stores are wholly managed by the private sector, with their location oriented to maximize profitability. The average percentages of houses located within 500 m is 61.8%. The strength of relationship between the percentages and DID densities is illustrated in Figure 16.15.

Results: urban density and accessibility (Table 16.4)

The average percentage of households located within 500 m of a number of facilities seem to fall into two groups, depending on the facility in question. The percentages of households within 500 m of a railway station and day-care centres range between 10% and 20%. Far higher are the percentages of households within 500 m of the other five facilities: between 50% and 66%. Furthermore, accessibility to local facilities whose location is influenced by market conditions, (i.e. convenience stores), is clearly affected by DID densities. However, public facilities (i.e. local community centres, and parks or gardens), are not much affected by the density of the DIDs. For the other facilities (i.e. banking facilities, hospitals and clinics, and railway stations), the correlation is moderate.

These results imply that the strength of correlation between urban population density and local facilities depends on

Table 16.4
The relationship between DID population densities and percentages of households within 500 m of local facilities.

Local facilities	Day-care centres for the elderly	Railway stations	Local community centres	Banking facilities/ post offices	Parks and gardens	Convenience stores	Hospitals and clinics
Households within 500 m of local facilities: standard deviation (% in brackets)	7.3 (5.9)	15.4 (10.1)	53.8 (27.6)	57.8 (9.7)	58.3 (22.9)	61.8 (12.0)	66.4 (15.3)
Correlation with DID's population densities (multiple correlation coefficient, R^2)	–	0.3316	–	0.4286	–	0.5413	0.3394
Market orientation	Various	Various	None	Strong	None	Strong	Various

'marketability' of the facility and the individual policies of municipalities. Urban densities, as an indicator to demonstrate accessibility, are not sufficient for all kinds of local facilities. Accessibility and arrangement of local facilities are also affected by other local characteristics.

Further case study city analysis

Principal component analysis

Eleven factors were selected for principal component analysis. Three principal components were calculated and their qualities were examined by the size of the eigenvalue of each factor (see Table 16.5). It was decided that the first principal component should relate to the theoretical requirements of the compact city. This can be seen through its relatively strong relationship with aspects such as DID's population densities, land prices and good accessibility to convenience stores, hospitals and clinics and banking facilities. The second principal component shows characteristics of urban diffusion, with the correlation with good access to local community centres and parks, and high car use. The third principal component, which was named urban 'reluctance' is illustrated with good access to railway stations and day-care centres for the elderly as well as increased floor space of residences.

Table 16.5
Results of principal component analysis.

Eigenvalue: Principal components	1: Compact city	2: Urban diffusion	3: Urban 'reluctance'
DID population densities	0.3717	−0.1805	−0.1406
Land prices	0.3439	−0.2133	0.1509
Convenience stores	0.3310	0.0649	−0.3269
Hospitals and clinics	0.3172	0.2157	0.0693
Banking facilities	0.3144	0.2186	0.0353
Local community centres	0.1336	0.6016	−0.0152
Parks and gardens	0.2193	0.5113	−0.2309
Driving to work	−0.3242	0.3436	0.1774
Railway stations	0.2934	−0.2263	0.5347
Day-care centres for the elderly	0.3041	0.0342	0.5233
Household floor space	−0.2915	0.2594	0.4470
Eigenvalue	6.1936	1.5386	0.7323
Proportion	0.5631	0.1399	0.0666
Cumulative	0.5631	0.7029	0.7695