Costs and Returns of Subdivision Development

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CONTENTS

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Costs and Returns of Subdivision Development

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INTRODUCTION

THE UNITED STATES is rapidly becoming an urban nation. In 1970 more than 70 per cent of the nation's population lived in urban places. One aspect of this urbanization trend has been intensive development of single-family-residence subdivisions. Large numbers of urban residents, while choosing to work in a central city, have elected to live in suburban housing developments. Rapid advances in transportation and communication have accelerated this trend in recent years. The result has been a significant increase in demand for suburban housing.

Associated with the increase in demand for housing has been a rapid rise in house construction costs. The average single-family home cost $9,780 in 1949. By 1969, the average cost had risen to $20,534 *(6)*. Lot prices have reflected similar price changes. In recent years home ownership expenses were affected by the sharp increases in mortgage costs as well as construction costs. These higher costs probably caused many people to postpone building.

Many solutions to the housing problem have been offered, but the general situation, intensified by a rapidly growing population, is far from solved. One of the solutions is a continuation of subdivision development. The accelerated rate of subdivision de-

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velopment throughout much of the nation is an indication that this approach is acceptable, at least in the short run.

If additional subdivision housing is to be sufficient to meet the increased demands, the return from investments by developers must compete with or exceed returns from other sources. Also, finished lot prices must be sufficiently low to allow home building by people within a wide income range. Hence, the need for an analysis of costs and returns of subdivision development and other forms of investment was realized. This report is a summary of the results of such a study.

Research Objectives

The overall objective of this study was to examine the costs and returns of subdivision developments from the viewpoint of both the private and public sectors. Specific objectives were to: (1) develop procedures for estimating costs and returns of additional subdivisions to municipalities and to private developers; (2) estimate costs and returns of actual development to municipalities and private developers; and (3) determine relative rates of return from investments in residential subdivisions for comparison with other forms of investment.

Procedure

This study was limited to analyses of selected cases to provide meaningful estimates of costs and returns. Cost and return factors of both private developers and local government were examined.

The initial step in the study was selection of the geographical location of the community to be studied and the specific subdivisions within that community. Factors used in selecting the community included population, location, income, and educational level.

Specific subdivisions were selected on basis of data available, time of development, location with respect to other residential areas, and proximity to work and shopping facilities. Detailed data on all aspects of private land development costs for the selected cases were obtained. These costs were obtained on a per lot basis and compared with returns generated by sale of the lots.

All developmental costs except land were adjusted to 1969 price levels using the wholesale price index. Land values have risen

somewhat faster than the wholesale price index during the last decade; therefore, another procedure of adjustment was needed for land. The value of land nationwide increased an estimated 5 per cent annually for the past several years, so land prices were adjusted using this rate of change.

Similar data were obtained from personnel of the local municipal government on initial and maintenance costs of new subdivisions and estimated revenue generated by these developments in the form of property, sales, and other taxes and various service fees. Although important, intangible social values were excluded from analysis.

Installation and maintenance costs of "public" utilities provided by private enterprise also were omitted from the present analysis. Corporations providing telephone, gas, electricity, and other special services operate on a self-sustaining basis. Charges made for a given utility installation and its maintenance may not be sufficient to cover costs. Because of this procedure of aggregating costs in a local area, some utility companies were not able to provide estimates of the costs and returns per house other than as simple averages. Hence, they were omitted from consideration. This omission was not considered serious since services were not provided by means of tax and fee revenues, whereas costs to municipalities must be covered by such revenues.

Description of the Case Study Area

The study area was an Alabama city that included a total area of 20 square miles with a density of 1,150 persons per square mile. Changes in population of the case city and the State are compared in Appendix Table 1.

Educational and income levels of residents in the study city were above the State average. The 1960 census indicated that males over 25 completed an average of 14.6 years of school and females over 25, 12.4 years *(7)*. The 1960 median income for all families was $4,269. Statewide data showed the average male over 25 completed 8.9 years of school while the average female completed 9.3 years *(1)*. The 1960 median income for all families in the State was $3,937. It was estimated that the number of years of school completed for the case city did not change greatly between 1960 and 1970. However, it was estimated that the median income rose from $4,269 in 1960 to approximately $6,500 by 1970. As indicated by these comparisons, the study area ex-

hibited a potential for rapid growth compared with the State. The potential was translated into a relatively high level of demand for subdivision and other new housing.

Results of Similar Studies

A case study in 1961 involving 159 lots in Lisle, Illinois revealed that the cost per acre of land to private developers was $2,000 *(5)*. A time lag of 2 years between land purchase and development resulted in additional costs of $240 in interest (2 years at 6 per cent) and $40 in property taxes. Thus, total land costs at time of development were $2,280 per acre. Through subdivision, each acre of land yielded 2.63 lots. Hence, initial land costs totaled $867 per lot at time of development. This total represented 24 per cent of the total development cost of each lot in the subdivision.

A survey by the National Association of Home Builders (NAHB) of its member builders provided information on the average value of land before and after development *(5)*. Average prices paid for raw usable land in the East-South-Central region of the United States in 1960 and 1964 were $1,533 and $2,420 per acre, respectively. Raw or undeveloped land prices in both years were significantly below the national average of $2,447 in 1960 and $3,878 in 1964. However, the percentage change in land prices from 1960 to 1964 in both the East-South-Central region and the Nation was approximately 63 per cent.

The NAHB survey also showed average prices for developed lots in the U.S. were $2,808 per lot in 1960 and $4,567 in 1964. Comparable prices in the East-South-Central region were $2,250 and $3,564 in the same periods. Regional and U.S. price changes were approximately the same between 1960 and 1964.

The large difference in raw and developed land prices indicated the importance of lot improvements on investment decisions. Improvements such as sewers, water mains, sidewalks, streets, and drains represented approximately 64 per cent of total lot cost in the Lisle, Illinois study. A somewhat lower proportion of total costs was attributed to improvements in a 1965 study in California. There, 45 per cent of the costs were incurred because of improvements *(4)*. However, the lower percentage reported in this study was largely the result of relatively high value of undeveloped land in California. Other studies have

indicated that attributing approximately 60 per cent of total costs to improvements appeared more normal throughout the United States *(2)*.

Other information of the National Association of Homebuilders as reported by Schmid indicated the average selling price per lot, including developmental improvements, in several large cities in each state. Although the average price for lots was not available for the study city, the report provided estimates for several Alabama cities, Table 1. The cities listed are larger than the case study city. Nevertheless, prices listed and the average price for seven major cities provide some indication of the 1964 cost per lot in Alabama.

TABLE 1. AVERAGE SELLING PRICE OF DEVELOPED LOTS IN RESIDENTIAL SUBDIVISIONS, SELECTED ALABAMA CITIES, 1964[1]

City	Price per lot, 1964 (includes developmental improvements)
	Dollars
Birmingham	3,939
Decatur	3,400
Dothan	2,083
Huntsville	3,650
Mobile	3,750
Montgomery	3,708
Tuscaloosa	3,750
All cities	3,469

[1] Source: Schmid, A. Allen, *Converting Land from Rural to Urban Uses.* Baltimore, Johns Hopkins Press, 1968, p. 20.

Municipalities, like private developers, incur certain costs and realize returns when new development occurs. Unfortunately, little is recorded in the literature on such costs and returns. For a new subdivision to pay its own way so far as the city is concerned, the revenue paid by the subdivision to the city must equal the cost of services offered by the city. This situation does not always exist.

