

TABLE V-16c.—Contingency table of portfolio turnover rates in 1955 and performance relatives in 1956, by size of fund ¹

(i) FUNDS WITH ASSETS LESS THAN \$10,000,000

1956 performance relatives (percent)	1955 portfolio turnover rates (percent)			Total number of funds
	Less than 15	15 and less than 30	30 and over	
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Less than 100.....	4	4	5	13
100 and less than 110.....	14	11	12	37
110 and over.....	4		5	9
Total number of funds in size class.....	22	15	22	59

(ii) FUNDS WITH ASSETS \$10,000,000 AND LESS THAN \$50,000,000

Less than 100.....	1	4	1	6
100 and less than 110.....	8	9	8	25
110 and over.....	9	5	5	19
Total number of funds in size class.....	18	18	14	50

(iii) FUNDS WITH ASSETS \$50,000,000 AND OVER

Less than 100.....	2	2	1	5
100 and less than 110.....	14	9	4	27
110 and over.....	7	5	4	16
Total number of funds in size class.....	23	16	9	48

(iv) ALL FUNDS COMBINED

Less than 100.....	7	10	7	24
100 and less than 110.....	36	29	24	89
110 and over.....	20	10	14	44
Total number of funds.....	63	49	45	157

¹ Size classification is based upon net assets on Sept. 30, 1958.

TABLE V-16d.—Contingency table of portfolio turnover rates in 1956 and performance relatives in 1957, by size of fund¹

(i) FUNDS WITH ASSETS LESS THAN \$10,000,000

1957 performance relative (percent)	1956 portfolio turnover rates (percent)			Total number of funds
	Less than 15	15 and less than 30	30 and over	
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Less than 85.....	7	2	3	12
85 and less than 95.....	9	14	14	37
95 and over.....	4	6	3	13
Total number of funds in size class.....	20	22	20	62

(ii) FUNDS WITH ASSETS \$10,000,000 AND LESS THAN \$50,000,000

Less than 85.....	2	6	5	13
85 and less than 95.....	9	9	9	27
95 and over.....	5	2	6	13
Total number of funds in size class.....	16	17	20	53

(iii) FUNDS WITH ASSETS \$50,000,000 AND OVER

Less than 85.....	5	4	3	12
85 and less than 95.....	9	11	6	26
95 and over.....	6	3	1	10
Total number of funds in size class.....	20	18	10	48

(iv) ALL FUNDS COMBINED

Less than 85.....	14	12	11	37
85 and less than 95.....	27	34	29	90
95 and over.....	15	11	10	36
Total number of funds.....	56	57	50	163

¹ Size classification is based upon net assets on Sept. 30, 1958.

TABLE V-16e.—Contingency table of portfolio turnover rates in 1957 and performance relatives in 1958, by size of fund ¹

(i) FUNDS WITH ASSETS LESS THAN \$10,000,000

1958 ² performance relative (percent)	1957 portfolio turnover rates (percent)			Total number of funds
	Less than 15	15 and less than 30	30 and over	
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Less than 120.....	5	9	8	22
120 and less than 130.....	9	5	20	34
130 and over.....	5	3	3	11
Total number of funds in size class.....	19	17	31	67

(ii) FUNDS WITH ASSETS \$10,000,000 AND LESS THAN \$50,000,000

Less than 120.....	2	5	3	10
120 and less than 130.....	7	14	12	33
130 and over.....	4	3	3	10
Total number of funds in size class.....	13	22	18	53

(iii) FUNDS WITH ASSETS \$50,000,000 AND OVER

Less than 120.....	1	5	1	7
120 and less than 130.....	11	9	6	26
130 and over.....	6	6	3	15
Total number of funds in size class.....	18	20	10	48

(iv) ALL FUNDS COMBINED

Less than 120.....	8	19	12	39
120 and less than 130.....	27	28	38	93
130 and over.....	15	12	9	36
Total number of funds.....	50	59	59	168

¹ Size classification is based upon net assets on Sept. 30, 1958.² Performance for 1st 9 months of 1958.

The data for the various size groups suggested the same relationship, but not with the consistency displayed by the data for all funds combined. The smallest size class (assets less than \$10 million) conformed to the negative pattern for three of the five periods, but behaved in the opposite manner in 1956-57. In the remaining period (1955-56) the evidence showed no relationship. The second size class (assets between \$10 and \$50 million) might be construed as conforming to a negative pattern in each of the five periods, but the relationship was rather weak in at least two instances. The evidence for the largest-size class is still less convincing, but tends in the direction of the negative relationship. The figures for 1954-55 suggest a positive relation; those for 1956-57, a negative one; and the remaining three are not strong in either direction.

