

FINANCIAL ANALYSIS

A. Introduction

1. Financial analysis of the Jiangxi Ji'an Sustainable Urban Transport Project was undertaken in accordance with Asian Development Bank (ADB) Guidelines on the Financial Management and Analysis of Projects.¹ The financial analysis was to assess (i) the financial sustainability of the Ji'an Municipal Government, the executing agency and borrower; (ii) the financial management arrangement and capacity of the implementing agency, Ji'an Urban Investment and Development Company (JIDC); and (iii) the financial viability of the bus rapid transit (BRT) component.

B. Financial Sustainability of Ji'an Municipality

2. Ji'an municipality has experienced robust socioeconomic development with average annual gross domestic product growth of 18.8% between 2008 and 2013. The municipal government's fiscal revenue has also increased rapidly from CNY16.4 billion in 2010 to CNY30.3 billion in 2013; an average annual increase of 23.0%. The growth targets in the 12th Five-Year Plan² are a 12.0% annual increase in gross domestic product and a 18.0% annual increase in total fiscal revenue in 2011–2015.

3. The fiscal status and funding requirements were projected for the project implementation period, 2015–2019. The analysis results indicate that, during the implementation period, the total project cost will account for only 0.5% of total fiscal expenditure and only 1.0% of local revenue. In general, the project's funding requirement will be small compared with the municipal government's total fiscal capacity. Table 1 presents the consolidated financial status of the Ji'an Municipal Government (executing agency) and of JIDC.

Table 1: Analysis of Funding Availability – Consolidated
(CNY million)

Fiscal Revenue	2012	2013	2014	2015	2016	2017	2018	2019
Local revenue (tax & nontax)	12,014	11,903	13,067	14,347	15,753	17,298	18,997	20,863
Government transfers	14,500	18,436	23,106	29,305	36,905	45,612	56,241	69,092
Total fiscal revenue	26,514	30,339	36,173	43,652	52,658	62,910	75,238	89,955
ADB loan funds	-	-	-	-	50	120	375	192
Local borrowing	3,062	750	950	750	750	750	750	750
Fiscal expenditures	26,981	31,089	37,124	44,401	53,457	63,781	76,363	90,898
Debt position								
External & other debt	54	50	247	243	206	169	132	95
JIDC debt	6,720	6,655	6,483	6,203	5,788	5,266	4,636	3,900
ADB loan balance	-	-	-	-	50	169	544	737
Total debt	6,774	6,705	6,730	6,446	6,044	5,604	5,312	4,732
ADB project spending	-	-	-	49	390	386	598	313
ADB project expenditures as percent of local revenue	-	-	0.0%	0.3%	2.5%	2.2%	3.1%	1.5%
ADB project expenditures as percent of fiscal expenditures	-	-	0.0%	0.1%	0.7%	0.6%	0.8%	0.3%
Municipal project expenditures as percent of local fiscal revenue	-	-	2.0%	2.2%	4.2%	3.8%	4.7%	2.9%
Debt as percent of local fiscal revenue	65.5%	58.9%	53.7%	46.8%	39.9%	33.6%	29.0%	23.5%
Debt as percent of municipal gross domestic product	6.7%	6.0%	5.4%	4.6%	3.9%	3.3%	2.8%	2.3%

ADB = Asian Development Bank, JIDC = Ji'an Urban Investment and Development Company.
Source: Asian Development Bank estimates based on municipal government's budget and plans.

¹ ADB 2005. *Guidelines on the Financial Management and Analysis of Projects*. Manila.

² Government of the People's Republic of China. 2011. *12th Five-Year Plan (2011-2015)*. Beijing.

C. Financial Management Arrangement and Assessment

4. Under the proposed loan, the borrower will be the Government of the People's Republic of China (PRC), and the final borrower will be the Ji'an Municipal Government. The ADB loan will be lent to the central government and relent by the Ministry of Finance, as the representative of the central government, to the Jiangxi Provincial Financial Department, as the representative of the Jiangxi Provincial Government, which will onlend the funds to the Ji'an Municipal Financial Bureau, as the representative of the municipal government—all on the same lending terms. The Ji'an Municipal Financial Bureau will transfer both the ADB loan and government counterpart funds to JIDC. The municipal government will bear responsibility for repaying the loan, both principal and interest.

5. The financial management assessment found that the implementing agency has adequate financial management capacity and expertise, and has successfully implemented numerous large infrastructure projects in the past. Based on the assessment, there is moderate financial management risk. The implementing agency has never implemented an ADB-financed project, so the capacity building component will assist it in financial management, monitoring, and reporting to ensure that ADB requirements are met.