Bahl *(3)* reported the extra cost associated with a "leapfrog" development near Lexington, Kentucky[2]. He noted many areas in which city costs were incurred. These included maintenance of sanitary sewers, water lines, and streets, garbage dis-

[2] Leapfrog development is the term given to the procedure of developing areas around cities in a patchwork manner. Large undeveloped areas are left between developments and the central city. Relative land prices generally determine the development pattern.

posal, police and fire protection, public transportation, and schools. The incidence of these costs was only partially on residents of the new subdivision since 42 per cent of the costs of the "leapfrog" development were borne by the total population in the service area. Thus, only 58 per cent of the added costs of the "leapfrog" were collected from subdivision residents through property taxes, excise (gasoline) taxes, and service fees.

Description of the Cases Studied

Five separate developments were analyzed for this study. Two of the developments were subdivisions of larger platted areas. However, they were developed as separate projects which allowed them to be classified independently. The cases studied were designated as Subdivision "A", "B", and "C", with "A" and "C" having two plats each. Cost and return figures were adjusted to 1970 levels according to the procedure outlined earlier, Appendix Tables 2-6. Adjusted data were used in the analysis.

Case Study A. Case A contained two plats with Plat One having 35 lots and Plat Two, 42 lots. The two plats were analyzed separately to determine differences within a large subdivision as well as between subdivisions.

The site for Case A was purchased in November 1962. Development for both plats began 3 years later. Plat One contained 15.38 acres and was subdivided into lots of approximately .35 acre each. Plat Two, with 20 acres, was subdivided into lots of .39 acre each. At the time of this study, 32 lots in Plat One and 21 lots in Plat Two had been sold.

The 77 lots in Case A were located approximately 2.2 miles from the prevailing "100 per cent" spot in the City[3]. However, rapid development of satellite shopping centers reduced the importance of this location somewhat. The closest shopping center was located 2.0 miles from Case A. With good roads leading to both the "100 per cent" spot and shopping centers, a distance of 2 to 3 miles was not considered significant. The more significant aspects of location were found in the close proximity of Case A to schools, churches, and employment centers.

The entire land area of Case A was underlain with sand at its

[3] The "100 per cent" spot in a city is considered the prime spot for commercial activity. Here one might expect the greatest flow of trade and employment opportunities.

lower points and heavy clay on hills and ridges. Drainage was good throughout the development. Vegetative cover was moderate with a limited number of large trees. Thus, the area was not considered physically difficult to develop.

Case Study B. Case study B was located on the opposite side of town from cases "A" and "C". This development, although 0.3 mile closer to the "100 per cent" spot, was not located near any other shopping facilities. Only one road was available for commuting to the central work and shopping areas, and traffic on this road was sometimes quite congested. In addition, Case B lay beyond an older portion of the city where some deterioration of existing homes was evident.

Land for this Subdivision was purchased in December 1966, and development began early in 1967. At the time of the study 22 of the 49 lots had been sold.

This subdivision contained a total of 25.3 acres of land. The original subdivision design contained 50 lots, but after completion of development, it was discovered that 1 lot was not suitable for building purposes because of drainage problems. Had this problem been realized earlier surrounding lots could have been enlarged. Higher selling prices associated with larger lots may have been sufficient to recover a portion of the loss caused by this situation. Because of the loss of this lot, average costs and returns for the subdivision were computed on the basis of 49 total lots.

The land on which Case B was located was partially underlain by thick rock formations. This situation was not realized at the time the tract was purchased. Some difficulties were encountered in laying sewer and water lines because of the rock. The extra costs required to install utility services were not sufficient to offset all profits from the development although some reduction was evident.

Case Study C. Case C was located approximately 0.5 mile from Subdivision A. This location placed the development 2.5 miles from the "100 per cent" location defined earlier. This subdivision was located favorably with respect to the shopping facilities, schools, and churches near Subdivision A.

Land for this subdivision was purchased in late 1969. Actual development had not begun at the time of the study. However, a sufficient number of bids and contracts were completed to use the area for study. There were two plats in the development.

Plat One contained 31 lots arranged on 16 acres of land. Plat Two had 33 lots on a total of 18.5 acres, see figure.

Although Case C was located within 0.5 mile of "A" and was located close to the same facilities as "A", there were a number of physical differences that justified comparison of the two areas. Subdivision A was located on rolling sandy land covered with only small brush. Case C was in an area covered with large trees and was situated on relatively rough, hilly land rather than rolling plains as was the case in "A". Another difference was the heavy rock content in the soil in Case C as compared with sandy soil in Case A.

Each development had a number of physical advantages as well as disadvantages. These pros and cons affected the amount of return to the respective developers.

RESULTS

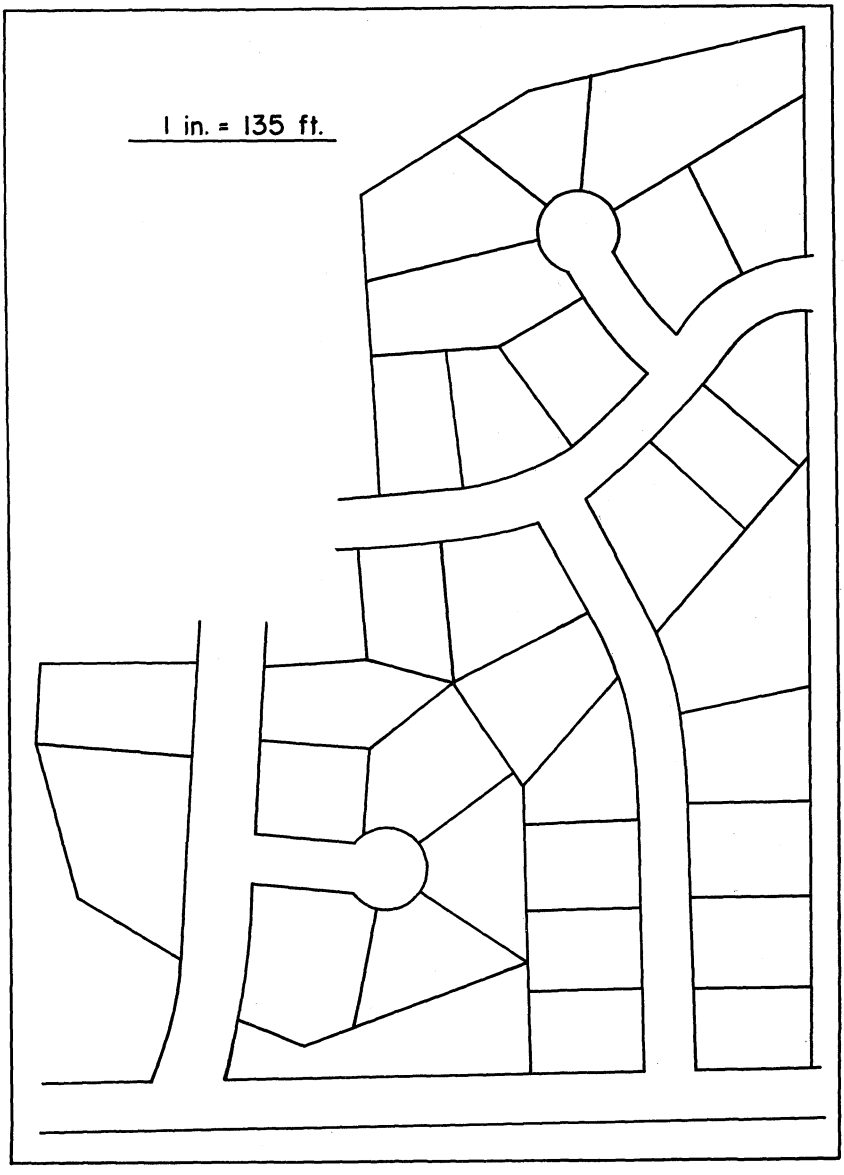
Development Costs

The best perspective concerning variations in costs among developments was obtained by examining each cost item separately. Cost factors were broken down into the following classes: land, improvements (sewer, water, and street extension), taxes, engineering, recording, broker's fee, interest, and miscellaneous. The analysis of these factors provided a partial explanation of the difference among and within the separate developments.