The principal conclusions which emerge from the foregoing analysis can be summarized very briefly: In the period between 1953 and 1956, in which general upward movements occurred in stock market values, there appeared a moderate negative relation between annual portfolio turnover rates and performance measures recorded the following year; secondly, the strength of this tendency was weakened in the

1956-57 period of less-stable markets; and finally, there was a re-emergence of the trend in the final period of the study, 1957-58.

The implications of this analysis are to be found in the light it throws on a significant question of portfolio management efficiency. It was established previously that relatively more active turnover policies failed, in the years under review, to improve the performance results in the year in which the turnovers occurred. The evidence, on the other hand, was not sufficient to conclude that the high turnover impaired performance. The question is raised, therefore, whether the portfolio switching implicit in the turnovers actually placed the funds in a better position for the employment of higher income and capital gains in the ensuing year. How efficient, in other words, were the portfolio management policies and security selections in anticipating the beneficial impacts of future economic and market conditions? Some answer to the question has already emerged, and the persistence of the general, though moderate, negative relation has been noted.

TABLE V-17a.—Contingency table of portfolio turnover rates in 1953 and performance relatives in 1954, balanced funds and common stock funds

BALANCED FUNDS									
1954 performance relative (percent)	Funds with assets less than \$50,000,000 ¹			Funds with assets \$50,000,000 and over ¹			All funds in specified type class		
	Portfolio turn-over rates (percent)		Total	Portfolio turn-over rates (percent)		Total	Portfolio turn-over rates (percent)		Total
	20 or less	Greater than 20		20 or less	Greater than 20		20 or less	Greater than 20	
140 or less.....	9	19	28	5	5	10	14	24	38
Over 140.....	1	3	4	4	4	4	5	3	8
Total number of funds in size class.....	10	22	32	9	5	14	19	27	46
COMMON STOCK FUNDS									
140 or less.....	4	5	9	2	3	5	6	8	14
Over 140.....	11	18	29	13	7	20	24	25	49
Total number of funds in size class.....	15	23	38	15	10	25	30	33	63

¹ Size classification is based upon net assets on Sept. 30, 1958.

TABLE V-17b.—Contingency table of portfolio turnover rates in 1954 and performance relatives in 1955, balanced funds and common stock funds

BALANCED FUNDS									
1955 performance relative (percent)	Funds with assets less than \$50,000,000 ¹			Funds with assets \$50,000,000 and over ¹			All funds in specified type class		
	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total
	20 or less	Greater than 20		20 or less	Greater than 20		20 or less	Greater than 20	
117 or less.....	6	22	28	3	9	12	9	31	40
Over 117.....		5	5		2	2		7	7
Total number of funds in size class.....	6	27	33	3	11	14	9	38	47
COMMON STOCK FUNDS									
117 or less.....		6	6	2	3	5	2	9	11
Over 117.....	13	21	34	12	9	21	25	30	55
Total number of funds in size class.....	13	27	40	14	12	26	27	39	66

¹ Size classification is based upon net assets on Sept. 30, 1958.

TABLE V-17c.—Contingency table of portfolio turnover rates in 1955 and performance relatives in 1956, balanced funds and common stock funds

BALANCED FUNDS									
1956 performance relative (percent)	Funds with assets less than \$50,000,000 ¹			Funds with assets \$50,000,000 and over ¹			All funds in specified type class		
	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total
	20 or less	Greater than 20		20 or less	Greater than 20		20 or less	Greater than 20	
105 or less.....	7	12	19	5	4	9	12	16	28
Over 105.....	5	10	15	3	2	5	8	12	20
Total number of funds in size class.....	12	22	34	8	6	14	20	28	48
COMMON STOCK FUNDS									
105 or less.....	2	3	5		2	2	2	5	7
Over 105.....	22	15	37	16	9	25	38	24	62
Total number of funds in size class.....	24	18	42	16	11	27	40	29	69

¹ Size classification is based upon net assets on Sept. 30 1958.