D. Financial Evaluation of the Bus Rapid Transit Component

6. The BRT component will generate revenue from passengers and advertisers. Financial projections were made for a “without” scenario (assuming that the BRT investment does not occur) and a “with” scenario (assuming that the BRT investment occurs). This approach distinguishes the impact of the BRT on the estimated financial condition of the public bus company. The financial viability of the BRT component was evaluated by estimating the bus operator's cash flows in the “without” and “with” scenarios, and by calculating the financial internal rate of return (FIRR) on the difference between the projected cash flows under the two scenarios. The FIRR was then compared with the weighted average cost of capital of the project.

7. **Project cost.** The project capital cost for the BRT component was estimated at CNY272.4 million.³ For the financial analysis, costs are expressed in constant 2014 yuan prices and exclude price contingencies and financing charges. Construction of the BRT system is expected to begin in 2015 and service will begin by 2018.

8. **Weighted average cost of capital.** The FIRR for the project is compared with the weighted average cost of capital (WACC) for the project. Capital subsidies, primarily for bus replacements, are included as financing from the municipal government in the calculation of the WACC. The WACC for the BRT was calculated at 2.92% (Table 2).

³ Converted at \$1.00 = CNY6.2.

Table 2: Weighted Average Cost of Capital for the Bus Rapid Transit Component

	ADB Loan	JMG	Total
Capital (CNY million)	189.8	194.8	384.6 ^a
Percent of total capital	49.40%	50.60%	-
Nominal cost	3.21%	7.95%	-
Tax rate	25.00%	0.00%	-
Tax adjusted nominal cost	2.41%	7.95%	-
Inflation rate	1.40%	3.00%	-
Real cost (tax-adjusted cost/inflation rate)	0.99%	4.81%	-
Weighted component of WACC	0.49%	2.43%	2.92%
WACC (Real)			2.92%

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

^a The municipal government contribution includes the estimated ongoing capital subsidies for bus and facility replacements to the Ji'an Public Bus Company over the financial analysis period, consistent with the government's current practice of providing capital subsidies. For this reason, the capital cost in the WACC calculation is higher than the capital cost of the BRT component.

Source: Asian Development Bank estimates.

9. **Operation and maintenance costs of the bus rapid transit.** The BRT service will be operated by the Ji'an Public Transport Company. The estimated operation costs are based on several assumptions: First, 241 staff will be required, including bus drivers, station attendants, and equipment maintenance staff. The estimated cost in the first year of operation is CNY43,870 per staff member, or CNY10.6 million in total, with real annual increases of 3.0%. Second, the annual maintenance cost is CNY44,100 per bus. Third, fuel costs are based on reported fuel efficiency and projected vehicle-kilometers. Fourth, routine corridor maintenance costs CNY2.0 per year, and periodic maintenance (every 5 years) costs CNY60,000–CNY100,000 per year. Fifth, the total annual salary cost for the operations control center is CNY0.3 million (7 persons), and other expenses amount to CNY0.123 million, increasing by 3% per year. Sixth, management and administration expenses are 9.1% of operating expenses. Seventh, capital expenditures include (i) periodic civil overhaul of the BRT corridor every 10 years (about 40% of the original cost); (ii) vehicle replacement every 7 years; and (iii) additional vehicles added to the fleet based on peak-hour passenger demand. Eighth, the depreciation period is 40 years on a straight-line basis for civil assets, 7 years for buses, and 15 years for the control center. Residual values of assets are included as a benefit in the final year of the analysis.

10. **Operation and maintenance costs of the bus rapid transit.** Comparing the BRT service with a conventional bus service, the BRT service will increase the average bus speed and reduce stop-and-go operations. This in turn reduces the number of vehicles and drivers needed to operate a given level of service, while reducing fuel consumption and operation and maintenance costs.

11. **BRT revenues.** Shorter travel times and better schedule adherence will increase ridership⁴ and revenues. The financial analysis assumes that the single-ticket price for the BRT service matches the existing fare, CNY2.0 per passenger-ride, an exceedingly low fare designed to benefit the poor. The fare is expected to increase by 2.0% per year in real terms, which is less than the expected growth in real per-capita income. Cash passengers account for 32% of total public transport ridership, integrated circuit (IC) card passengers for 48%, students for 4%, and senior citizens for 15%. After discounts, the actual price for the BRT would be CNY2.00 for cash passengers (no discount), CNY1.80 for IC card passengers, and CNY1.20 for students. Based on these fares and the percentage of total passengers in each group, the

⁴ Bus ridership under the "with" and "without" scenarios is based on the travel demand forecasts described in detail in Travel Demand forecast, Supplementary Linked Document 17 (accessible from the list of linked documents in Appendix 2).

average BRT fare was calculated at CNY1.56. Current pricing policies that provide free rides to senior citizens are expected to continue. Non-ticket revenue from advertising, vehicle rentals, and space leasing is expected to be about 5% of the ticket revenue.