Land. The average cost of land to developers for all lots in the study was $965 per lot, Tables 2 and 3.[4] The lowest land costs were found in Plat One of Subdivision A and the highest costs in Subdivision C, Plat Two. Costs in both plats were considered sufficiently different from the mean and other plats to merit separate consideration. Differences in size of the lots in the two plats appeared to account for differences in the costs. However, the cost per acre of the two cases differed also. The average land cost in Plat One, Case A was $1,223 per acre and Plat Two, Case C was $2,000 per acre, Appendix Tables 2 and 6, respectively. The higher cost per acre of the latter development was reflected in the higher lot cost.

Changes in the value of land over time offered one explanation for differences in the land costs for the developments. The value

[4] Averages used in text that refer to all cases collectively are simple averages. Weighted averages are shown in Appendix Table 13.



General plat map of Plat Two, Case C shows typical subdivision layout.

TABLE 2. COST OF SUBDIVISION DEVELOPMENT PER LOT BY SELECTED FACTORS, ALABAMA CASE STUDY, 1970

Item	Subdivision					Average
	A-1	A-2	B	C-1	C-2	
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Land[1]	756	820	992	1,084	1,177	966
Taxes[2]	29	12	—[3]	20	22	17
Sewer	582	358	557	510	446	491
Street extension	1,163	1,067	1,097	1,306	1,144	1,155
Water	358	314	340	524	461	399
Engineering	179	149	64	100	100	118
Recording	—[3]	—[3]	5	1	1	2
Interest	1,036	933	744	1,432	1,389	1,107
Broker fee	250	250	250	350	350	290
Miscellaneous	—	—	48	32	24	21
Total[4]	4,354	3,903	4,097	5,359	5,114	4,566

[1] Land prices were adjusted to 1969 by computing a 5 per cent increase in value annually. All other costs were adjusted by means of the wholesale price index.
[2] Estimate of aggregate real property taxes during development period.
[3] Less than $1.00.
[4] Excludes management fee. Totals do not necessarily agree with totals in Appendix Tables 7 through 11 because of rounding.

TABLE 3. PERCENTAGE DISTRIBUTION OF TOTAL SUBDIVISION COST PER LOT BY COST FACTORS, ALABAMA CASE STUDY, 1970[1]

Cost factor	Subdivision				
	A-1	A-2	B	C-1	C-2
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Land	17.37	21.00	24.21	20.23	23.02
Taxes	.67	.30	.01	.37	.43
Improvements	48.31	44.56	48.67	43.66	40.11
Engineering	4.11	3.82	1.56	1.87	1.96
Recording	.01	.01	.12	.02	.02
Interest	23.80	23.90	18.16	26.72	27.16
Broker fee	5.74	6.41	6.10	6.53	6.84
Miscellaneous	—[2]	—[2]	1.17	.60	.47

[1] Excludes management fee.
[2] None reported.

of land rose significantly during the last decade. A portion of the increase in value was attributed to changes in the price level brought about by inflation in the general economy. However, after adjusting all costs to 1970 price levels, differences still appeared significant. This situation led to the conclusion that the demand for land in 1970 was greater than the demand in 1962. This change probably resulted from growth in population and income levels in the community.

Perhaps another reason the prices paid for land were not more uniform was the assumption of a price adjustment rate of 5 per

cent per year. The 5 per cent rate is accurate for the annual rise in land prices generally, but for land located close to a growing, young, and relatively wealthy community 5 per cent may be somewhat low. If the land for development "A" had been compounded at 7 or 8 per cent per year, the adjusted costs for land in the five developments would be more nearly the same total amount.

Generally, the single most important factor in the value of a parcel of land is its location. This is especially true of subdivision lots. However, in this study too few cases were analyzed to represent any significant difference. All developments were located near some or all of the following: transportation facilities, shopping centers, places of business, schools, churches, or nucleus of the city. If more cases had been available for study, it was felt that net returns for developments located some distance from a number of the above amenities might have been significantly lower.

Improvements. Three areas constituted improvements—sewer, street extension, and water.[5] An observation concerning improvement cost in general was that A-2 had the lowest cost for all three types of improvements. Several factors contributed to this situation. Subdivision A-2 contained 11 lots located on a previously existing street for which sewer and water lines were already installed when the plat was subdivided. If the total cost of street extension in Plat Two of Subdivision A were divided among the 31 lots serviced, the average cost per lot would actually exceed the street cost in the other subdivisions. The latter procedure was used in a final cost comparison, Table 4. A second reason for the lower improvement costs was the sandy soil and uniform topography. Also, the limited number of trees existing on the tract allowed clearing to be accomplished with relative ease. These combined factors resulted in Plat A-2 having the lowest cost in each class of improvement among all subdivisions studied. Individual variation within the three items of improvement is discussed in following sections.

Clearing, grading, and paving are the major items included in the extension of streets. Street extension in each of the cases

[5] It should be noted that the construction costs for Subdivision C were estimated in 1968 and land purchased in 1969. The advance estimate date was possible because the land was owned by a separate corporation in which the developer had an interest. Historically, the preliminary estimate for subdivision development by this developer closely approximated the final construction costs.

TABLE 4. COMPARISON OF SEWER, STREET, AND WATER COSTS PER LOT IN ALL SUBDIVISIONS BASED ON A TOTAL OF 42 AND 31 LOTS IN A-2, ALABAMA CASE STUDY, 1970[1] (ADJUSTED COSTS)

Cost item	Subdivision						Average
	A-1	A-2	A-2	B	C-1	C-2	
	35 lots	42 lots	31 lots	49 lots	31 lots	33 lots	190 lots
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Sewer	582	358	485	557	510	446	491
Street extension	1,163	1,067	1,446	1,097	1,306	1,144	1,155
Water	358	314	425	340	524	461	399
Total	2,103	1,739	2,356	1,994	2,240	2,051	2,045
Total cost per lot of each development	4,354	3,903	5,288	4,097	5,359	5,114	4,566

[1] Excludes management fees.

represented the largest physical development expense, Table 2. Adjusted costs ranged from a low of $1,067 per lot for Case A, Plat Two, to a high of $1,306 per lot for Case C, Plat One. Street extension costs for the three remaining subdivisions were within a $65 range. The $240 difference between the high and low costs of street extension per lot was attributed largely to the amount of clearing and excavation necessary in the construction of the streets.

Sewer extension consists of laying and connecting sewer pipe in each development. The average cost of this improvement for all lots was $491, Table 2.

As seen in Table 2, the sewerage cost for Plats One and Two of Subdivision A differed substantially. The difference between the totals for sewer extension was attributed to two main factors. Case A, Plat Two had a comparatively low cost per lot for sewerage because 11 of the 42 lots in the development were served by an existing sewer. Exclusion of these 11 lots for computational purposes resulted in a per lot cost of $485 for sewer extensions to the remaining 31 lots, Table 4. The latter cost more accurately reflects the true cost of this development in A-2 relative to the other subdivisions.

