

APPENDIX B

THE BREAK-EVEN DISTANCE

Table B.1
Parameter Value for Calculating Break-Even
Distance Bus versus Automobile
Transit 1998

Income Group	2	3	4	5
Fixed cost (Baht/trip)				
_bus (f^b)	6.025	6.025	6.025	6.025
_automobile (f^a)	7.101	7.101	7.101	7.101
Variable cost (Baht /km.)				
_bus (c^b)	1.060	1.060	1.060	1.060
_automobile (c^a)	2.037	2.037	2.037	2.037
Income&Salary (Baht/hr)	48.855	110.736	167.445	280.426
Value of time (of income)	0.49	0.49	0.49	0.49
Avg speed (km./hr)				
_bus	10	10	10	10
_automobile	31.14	31.14	31.14	31.14
Inverse of speed (hr/km.)				
_bus (t^b)	0.1	0.1	0.1	0.1
_automobile (t^a)	0.032	0.032	0.032	0.032
Variable time cost (Baht/km.)				
_bus (wt^b)	2.394	5.426	8.205	13.741
_automobile (wt^a)	0.769	1.742	2.635	4.413
$f^a - f^b$	1.075	1.075	1.075	1.075
$c^b - c^a$	-0.977	-0.977	-0.977	-0.977
$wt^b - wt^a$	1.625	3.684	5.570	9.328
$(c^b - c^a) + (wt^b - wt^a)$	0.649	2.707	4.593	8.352
Break-even distance	1.658	0.397	0.234	0.129

Table B.2
Parameter Value for Calculating Break-Even Distance
Bus versus Automobile Transit
2004

Income Group	2	3	4	5
Fixed cost (Baht/trip)				
_bus (f^b)	3.793	3.793	3.793	3.793
_automobile (f^a)	6.237	6.237	6.237	6.237
Variable cost (Baht/km.)				
_bus (c^b)	0.940	0.940	0.940	0.940
_automobile (c^a)	3.705	3.705	3.705	3.705
Income&Salary (Baht/hr)	46.289	101.598	158.868	258.305
Value of time (of income)	0.49	0.49	0.49	0.49
Avg speed (km./hr)				
_bus	10	10	10	10
_automobile	31.14	31.14	31.14	31.14
Inverse of speed (hr/km.)				
_bus (t^b)	0.1	0.1	0.1	0.1
_automobile (t^a)	0.032	0.032	0.032	0.032
Variable time cost (Baht/km.)				
_bus (wt^b)	2.268	4.978	7.785	12.657
_automobile (wt^a)	0.728	1.599	2.500	4.065
$f^a - f^b$	2.444	2.444	2.444	2.444
$c^b - c^a$	-2.766	-2.766	-2.766	-2.766
$wt^b - wt^a$	1.540	3.380	5.285	8.592
$(c^b - c^a) + (wt^b - wt^a)$	-1.226	0.614	2.519	5.827
Break-even distance	-1.994	3.981	0.970	0.419

Table B.3.1
Parameter Value for Calculating Break-Even
Distance Bus versus Rapid Rail Transit
(for Grids with Rapid Rail Lines)
2004

Income Group	2	3	4	5
Fixed cost (Baht/trip)				
_bus (f^b)	2.968	2.968	2.968	2.968
_rapid rail transit (f^s)	12	12	12	12
Variable cost (Baht/km.)				
_bus (c^b)	1.847	1.847	1.847	1.847
_ rapid rail transit (c^s)	2.405	2.405	2.405	2.405
Income&Salary (Baht/hr)	46.289	101.598	158.868	258.305
Value of time (of income)	0.49	0.49	0.49	0.49
Avg speed (km./hr)				
_bus	10	10	10	10
_ rapid rail transit	35	35	35	35
Inverse of speed (hr/km.)				
_bus (t^b)	0.1	0.1	0.1	0.1
_ rapid rail transit (t^s)	0.029	0.029	0.029	0.029
Variable time cost (Baht/km.)				
_bus (wt^b)	2.268	4.978	7.785	12.657
_ rapid rail transit (wt^s)	0.648	1.422	2.224	3.616
$f^s - f^b$	9.032	9.032	9.032	9.032
$c^b - c^s$	-0.557	-0.557	-0.557	-0.557
$wt^b - wt^s$	1.620	3.556	5.560	9.041
$(c^b - c^s) + (wt^b - wt^s)$	1.063	2.999	5.003	8.483
Break-even distance	8.499	3.012	1.805	1.065

Table B.3.2
Parameter Value for Calculating Break-Even
Distance Bus versus Rapid Rail Transit
(for Grids without Rapid Rail Lines)
2004