12. **Government subsidies.** The central and municipal governments subsidize provision of public transport services. The central government subsidizes the fuel cost to compensate for the national fuel tax at a rate of CNY 0.8 per liter.⁵ The municipal government provides fiscal subsidies to the Ji'an Public Transport Company to compensate for the discounted fares for students and senior citizens, purchase of new buses, and replacement of facilities.

13. **Financial evaluation.** The public transport operator, like most public transport providers, requires subsidies to remain viable. The incremental BRT investment generates returns in excess of the cost of capital because the impact of BRT infrastructure is to improve the average speed and service levels of the bus system, which reduces operating costs and vehicle requirements and results in higher ridership. It does not add coverage or routes that are not in the "without" scenario. Table 3 shows the annual cash of the Ji'an Public bus Company without the project. Table 4 shows the "with" and "without" project financial projections and the FIRR calculation for the difference between them. The FIRR for the BRT component was calculated to be 5.1% before tax and 3.6% after tax.⁶ The FIRR after tax is higher than the WACC. The bus operator is financially better off with BRT but will require ongoing operating and capital subsidies to remain financially viable in both the "with" and "without" scenarios.

Table 3: Cash Flow of the Ji'an Public Bus Company (Without Project)
(CNY million)

Year	Cost				Revenue				Cash Flow After Tax	
	Capital	Operation	Maintenance	Total	Ticket	Other	Fuel Subsidy	Total		Tax
2015	-	-	-	-	-	-	-	-	-	-
2016	-	-	-	-	-	-	-	-	-	-
2017	-	-	-	-	-	-	-	-	-	-
2018	-	113.2	60.0	173.2	136.1	6.8	7.7	150.7	5.0	(27.5)
2019	-	120.2	61.8	182.0	151.1	7.6	8.1	166.8	5.5	(20.7)
2020	-	129.2	63.7	192.8	167.7	8.4	8.6	184.7	6.1	(14.2)
2021	-	137.3	65.6	202.9	186.2	9.3	9.1	204.6	6.8	(5.1)
2022	28.1	146.0	67.5	241.6	206.7	10.3	9.6	226.6	8.9	(24.0)
2023	-	155.2	69.6	224.8	229.4	11.5	10.1	251.0	12.8	13.4
2024	81.1	166.5	76.4	324.0	254.6	12.7	10.7	278.0	15.8	(61.7)
2025	24.7	178.1	81.8	284.6	282.6	14.1	11.3	308.0	19.8	3.7
2026	41.8	191.0	89.8	322.6	313.7	15.7	11.9	341.3	23.7	(5.0)
2027	64.9	204.5	96.9	366.3	348.2	17.4	12.6	378.2	28.7	(16.9)
2028	47.5	219.6	106.4	373.5	386.5	19.3	13.3	419.1	33.9	11.7
2029	43.7	235.5	115.9	395.2	429.0	21.4	14.0	464.5	40.0	29.3
2030	115.3	253.0	127.3	495.6	476.2	23.8	14.8	514.8	46.7	(27.5)
2031	12.4	262.5	131.1	406.0	490.5	24.5	15.1	530.2	47.6	76.6
2032	58.7	272.4	135.0	466.2	505.3	25.3	15.4	546.0	48.5	31.4
2033	33.3	281.4	141.9	456.6	520.6	26.0	15.7	562.4	49.0	56.8
2034	31.4	290.3	147.4	469.0	536.3	26.8	16.0	579.2	50.1	60.1
2035	37.1	299.4	153.7	490.1	552.5	27.6	16.4	596.5	51.0	55.4
2036	98.2	308.5	159.2	565.9	569.2	28.5	16.7	614.4	52.2	(3.8)
2037	68.6	317.7	164.8	551.1	586.4	29.3	17.0	632.7	53.6	28.0
2038	34.2	327.1	170.5	531.8	604.1	30.2	17.4	651.7	55.1	64.8
2039	36.1	335.5	176.0	547.6	622.4	291.2	17.7	931.2	57.0	326.7

() = negative.

Source: Asian Development Bank estimates.

⁵ Starting from 1 January 2009, the central government increased the fuel tax, a portion of which is returned to public transport operators.

⁶ The business tax for transport entities is 3.36% of sales, and the corporate income tax for all businesses is 25.00% of profit.