The higher sewer costs per lot in Subdivision A-1 were partially attributable to physical factors. Direction of the sewage flow was from Plat One to Plat Two; however, there was a substantial variation in the elevation of the ground in the two plats. This change in elevation was such that much of the sewer for Plat

Two was relatively close to the surface of the ground, whereas in Plat One it was fairly deep—25 feet or more. The deeper sewer resulted in higher costs.

The per lot cost of water line extensions into the five developments ranged from a low of $314 in Subdivision A-2 to a high of $524 in Subdivision C-1, Table 2. Average cost to the developer for this service was $399.

Variations in the costs of water within and between Subdivisions A and B were relatively insignificant. The largest variation in price was noted in comparison of "A" and "B" with Subdivision C. Part of this variation was attributed to the fact that subdivision C had some factors that made installation more difficult, thereby raising water costs.

A final more significant factor causing differences among water line installation costs was extension of trunk lines. Subdivision C was isolated from any existing water line facilities. Consequently, the developer eventually may be required to pay all or a portion of the water trunk line installation costs to connect the city's water supply. This means an additional cost for water service. Therefore, the cost of water per lot in the two plats of Subdivision C may be higher than shown in these comparisons.

Engineering. Engineering cost in each of the five cases was for the development of lot plat maps, utility engineering maps, and maps showing changes in elevation. Costs for this service ranged from a low of $64 per lot in Subdivision B to a high of $179 in Plat One of Subdivision A. No specific reasons for the variation in the costs were determined, but it was probably caused by differences between the difficulty of the job with respect to each plat.

Broker's Fee. A fee for selling the individual lots was not reported by any of the developers. It was thought the developer sold the lots himself and therefore did not record the expense. Whether a developer sells the lots or has a realtor sell them, there is an expense involved. If the developer does the work himself, a charge should be placed on the time and trouble he experiences. If he lists the lots with a real estate broker, he will be charged a certain per cent of the selling price. The procedure followed involved assessing each lot for a broker's fee equal to 5 per cent of the designated sales price. A 5 per cent fee was commonly accepted by realtors for selling lots and several local realtors charged fees on this basis. The monetary

amount of this service is shown in Table 2. Variations in this fee were the result of the differences between selling prices to which the 5 per cent broker's fee was applied.

Taxes. Property taxes as a whole did not affect development costs significantly. Revenue from property taxes was comparatively low for the case study area. Low taxes meant that the cost to the developer for holding undeveloped land was a relatively insignificant portion of total development cost. Of the cases studied, the per lot taxes from time of purchase through the holding period to time of sale ranged from a low of $.34 to a high of $29.25 per lot, Appendix Tables 2-6. The weighted average cost for taxes over the entire study period was $15 per lot, Appendix Table 12.

Other Costs. Total costs to the developer included two relatively insignificant costs—recording and miscellaneous. Recording, the listing of plats with the County Clerk, varied from $.32 per lot in Case A, Plat One to $4.84 per lot in Case B. Although there was a significant difference among the subdivisions with respect to these costs they were relatively unimportant when compared to total costs per lot.

Miscellaneous costs were not itemized by developers in Case A. In Case B the portion of costs attributed to miscellaneous items was approximately $48 per lot. The developer of Subdivision B explained that these costs consisted mainly of extra labor used for final cleaning of lots and keeping streets and lots clean for early sales and other incidentals.

Subdivision C had a miscellaneous cost of $32 per lot for Plat One and $24 per lot for Plat Two. The developers of these subdivisions explained this was a hedge factor to help offset any costs that possibly were overlooked in computing total costs.

Interest Cost and Return to Developer. Opportunity costs and holding costs were not included in any of the raw data furnished by the developers. One developer indicated that money for construction was borrowed from a separate, personally owned corporation. This developer was, in effect, paying the interest to himself. This is possible for any developer who possesses sufficient capital to develop a subdivision without outside financial assistance. However, an interest charge and opportunity cost must be considered to account for the possibility of alternative uses for the money invested.

The interest charge for each of the five plats in this study was

estimated to be 6 per cent. The actual market rate of interest was slightly higher during the latter years of the study, but the difference was offset by lower rates in earlier years. Interest charges in each case were stopped in the year when it was estimated that a sufficient number of lots had been sold to repay the principal amount and all accumulated interest.

Case A, Plat One. Land for Plat One was purchased in November 1962 for $537 per lot. Over the 8-year development period, approximately $28 in real property taxes were paid on each lot. Since annual taxes were relatively small it was assumed that funds to pay them were borrowed at the time initial purchase of the land was financed, rather than on a yearly basis. In other words, $565 per lot was assumed borrowed January 1, 1963 to pay for the land and taxes that accrued while the tract was being held for development, Table 5.

After a ripening period of 3 years, development was begun. In 1965, $2,071 per lot was needed to make developmental improvements. The totals of the two investments along with interest charged on the selling price of the lots is shown below.

Cost item (A-1)	*Amount*
Estimated sales price	$5,000
Less unadjusted cost of land and improvements	2,636
Net before interest	2,364
Less interest charge	1,036
Net profit excluding broker	1,328
Less broker expense	250
Net returns above cash cost for development	$1,078

Interest charges were a very important expense. The significance of interest was reflected in the fact that it represented 26.4 per cent of the estimated total cost. Of equal significance was the net return (above interest charges) as a per cent of the selling price. In this case the return was 21.6 per cent of sales price after a 5 per cent broker fee was paid.

Lot sales in this subdivision averaged approximately $5,000 each. This figure was derived from the desired gross return expressed by the developer. Gross receipts for the 15.38 acres in Plat One including improvements totaled $173,273, Appendix Table 2. The average price of the 77 lots originally was estimated to be $4,950 per lot. However, the demand for the lots in Subdivision A combined with the general rise in the price of land enabled the developer to increase the sales price of the lots an average of about $50 each. Thus, the estimated sales

TABLE 5. CAPITAL BORROWED FOR LAND AND IMPROVEMENTS AND INTEREST ON CAPITAL, BY COST ITEM, FOR EACH SUBDIVISION LOT, ALABAMA CASE STUDY, 1970 (UNADJUSTED COSTS)

Item	Subdivision				
	A-1	A-2	B	C-1	C-2
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Cost of land and all taxes	565	594	857	1,052	1,143
Improvement cost	2,071	1,714	1,985	2,387[1]	2,098
Interest on land, taxes, and improvements @ 6%	1,036	933	746	1,432	1,388
Total	3,672	3,241	3,588	4,871	4,629
Year money borrowed for land purchase	1962	1962	1967	1970	1970
Number years in loan period	8	8	4	8	8
Year money borrowed for improvements	1965	1965	1967	1973	1973
Number years in loan period	5	5	4	5	5

[1] Improvement price was for 1969; however, work was not expected to begin until 1973. Full development period was based on time required to develop and amortize subdivisions A-1 and A-2.

price, Appendix Table 1, may be somewhat low when all lots are finally sold if present trends in inflation and demand levels continue.

Data from Case A, Plat One were used to determine how high interest rates could rise before the return above development costs would be zero. The following illustration shows various interest rates and corresponding returns.

Interest rate Per cent	*Net return above development costs*
6	$1,078
7	874
8	661
9	438
10	204
11	—42

Comparable charges for interest on land and improvements for the remaining cases are shown in Table 5.

