tables SAG.17 to SAF.20

**Table SAG.17: Microfinance Subloan to Midwives Amortization Schedule (\$3,750 Loan Amount)**

Year	Interest Payment	Principal Payment	Total Payment	Outstanding Loan Amount
2009	1,125	-	1125	<b>3,750</b>
2010	1125	-	1,125	3,750
2011	1,125	415	1,540	3,335
2012	1,001	539	1540	2,796
2013	839	701	1540	2,095
2014	629	911	1540	1,184
2015	355	1,184	1540	0
<b>Total</b>	<b>6,198</b>	<b>3,750</b>	<b>8,823</b>	

**Table SAG.18: Amortization Schedule for \$25,000 Loan to Ob-Gyns**

Year	Interest Payment	Principal Payment	Total Payment	Outstanding Loan Amount
2009	5,250	-	5,250	25,000
2010	5,250	-	5,250	25,000
2011	5,250	-	5,250	25,000
2012	5,250	1,877	7,127	23,123
2013	4,856	2,271	7,127	20,853
2014	4,379	2,748	7,127	18,105
2015	3,802	3,325	7,127	14,780
2016	3,104	4,023	7,127	10,757
2017	2,259	4,868	7,127	5,890
2018	1,237	5,890	7,127	0
<b>Total</b>	<b>40,637</b>	<b>25,000</b>	<b>65,637</b>	

**Table SAG.19: Amortization of \$10,000 Microfinance Loan to General Practitioners for CEMOC**

Year	Interest Payment	Principal Payment	Total Payment	Outstanding Loan Amount
2009	2,100	-	2,100	10,000
2010	2,100	-	2,100	10,000
2011	2,100	-	2,100	10,000
2012	2,100	367	2,467	9,633
2013	2,023	444	2,467	9,190
2014	1,930	537	2,467	8,653
2015	1,817	650	2,467	8,003
2016	1,681	786	2,467	7,217
2017	1,516	951	2,467	6,266
2018	1,316	1,151	2,467	5,116
2019	1,074	1,392	2,467	3,723
2020	782	1,685	2,467	2,039
2021	428	2,039	2,467	0
<b>Total</b>	<b>20,967</b>	<b>10,000</b>	<b>30,967</b>	

**Table SAG.20: Amortization Schedule for \$50,000 Loan for Drugstores**

Year	Interest Payment	Principal Payment	Total Payment	Outstanding Loan Amount
2009	15,000	-	15,000	50,000
2010	15,000	-	15,000	50,000
2011	15,000	-	15,000	50,000
2012	15,000	2,844	17,844	47,156
2013	14,147	3,697	17,844	43,460
2014	13,038	4,806	17,844	38,654
2015	11,596	6,248	17,844	32,406
2016	9,722	8,122	17,844	24,284
2017	7,285	10,558	17,844	13,726
2018	4,118	13,726	17,844	0
<b>Total</b>	<b>119,906</b>	<b>50,000</b>	<b>189,906</b>	

42. The projected annual cash flows of the subloans for midwives, OB-Gyns, and the general practitioners were based on information gathered from the demand study of the Project. Willingness to borrow and pay were adopted as basis for the loan amounts such as (i) midwives may avail of P150,000 loan; (ii) OB-Gyns may borrow up to \$25,000; (iii) general practitioners may avail of \$10,000 loan; and (iv) the *Botika ng Bayan* and other public private partnerships have been allocated \$50,000 loan amount.

43. To establish viability and sustainability of the Project, a composite rate for the project was computed with the respective investment amounts for the retail and wholesale modalities as weights against the individual FIRR for both lending windows. The resulting figures are shown below:

**Table SAG.21: Composite Weighted Average FIRR for the Project**

	<b>FIRR</b>
<b>Base Cost</b>	7.95%
<b>SENSITIVITY TESTS</b>	
+10% Investment	1.2%
+10% <b>operating and maintenance</b>	2.8%
-10% benefits	4.9%
delayed revenues (1 year)	3.9%

FIRR = financial internal rate of return.  
 Source: Asian Development Bank estimates.

44. From the presentation of FIRRs (individual subproject loans and composite rates) and the WACC figure of 3.84% for retail and wholesale subloans, the projected financial performance of the project indicates the viability and sustainability of the project at base cost. However, with the existence of the subsidy program for indigent patients, the subprojects of LGUs are sensitive to additional investments and higher operations and maintenance expenses as the FIRRs for such assumptions Fell below the WACC.

45. The target borrower LGUs under the DBP retail lending facility however will need to establish strong partnerships with the Department of Health and the PHIC for easy access to the reimbursement window of PHIC and possible increase in the ceilings for user services. Recovery of investments will be hastened and results shall be beneficial to the patients with the projected decrease in out-of-pocket expenses.