Table 4: Financial Evaluation of the Bus Rapid Transit Component (With Project)
(CNY million)

Year	Cost				Revenue					Cash Flow After Tax	With-Without Cash Flow After Tax ^a
	Capital	Operation	Maintenance	Total	Ticket	Other	Fuel Subsidy	Total	Tax		
2015	30.8	-	-	30.8	-	-	-	-	-	(30.8)	(30.8)
2016	106.0	-	-	106.0	-	-	-	-	-	(106.0)	(106.0)
2017	162.0	-	-	162.0	-	-	-	-	-	(162.0)	(162.0)
2018	-	115.4	60.0	175.4	140.9	7.0	7.5	155.4	(1.2)	(18.9)	8.7
2019	-	122.2	61.8	184.0	156.2	7.8	7.9	171.9	1.2	(13.4)	7.4
2020	-	130.9	63.7	194.6	173.2	8.7	8.3	190.2	3.7	(8.0)	6.2
2021	-	138.7	65.6	204.3	192.1	9.6	8.8	210.5	6.8	(0.6)	4.5
2022	28.1	147.1	67.5	242.7	213.0	10.6	9.3	232.9	10.4	(20.2)	3.8
2023	-	156.0	69.6	225.5	236.2	11.8	9.8	257.8	14.5	17.7	4.4
2024	114.0	165.5	71.6	351.2	261.9	13.1	10.4	285.3	19.2	(85.1)	(23.4)
2025	-	175.7	73.8	249.5	290.4	14.5	11.0	315.8	24.5	41.8	38.1
2026	-	186.6	76.0	262.6	322.0	16.1	11.6	349.6	30.6	56.5	61.5
2027	83.9	200.2	83.7	367.8	357.0	17.9	12.2	387.1	35.6	(16.3)	0.6
2028	26.6	213.8	89.0	329.5	395.9	19.8	12.9	428.6	42.3	56.9	45.1
2029	58.9	229.7	98.2	386.8	439.0	21.9	13.6	474.5	48.7	39.1	9.7
2030	152.0	245.7	105.5	503.3	486.8	24.3	14.4	525.5	56.9	(34.7)	(7.2)
2031	-	254.9	108.7	363.6	501.5	25.1	14.7	541.2	58.1	119.5	42.9
2032	43.5	264.7	112.6	420.9	516.6	25.8	15.0	557.4	59.2	77.4	46.0
2033	40.9	273.4	117.9	432.1	532.2	26.6	15.2	574.1	60.3	81.7	24.9
2034	20.9	282.0	122.4	425.3	548.3	27.4	15.6	591.3	61.7	104.2	44.1
2035	44.7	290.8	127.5	463.0	564.8	28.2	15.9	609.0	63.1	82.9	27.5
2036	142.5	299.6	132.0	574.1	581.9	29.1	16.2	627.2	64.8	(11.8)	(8.0)
2037	56.3	308.4	136.5	501.2	599.5	30.0	16.5	646.0	66.7	78.1	50.1
2038	14.3	317.4	140.8	472.5	617.6	30.9	16.8	665.3	68.7	124.2	59.4
2039	46.6	325.6	145.5	517.7	636.2	325.8	17.2	979.2	70.9	390.6	63.9
										FIRR	3.6%
										NPV	27.1

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

^a Comparison of cash flows after tax, indicating the incremental effect of the BRT project on the financial rate of return.

Source: Asian Development Bank estimates.

14. Sensitivity analysis indicates that a minor shortfall in ridership or fare levels, or an increase in capital cost would bring the FIRR below the WACC and necessitate the transfer of additional subsidies to the Ji'an Public Bus Company (Table 5). These factors are considered as potential risks and are accounted for in the risk management measures of the project design. The financial returns to investments in public transport are expected to be low given that fares are regulated to minimize the burden on the poor. The municipal government has a long history of providing operating and capital subsidies to the Ji'an Public Bus Company. The continuation of adequate subsidies to ensure financial sustainability of the public transport system in Ji'an has been included as a condition in the project agreement.

Table 5: Sensitivity Analysis

Scenario	Base FIRR (%)	FIRR (%)	NPV (CNY million)	Switching Value (%)
Cost increase of 20%	3.6	2.3	(29.1)	10.00
Cost decrease of 20%	3.6	5.4	82.4	NA
Fare or ridership increase of 20%	3.6	15.7	918.9	NA
Fare or ridership decrease of 20%	3.6	NC	(757.1)	0.64

() = negative, FIRR = financial internal rate of return, NC = not calculable, NA = not applicable, NPV = net present value.

Source: Asian Development Bank estimates.