Returns to Capital, Management, and Opportunity Cost

Return to management is a cost that a manager, or in this case the developer, pays to himself for work he does in developing a subdivision. Return to management does not represent a payment for risk and speculation, which are high in this particular endeavor. Rather, it is simply a salary for services performed. However, since a large amount of capital is invested

when land is subdivided and the speculative risks of the investment are high, competent management is essential. Therefore, a compensation of 10 per cent of gross income was considered necessary to retain competent management.

Developmental costs of each subdivision and a corresponding management fee of 10 per cent of gross income are shown in Table 6. The residual return after deduction of a management fee is return to capital invested. This return represents a payment for the risk involved in subdivision development.

TABLE 6. RESIDUAL RETURN TO CAPITAL ASSUMING A MANAGEMENT FEE OF 10 PER CENT, ALABAMA CASE STUDY, 1970

Cost and returns	Subdivision				
	A-1	A-2	B	C-1	C-2
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Return above development cost	1,078	1,509	1,164	1,779	2,021
Estimated cost of management	500	500	500	700	700
Return to capital	578	1,009	664	1,079	1,321

Net return to capital is often expressed as a percentage. This is simply the return to capital divided by the amount of capital invested as shown below:

	Subdivision				
	A-1	*A-2*	*B*	*C-1*	*C-2*
Return to capital per lot, Table 6	$ 578	$1,009	$ 664	$1,079	$1,321
Capital investment	2,636	2,308	2,842	3,439	3,241
Per cent return to capital	21.9	43.7	23.4	31.4	40.8

The reason A-2 had a relatively higher return is the fact that 11 of its 42 lots were on existing streets that had sewer and water facilities. This meant a smaller capital investment and a larger return to capital.

Evaluating returns in Case A-2 on 31 rather than 42 lots yielded a 26 per cent return.

Subdivision A-2

Return above development cost	$1,097
Estimated cost of management	500
Return to capital	$ 597
Per cent return to capital	25.9

Unpublished data in the case study city revealed that at least one owner of a large apartment complex was earning a 30 per cent return to capital and management after debt service and operating expenses were paid. When 10 per cent of gross rental

income was deducted as a cost of management, approximately 15 per cent remained as a return to capital. These return levels indicate that subdivision development may yield a higher return to capital than apartment rental. Comparison of the returns from one apartment complex are in no way conclusive, but in the situation studied, they do indicate that subdivisions are highly competitive. The stability of this situation is uncertain, and several factors indicate a change in the future.

Opportunity cost of developing land into subdivision lots is the difference between profit earned on lots and profits from investment in another land use, for example an apartment complex. As shown, returns in this case study indicated the opportunity cost to developer was less than the potential returns from subdivision development in the immediate time period.

Cost and Returns of Subdivision Development to the City

Each new household in a city brings with it a certain amount of expense as well as an additional revenue source. Hence, measurement of the total effect of the newly developed subdivision required that problems confronting cities as well as benefits be considered.

The average cost for each budgeted expenditure by the city studied was derived by allocating aggregate costs of the city among the total number of households. Revenue from the several sources was handled in a similar manner.[6]

Preliminary census figures for 1970 showed population in the case study city to be approximately 23,000. However, residents for whom services were provided totaled only 18,030. Nearly 5,000 people were classified as having services provided by a State institution located in the city. The 18,030 people were apportioned among households that approximated 3.2 persons each *(8)*. Consequently, there were 5,634 households in the city. An estimated 2,250 households resided in multi-unit dwellings such as apartment houses or duplexes, many of which had city utilities included in the house rent. Average costs and revenues

[6] Costs to the city of school related items were handled through a special fund supported by a 13 mill ad valorem tax. An additional 5 mill property tax was assessed for special debt service. Expenditures for these items were omitted from this discussion. Costs and returns to city were based on the city budget for 1 year only.

for the city were derived on the basis of 5,634 households for all items except water and sewer services. City personnel indicated that 3,991 housing units were metered at the time of this study. Therefore, sewer and water costs and income per household were derived using this figure.

Services provided by municipalities are quite important and service costs are a critical part of the city budget. Distribution of the various items supported by municipal funds are shown in Table 7. If these necessary services are to be provided without deficit financing, the revenue earned by the city must equal or exceed the total cost incurred. Revenue items in the city budget were divided into two parts. Part one included all revenue that was related to the addition of a new household, Table 8. The second part of the revenue section was compiled from income received primarily from business related interests, Table 9. It should be noted that although these funds are collected from the business sector, they are for the most part ultimately derived from households. The full incidence of the various business taxes and licenses depends on the relative elasticities of supply and demand for products which are taxed or licensed.

TABLE 7. DISTRIBUTION OF TOTAL AND HOUSEHOLD ANNUAL COST TO CITY BY COST ITEM, ALABAMA CASE STUDY, 1970[1]

Cost item	Total	Per household
	Dol.	*Dol.*
Fixed charges	149,720	26.57
Sanitation (garbage collection)	202,472	35.94
Police	185,357	32.90
Fire	178,726	31.72
Streets	118,657	21.06
Parks and recreation	89,303	15.85
Administration (mayor, recorder, attorney, city council, and general administration)	87,605	15.55
Planning, engineering, and inspection	67,080	11.91
Other (library, mosquito and fly protection, and garage)	39,032	6.93
Water[2]	176,424	44.16
Sewer[2]	143,197	35.88
Total	1,437,391	278.47

[1] Source: 1969 Annual Budget and departmental reports of the case study city.
[2] This total was based on the estimated percentage of cost attributed to households. The total was then divided by 3,991, the estimated number of households using this service, to derive cost per household.

The item in business revenues "contribution in lieu of taxes" was an amount paid by a local State institution which normally would not pay taxes. The institution draws heavily on the city's

services, therefore a contribution is made to the city's general fund. This contribution is shown in Table 9 for informational purposes only. The assumption was made that the contribution represented the exact expense of the city since specific charges could not be separated from aggregate data. Therefore, total revenue generated by the business sector in 1970 was considered in this study to be $289,000.

TABLE 8. DISTRIBUTION OF TOTAL REVENUE AND REVENUE PER HOUSEHOLD OF CASE STUDY CITY, BY SOURCE, ALABAMA CASE STUDY, 1970[1]

Source	Total	Per household
	Dol.	*Dol.*
Occupation tax	262,500	46.59
Sales tax	245,000	43.49
Garbage	175,000	31.06
Five mill ad valorem	93,000	16.51
Fines and forfeitures	80,000	14.20
Gasoline tax	75,000	13.31
Cigarette tax	26,000	4.61
Motor vehicle	25,000	4.44
Parking meter collections	15,000	2.66
City parking facilities	10,000	1.77
Other (Alabama Gas franchise, dog licenses, engineering fees, Health Department, swimming pool and recreation, cemetery, and miscellaneous)	28,700	5.09
Water[2]	227,487	57.00
Sewer[2]	83,384	20.89
Total	1,346,071	261.62

[1] Source: 1970 Annual Budget of the case study city.
[2] Totals were based on the estimated percentage of revenue collected from households. Total was then divided by 3,991, which was the estimated number of households using this service.

An average revenue of $313 per household was obtained by adding income associated directly with households and income of a business oriented nature. Comparison of these total revenue figures with the $278 per household expenses reflected an excess of income over expenses of $35. However, when only household revenue and expense data were compared, expenses exceeded revenue by $17. This deficit indicated that additional households may not support themselves as far as the city is concerned.[7] However, new households should contribute to in-

[7] This point assumes the city's fixed cost for each new residence remains constant. If the number of residences is increased without additional services, say firemen or policemen and equipment, fixed costs of these services will be spread over more units thereby reducing the average cost to each. Data in the case study were insufficient to measure the magnitude of each increment in the stepped marginal and fixed cost schedules.