Income Group	2	3	4	5
Fixed cost (Baht trip)				
_bus (f^b)	3.737	3.737	3.737	3.737
_rapid rail transit (f^s)	23.696	23.696	23.696	23.696
Variable cost (Baht/km.)				
_bus (c^b)	0.705	0.705	0.705	0.705
_ rapid rail transit (c^s)	3.519	3.519	3.519	3.519
Income&Salary (Baht/hr)	46.289	101.598	158.868	258.305
Value of time (of income)	0.49	0.49	0.49	0.49
Avg speed (km./hr)				
_bus	10	10	10	10
_ rapid rail transit	35	35	35	35
Inverse of speed (hr/km.)				
_bus (t^b)	0.1	0.1	0.1	0.1
_ rapid rail transit (t^s)	0.029	0.029	0.029	0.029
Variable time cost (Baht/km.)				
_bus (wt^b)	2.268	4.978	7.785	12.657
_ rapid rail transit (wt^s)	0.648	1.422	2.224	3.616
$f^s - f^b$	19.958	19.95843036	19.958	19.958
$c^b - c^s$	-2.814	-2.814	-2.814	-2.814
$wt^b - wt^s$	1.620	3.556	5.560	9.041
$(c^b - c^s) + (wt^b - wt^s)$	-1.193	0.742	2.747	6.227
Break-even distance	-16.723	26.887	7.266	3.205

Table B.4.1
Parameter Value for Calculating Break-Even Distance
Automobile versus Rapid Rail Transit
(for Grids with Rapid Rail Lines)
2004

Income Group	2	3	4	5
Fixed cost (Baht/trip)				
_automobile (f^a)	5.358	5.358	5.358	5.358
_rapid rail transit (f^s)	12	12	12	12
Variable cost (Baht/km.)				
_ automobile (c^a)	7.046	7.046	7.046	7.046
_ rapid rail transit (c^s)	2.405	2.405	2.405	2.405
Income&Salary (Baht/hr)	46.289	101.598	158.868	258.305
Value of time (of income)	0.49	0.49	0.49	0.49
Avg speed (km./hr)				
_ automobile	31.14	31.14	31.14	31.14
_ rapid rail transit	35	35	35	35
Inverse of speed (hr/km.)				
_ automobile (t^a)	0.032	0.032	0.032	0.032
_ rapid rail transit (t^s)	0.029	0.029	0.029	0.029
Variable time cost (Baht/km.)				
_ automobile (wt^a)	0.728	1.599	2.500	4.065
_ rapid rail transit (wt^s)	0.648	1.422	2.224	3.616
$f^s - f^a$	6.642	6.642	6.642	6.642
$c^a - c^s$	4.641	4.641	4.641	4.641
$wt^a - wt^s$	0.080	0.176	0.276	0.448
$(c^a - c^s) + (wt^a - wt^s)$	4.721	4.817	4.917	5.089
Break-even distance	1.407	1.379	1.351	1.305

Table B.4.2
Parameter Value for Calculating Break-Even Distance
Automobile versus Rapid Rail Transit
(for Grids without Rapid Rail Lines)
2004

Income Group	2	3	4	5
Fixed cost (Baht/trip)				
_automobile (f^a)	6.531	6.531	6.531	6.531
_rapid rail transit (f^s)	23.696	23.696	23.696	23.696
Variable cost (Baht/km.)				
_ automobile (c^a)	2.595	2.595	2.595	2.595
_ rapid rail transit (c^s)	3.519	3.519	3.519	3.519
Income&Salary (Baht/hr)	46.289	101.598	158.868	258.305
Value of time (of income)	0.49	0.49	0.49	0.49
Avg speed (km./hr)				
_ automobile	31.14	31.14	31.14	31.14
_ rapid rail transit	35	35	35	35
Inverse of speed (hr/km.)				
_ automobile (t^a)	0.032	0.032	0.032	0.032
_ rapid rail transit (t^s)	0.029	0.029	0.029	0.029
Variable time cost (Baht/km.)				
_ automobile (wt^a)	0.728	1.599	2.500	4.065
_ rapid rail transit (wt^s)	0.648	1.422	2.224	3.616
$f^s - f^a$	17.165	17.165	17.165	17.165
$c^a - c^s$	-0.924	-0.924	-0.924	-0.924
$wt^a - wt^s$	0.080	0.176	0.276	0.448
$(c^a - c^s) + (wt^a - wt^s)$	-0.843	-0.747	-0.648	-0.475
Break-even distance	-20.353	-22.967	-26.490	-36.105