TABLE 9. DISTRIBUTION OF REVENUE FROM BUSINESS RELATED SOURCES, BY TOTAL AND HOUSEHOLDS, ALABAMA CASE STUDY, 1970[1]

Source	Total	Per household
	Dol.	*Dol.*
Business licenses	245,000	43.49
Contribution "in lieu of taxes"[2]	(68,000)	(12.07)
Construction permits	20,000	3.55
Alabama Beverage Control tax	16,000	2.84
Financial institution tax	8,000	1.42
Total	289,000	51.30

[1] Source: 1969 Annual Budget of the case study city. Excludes revenue and cost of water and sewerage from business.

[2] Contribution by State institution shown for information purposes only and is not reflected in total revenue. Contribution was assumed to be an exact payment for services rendered.

creases in business volumes thus adding more revenue from that source.

Of the services listed in Table 7, it was observed that approximately 45.1 per cent was provided with funds directly attributed to the households. This proportion was derived by comparing garbage, water, and sewer fees, and property taxes, totaling $125, with the average total cost to the city for each household, $278. A further ratio of average household revenue to average household cost showed that 94 per cent of the cost of each household was paid either directly or indirectly by the households.

Finally, revenue from households and business combined was 112.4 per cent of the cost of these services provided by the city. This illustrates that in the case city additional subdivisions must generate revenue from businesses in addition to household revenue in order to support themselves with respect to desired city services.

Subdivision A-1 was used to illustrate this idea as it concerns an entire subdivision. The households in this subdivision provided an estimated $9,157 to the city's government in 1970. This estimate was derived by multiplying the number of lots in the subdivision, 35, by the average revenue generated per household, $262. On the other hand, the subdivision required $9,730 from the city's resources in 1970 (average city cost per household in 1970, Table 7, times the 35 lots in the subdivision). The deficit was made up by the revenue generated in the city's business oriented sources. Since average per household cost and revenue to the city were used, a pattern of costs exceeding revenue would prevail in all five subdivisions.

Incidence of Costs. One of the primary concerns in the development of any resource is the incidence of costs and returns; or simply stated, "who pays for the development?" As indicated by this report there are several situations where costs are shifted among developers, residents of new developments, and other residents of established municipalities.

First are costs that are forced on a new development by the local municipal government (other residents of the city). In the cases studied these costs included installation of streets, sewers, and water lines. Also, developers were required to maintain these facilities for a period of 1 year.

These costs lead into the second area of incidence. Most of the developmental and selling costs are in turn passed on to the ultimate residents of new subdivisions by the developers. Municipalities may require developers to install and maintain facilities, but final selling prices of lots reflect these costs to the extent allowed by the effective demand.

Perhaps most significant are the costs forced on the local city government (other city residents) by a new subdivision development. The direct revenue from subdivisions in this case study provided funds for approximately 45.1 per cent of the cost created by the development. Variations in costs and revenue per household in this study were resolved by revenue generated indirectly by households such as excise taxes and revenue from taxes on businesses supported by the total community.

Many public services are provided specifically for the business sector of a community. However, the business sector is directly dependent on the residential sector for its support. Also, no distinction was made by the city government regarding explicit costs for businesses. Thus, they could not be separated from other budgeted expenditures. All costs such as fire and police protection, traffic control, health inspection, etc., were allocated to the private sector on a per household basis.

Property taxes in the State of Alabama are known to be low relative to other states. In this respect, it is important to show how much better a new development could support itself if the property tax were administered more equitably and according to the legal codes. In the case study city 5 mills of each assessment dollar were allocated to the general fund for operation of

city government.[8] An additional 5 mills were assessed for special debt retirement. The latter revenue was not considered available for general expenditures.

In the subdivisions of this study a lot selling for $5,000 was assumed to have built on it a house valued at $27,500. This additional improvement brought the assumed value of lot and house to $32,500. Application of the 20 per cent assessment rate resulted in an assessed value for tax purposes of $6,500. With 5 mills for each assessed dollar going to the general fund of the case city, the city would receive $32.50 in property taxes annually.

Taxes assessed on this basis, plus the revenue earned from established service fees, would bring the total income earned directly from each household to $141. The distribution of these revenue items is shown below.

Garbage	$31.06
Water	57.00
Sewer	20.89
Property tax	32.50
Total	$141.45

Cost to the city for services such as fire and police protection, street lighting, and general maintenance averaged $278 per household. Therefore, if residences in the new subdivision averaged $32,500 in value and were assessed at a 20 per cent rate for property taxes, each homeowner would pay 50.8 per cent of the direct cost to the city as opposed to 45.1 per cent that is paid by the average existing lot-house combination. Supplementary data revealed that newer houses were more frequently assessed at the maximum community rate than older homes. Hence, a new subdivision pays directly more of the cost it places on the city than do average existing households. In both cases total cost and revenue per household differences were made up by indirect revenue from households and businesses.

The future of city service costs and revenue sources is uncertain. Costs of services undoubtedly will continue to rise generally with other costs. To meet these expenses without deficit financing, the city will have to either raise present revenues from water and sewer services and various income and property taxes or go to new sources. These new sources possibly include such

[8] The established assessment rate in the study area was 20 per cent of the appraised value for tax purposes.

areas as higher income taxes, property taxes, and larger automobile registration fees. The public normally resents changes, especially where their money is involved. But if people continue to expect new streets, fire and police protection, garbage collection, and sewer and water services, they will have to provide the revenue for these services. Also, city administrators must become aware of the additional expense placed on established residents by new developments and take the necessary steps to relieve their problems.

SUMMARY

This study analyzed (1) the costs and returns realized by developers who subdivided land for single-family residences, and (2) the impact of a new residential development on the parent city. Five individual subdivisions were analyzed in case studies. The analysis was divided into examinations of both the private sector and public sector to determine the incidence of costs and returns to each.

The Private Sector. The various cost factors recognized by private developers were categorized and each category analyzed separately. The average total cash cost of developing a residential lot for all cases was $4,566, and the average sales price was $5,800.

Variations among the subdivisions with respect to specific cost factors led to a number of important observations. Land costs played an important part in determining final returns as well as lot selling prices. Locational differences were not of sufficient magnitude to reflect price differences. Topographical differences caused variation in water and sewer installation and street extension. The largest single cost factor was street construction. However, interest on the developer's investment accounted for 24 per cent of all costs. The latter was not considered a major factor by the majority of developers, yet the study indicated its significance.

The sum of all costs in each development was subtracted from the respective sale prices to determine returns to management and capital per lot. Returns to management for services were established at 10 per cent of the estimated sales price per lot. Returns on capital invested after all costs were deducted ranged from 22 per cent to 44 per cent. The highest return occurred in

Subdivision A-2 and was largely attributed to a portion of the necessary improvements being developed previously. Exclusion of those lots already partially developed resulted in a return to capital of 26 per cent in Subdivision A-2.

Compared with unpublished data on returns to capital invested in apartments, these subdivisions provided the higher return. However, these data were inconclusive because of the limited number of observations.

Public Sectors. Each new household of a city brings with it a certain amount of expense as well as an additional revenue source. The average cost for each budgeted expenditure by the city studied was derived by allocating aggregate costs of the city among the total number of households. Total annual cost to the city for each new household averaged $278.

Revenue contributed to the city was divided into two parts—that amount directly related to the new household and that earned indirectly through business related interests. Total revenue per household averaged $313, but direct payments from households contributed only $262.

There was a definite shifting of cost incidence among developers, new households, and other city residents (local government). If residences in new subdivisions were assessed for taxes at the prevailing rate for the entire city, total direct income to the city accounted for 45.1 per cent of the cost per household. However, most new homes were assessed at higher levels, which resulted in 50.8 per cent of the cost being paid by direct revenue sources.

CONCLUSIONS

The range of returns to investment in land reported in this study was quite high. Future investments of a similar nature also appear good, particularly because of land fixity and increasing populations. Several observations on these types of development are important. A large amount of capital is required to purchase and improve land for home construction. Experience was shown to be a significant factor in the success of a developer, especially since several years normally are required to sell a sufficient number of lots to repay the debts incurred in development.

As land becomes more scarce for subdivision use and the population increases, the primary housing unit possibly will shift from

the single family residence to a multifamily unit. Apartments, condominiums, and modular housing units require considerably less land than single-family units. They are also conducive to the mobile society of today since residents are not tied to a fixed location as they are with single family home ownership. This is not to say that apartments, condominiums, and modular housing units do not have their disadvantages. However, they are more adaptable to the large housing demand now being experienced and that will probably continue for some time to come. Thus, while returns to private residential subdivisions are quite attractive at present, several important factors indicate a gradual but significant shift in future housing patterns. These shifts undoubtedly will occur much slower in the smaller communities such as the one discussed here because of less congestion and demands for land. Yet, the change does appear inevitable.

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APPENDIX

APPENDIX TABLE 1. CHANGE IN POPULATION FOR ALABAMA AND CASE STUDY CITY, SELECTED YEARS[1]

Year	Alabama population	Change from previous census	Case city population	Change from previous census
	No.	*Pct.*	*No.*	*Pct.*
1940	2,832,961	7.1	4,652	66.1
1950	3,061,743	8.1	12,939	178.1
1960	3,266,740	6.7	16,261	25.7
1970	3,444,165	5.4	22,767	40.0

[1] U.S. Department of Commerce, Bureau of the Census, United States Census of Populations: 1960 and 1970. Number of Inhabitants, Alabama.

APPENDIX TABLE 2. DISTRIBUTION OF DEVELOPER'S UNADJUSTED CASH COST PER ACRE, AND PER LOT, SUBDIVISION A, PLAT 1, ALABAMA CASE STUDY, 1970[1]

Cost item[2]	Total	Per acre	Per lot
	Dol.	*Dol.*	*Dol.*
Land	18,812.35	1,223.17	537.50
Taxes	964.64[3]	62.72	27.56
Sewer	18,498.91	1,202.79	528.54
Street extension	36,930.33	2,401.19	1,055.15
Water	11,361.49	738.72	324.61
Engineering	5,700.34	370.63	162.87
Recording	11.20	.73	.32
Total	92,279.26	5,999.95	2,636.55
Sales price[4]	173,272.70	11,266.11	4,950.65
Profit before interest, broker fee, and management fee	80,993.44	5,266.16	2,314.10

[1] This table excludes management, interest, and broker charges, which are discussed in a separate subsection in the text.

[2] Land cost was incurred in 1962, improvement cost in 1965.

[3] Tax figure is total cash tax cost for years 1963-1970, years developer had possession of land.

[4] Estimated.

APPENDIX TABLE 3. DISTRIBUTION OF DEVELOPERS UNADJUSTED CASH COST BY TOTAL PER ACRE AND PER LOT, SUBDIVISION A, PLAT 2, ALABAMA CASE STUDY, 1970[1]

Cost item[2]	Total	Per acre	Per lot
	Dol.	*Dol.*	*Dol.*
Land	24,463.40	1,223.17	582.46
Taxes	467.20[3]	23.36	11.12
Sewer	13,641.74	682.08	324.80
Street extension	40,677.00	2,033.85	968.50
Water	11,966.55	598.33	284.92
Engineering	5,689.97	284.50	135.47
Recording	12.00	.60	.29
Total	96,917.86	4,845.89	2,307.56
Sales price[4]	207,927.30	10,396.36	4,950.65
Profit before interest, broker fee, and management fee	111,009.44	5,550.47	2,643.09

[1] This table excludes management, interest, and broker charges, which are discussed in a separate subsection in the text.
[2] Land cost was incurred in 1962, improvement cost in 1965.
[3] Tax figure is total cash tax cost for years 1963-1970, years developer had possession of land.
[4] Estimated.

APPENDIX TABLE 4. DISTRIBUTION OF DEVELOPERS UNADJUSTED CASH COST BY TOTAL PER ACRE AND PER LOT, SUBDIVISION B, ALABAMA CASE STUDY, 1970[1]

Cost item	Total	Per acre	Per lot
	Dol.	*Dol.*	*Dol.*
Land[2]	42,000.00	1,660.08	857.14
Taxes	13.34[3]	.53	.27
Sewer	25,514.02	1,008.46	520.69
Street extension	50,645.53	2,001.80	1,033.58
Water	15,670.84	619.40	319.81
Engineering	2,968.53	117.33	60.58
Recording	223.35	8.83	4.56
Miscellaneous	2,232.79	88.25	45.57
Total	139,268.40	5,504.68	2,842.20
Sales price[4]	171,500.00	6,778.66	3,500.00
Profit before interest, broker fee, and management fee	32,231.60	1,273.98	657.80

[1] This table excludes management, interest, and broker charges which are discussed in a separate subsection in the text.
[2] All cost incurred in 1967.
[3] Tax figure is total cash tax cost for years 1967-1970, years developer had possession of land.
[4] Estimated.

APPENDIX TABLE 5. DISTRIBUTION OF DEVELOPERS UNADJUSTED CASH COST BY TOTAL PER ACRE AND PER LOT, SUBDIVISION C, PLAT 1, ALABAMA CASE STUDY, 1970[1]

Cost item	Total	Per acre	Per lot
	Dol.	*Dol.*	*Dol.*
Land[2]	32,000.00	2,000.00	1,032.26
Taxes	616.00[3]	38.50	19.87
Sewer	15,260.00	953.75	492.26
Street extension	39,060.00	2,441.25	1,260.00
Water	15,680.00	980.00	505.81
Engineering	2,991.50	186.97	96.50
Recording	38.00	2.38	1.23
Miscellaneous	970.50	60.66	31.31
Total	106,616.00	6,663.51	3,439.24
Sales price[4]	155,000.00	9,687.51	5,000.00
Profit before interest, broker fee, and management fee	48,384.00	3,024.00	1,560.76

[1] This table excludes management, interest, and broker charges which are discussed in a separate subsection in the text.
[2] Land cost was incurred in 1969; improvements estimated for 1973.
[3] Tax figure is total cash tax cost for years 1970-77, approximate length of time needed to develop and sell lots.
[4] Estimated.

APPENDIX TABLE 6. DISTRIBUTION OF DEVELOPERS UNADJUSTED CASH COST BY TOTAL PER ACRE AND PER LOT, SUBDIVISION C, PLAT 2, ALABAMA CASE STUDY, 1970[1]

Cost item	Total	Per acre	Per lot
	Dol.	*Dol.*	*Dol.*
Land[2]	37,000.00	2,000.00	1,121.21
Taxes	713.36[3]	38.56	21.62
Sewer	14,199.50	767.54	430.29
Street extension	36,423.45	1,968.84	1,103.74
Water	14,619.00	790.22	443.00
Engineering	3,184.50	172.14	96.50
Recording	39.75	2.15	1.20
Miscellaneous	775.75	41.93	23.51
Total	106,955.31	5,781.38	3,241.07
Sales price[4]	165,000.00	8,918.92	5,000.00
Profit before interest, broker fee, and management fee	49,044.69	3,137.54	1,758.93

[1] This table excludes management, interest, and broker charges which are discussed in a separate subsection in the text.
[2] Land cost was incurred in 1969; improvements estimated for 1973.
[3] Tax figure is total cash tax cost for years 1970-1977, approximate length of time needed to develop and sell lots.
[4] Estimated.

APPENDIX TABLE 7. COST OF DEVELOPMENT PER LOT AND TOTAL BY SELECTED COST FACTORS, CASE STUDY A, PLAT 1, ALABAMA, 1970

Cost factor	Actual cost 1965	Cost adjusted to 1970 level	Total 1970 cost all lots
	Dol.	*Dol.*	*Dol.*
Land	537.50[1]	756.33	26,471.55
Taxes	27.56[2]	29.25[3]	1,023.76
Sewer	528.54	582.47	20,386.45
Street extension	1,055.15	1,162.81	40,698.35
Water	324.61	357.73	12,520.55
Engineering	162.87	179.49	6,282.15
Recording	.32	.35	12.25
Interest	----	1,036.00	36,260.00
Broker fee	----	250.00	8,750.00
Total[4]	2,636.55	4,354.43	152,405.06

[1] Land was purchased in 1962 and adjusted to 1970 at 5 per cent annually.
[2] Average yearly tax from 1963 through 1970.
[3] Taxes compounded to 1970 based on wholesale price index for year each tax was incurred.
[4] Excludes management fee.

APPENDIX TABLE 8. COST OF DEVELOPMENT PER LOT AND TOTAL BY SELECTED COST FACTORS, CASE STUDY A, PLAT 2, ALABAMA, 1970

Cost factor	Actual cost 1965	Cost adjusted to 1970 level	Total 1970 cost all lots
	Dol.	*Dol.*	*Dol.*
Land	582.46[1]	819.58	34,422.36
Taxes	11.12[2]	11.80[3]	495.60
Sewer	324.80	357.95	15,033.90
Street extension	968.50	1,067.32	44,827.44
Water	284.92	313.99	13,187.58
Engineering	135.47	149.29	6,270.18
Recording	.29	.32	13.44
Interest	----	933.00	39,186.00
Broker fee	----	250.00	10,500.00
Total[4]	2,307.56	3,903.25	163,936.50

[1] Land was purchased in 1962 and adjusted to 1970 at 5 per cent annually.
[2] Average yearly tax from 1963 to 1970.
[3] Taxes compounded to 1970 based on wholesale price index for year each tax was incurred.
[4] Excludes management fee.

APPENDIX TABLE 9. COST OF DEVELOPMENT PER LOT AND TOTAL BY SELECTED COST FACTORS, CASE STUDY B, ALABAMA, 1970

Cost factor	Actual Cost 1967	Cost adjusted to 1970 level	Total 1970 cost all lots
	Dol.	*Dol.*	*Dol.*
Land	857.14[1]	1,032.01	50,568.49
Taxes	.27[2]	.34[3]	16.66
Sewer	520.69	556.62	27,274.38
Street extension	1,003.58	1,097.46	53,775.54
Water	319.81	339.58	16,639.42
Engineering	60.58	64.32	3,151.68
Recording	4.56	4.84	237.16
Miscellaneous	45.57	48.39	2,371.11
Interest	----	744.00	36,456.00
Broker fee	----	250.00	12,250.00
Total[4]	2,842.20	4,137.56	202,740.44

[1] Land was purchased in 1966 and adjusted to 1970 at 5 per cent annually.
[2] Average yearly taxes from 1967 through 1970.
[3] Taxes compounded to 1970 based on wholesale price index for each year tax was incurred.
[4] Excludes management fee.

APPENDIX TABLE 10. COST OF DEVELOPMENT PER LOT AND TOTAL BY SELECTED COST FACTORS, CASE STUDY C, PLAT 1, ALABAMA, 1970

Cost factor	Actual cost 1969	Cost adjusted to 1970 level	Total 1970 cost all lots
	Dol.	*Dol.*	*Dol.*
Land[1]	1,032.26	1,083.87	33,600.00
Taxes[2]	19.87	19.87	616.00
Sewer	492.26	510.25	15,817.75
Street extension	1,260.00	1,306.07	40,448.17
Water	505.81	524.30	16,253.30
Engineering	96.50	100.03	3,100.93
Recording	1.23	1.27	39.37
Miscellaneous	31.31	32.46	1,006.26
Interest	----	1,431.96	44,390.76
Broker fee	----	350.00	10,850.00
Total[3]	3,439.24	5,360.08	166,162.54

[1] Land adjusted on basis of 5 per cent increase in value annually.
[2] Tax figure represents the sum of the next 8 years taxes at present rate; 8 years was approximate length of time of development and sale of lots.
[3] Excludes management fee.

APPENDIX TABLE 11. COST OF DEVELOPMENT PER LOT AND TOTAL BY SELECTED COST FACTORS, CASE STUDY C, PLAT 2, ALABAMA, 1970

Cost factor	Actual cost 1969	Cost adjusted to 1970 level	Total 1970 cost all lots
	Dol.	*Dol.*	*Dol.*
Land[1]	1,121.21	1,177.27	38,849.91
Taxes[2]	21.62	21.62	713.46
Sewer	430.29	446.02	14,718.66
Street	1,103.74	1,144.09	37,754.97
Water	443.00	461.09	15,215.97
Engineering	96.50	100.03	3,300.99
Recording	1.20	1.25	41.25
Miscellaneous	23.51	24.37	804.21
Interest	----	1,388.00	45,804.00
Broker fee	----	350.00	11,550.00
Total[3]	3,241.07	5,113.74	168,753.42

[1] Land adjusted on basis of 5 per cent increase in value annually.
[2] Tax figure represents the sum of the next 8 years taxes at present rate; 8 years was approximate length of time of development and sale of lots.
[3] Excludes management fee.

APPENDIX TABLE 12. AVERAGE TOTAL COST OF DEVELOPMENT FOR ALL CASES STUDIED, BY DEVELOPMENT, ALABAMA CASE STUDY, 1970[1]

Case	Number of lots	Total cost for each case
		Dol.
Subdivision A, Plat 1	35	152,405.06
Subdivision A, Plat 2	42	163,936.50
Subdivision B	49	202,740.44
Subdivision C, Plat 1	31	166,162.54
Subdivision C, Plat 2	33	168,753.42
Total	190	853,997.96
Av. total cost per lot[2]		4,494.73

[1] All figures adjusted to 1970 with the exception of taxes in Plat 1 and 2 of Subdivision C in which estimated total taxes during the development period were used.
[2] Excludes management fee.

APPENDIX TABLE 13. TOTAL AND AVERAGE COST PER LOT BY EACH COST ITEM IN CASE STUDY, ALABAMA CASE STUDY, 1970[1]

Cost item[2]	Total	Average cost per lot
	Dol.	*Dol.*
Land	183,912.31	967.96
Sewer	93,231.14	490.69
Street extension	217,544.47	1,144.97
Water	73,816.82	388.51
Engineering	22,105.93	116.35
Recording	343.47	1.81
Taxes	2,865.48	15.08
Miscellaneous	4,181.58	22.01
Interest	202,096.76	1,063.67
Broker fee	53,900.00	283.68
Total	853,997.96	4,494.73

[1] All figures adjusted to 1970 with the exception of taxes in Plats 1 and 2 of Subdivision C, which used total annual cost.

[2] Excludes management fee.