TABLE V-17d.—Contingency table of portfolio turnover rates in 1956 and performance relatives in 1957, balanced funds and common stock funds

BALANCED FUNDS									
1957 performance relative (percent)	Funds with assets less than \$50,000,000 ¹			Funds with assets \$50,000,000 and over ¹			All funds in specified type class		
	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total
	20 or less	Greater than 20		20 or less	Greater than 20		20 or less	Greater than 20	
90 or less.....	8	5	5	5	5	5	5	5	10
Over 90.....		22	30	4	5	9	12	27	39
Total number of funds in size class.....	8	27	35	9	5	14	17	32	49
COMMON STOCK FUNDS									
90 or less.....	9	17	26	11	8	19	20	25	45
Over 90.....	9	10	19	5	3	8	14	13	27
Total number of funds in size class.....	18	27	45	16	11	27	34	38	72

¹ Size classification is based upon net assets on Sept. 30, 1958.

TABLE V-17e.—Contingency table of portfolio turnover rates in 1957 and performance relatives in 1958,¹ balanced funds and common stock funds

BALANCED FUNDS									
1958 ¹ performance relative	Funds with assets less than \$50,000,000 ²			Funds with assets \$50,000,000 and over ²			All funds in specified type class		
	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total	Portfolio turnover rates (percent)		Total
	20 or less	Greater than 18		20 or less	Greater than 18		20 or less	Greater than 18	
125 or less.....	10	21	31	7	3	10	17	24	41
Over 125.....		6	6	3	1	4	3	7	10
Total number of funds in size class.....	10	27	37	10	4	14	20	31	51
COMMON STOCK FUNDS									
125 or less.....	5	11	16	2	2	4	7	13	20
Over 125.....	10	21	31	12	11	23	22	32	54
Total number of funds in size class.....	15	32	47	14	13	27	29	45	74

¹ Performance for 1st 9 months of 1958.

² Size classification is based upon net assets on Sept. 30, 1958.

A more complete answer to this question of management results can be based on the data summarized in tables V-17a through V-17e relative to balanced funds and common stock funds respectively. For the common stock funds a negative relation emerged clearly during the 1954-56 period. The evidence for the rest of the study period was less convincing, but not suggestive of a positive relation.⁴⁴

⁴⁴ The data for the smaller common stock funds with 1954 performance against 1953 turnover might be construed as showing a slight positive indication, but none of the other contingency tables showed such a tendency.

Only 2 of 27 (7 percent) common stock funds in the low turnover class in 1954 were also in the low performance class of 1955, but 9 of 39 (23 percent) common stock funds in the high turnover class were in the lower performance class. The same relationship can be seen for both size groups of common stock funds. In the 1955-56 comparison the same general pattern was observed: 2 of 40 (5 percent) low turnover funds recorded inferior performance, and 5 of 29 (17 percent) high turnover funds recorded inferior performance. The figures for 1956-57 show differences in the same direction (negative relation), but of somewhat less magnitude.⁴⁵ The 1957-58 data were again in a negative direction, but even less conclusive.

The balanced funds gave some indication of a positive relationship between portfolio turnover rate in one period and performance in the next, although the strength and consistency of this relation is less than that observed for the opposite phenomenon among common stock funds; 1954-55 and 1956-57 were the two periods in which the positive relation was particularly evident. In the first period (1954-55), no balanced fund in the low turnover category recorded a performance relative in excess of 117 percent, but 7 of 38 with high turnover rates were in this higher performance class. In 1955-56 the relationship virtually disappeared as high and low turnover funds had approximately the same distribution between the two performance classes. The positive relation appeared again in the 1956-57 data when a higher percentage of high turnover funds recorded better performances: 27 of 32 (84 percent) balanced funds in the high turnover category were in the higher performance class, but only 12 of 17 (71 percent) of the lower turnover funds were in that class. The same positive tendency remained in the 1957-58 comparison although its strength was decreased: 23 percent of the high turnover funds in the higher performance group but only 15 percent of the lower turnover funds in that performance group. The initial period of the study (1953-54) suggested a negative relation for balanced funds, but the direction of relationship was positive for all of the remaining periods, sometimes strong and at other times rather weak.

Relation between performance and portfolio turnover rates after stratification by inflow

Various adjustments for inflow in the calculation of portfolio turnover rates were discussed in chapter IV. It was noted there that a high net inflow might produce a high turnover rate as calculated by the basic formula employed,⁴⁶ owing principally to the temporary investment in liquid portfolio items. It is thus theoretically possible that the relationship between portfolio turnover rate and performance may have been obscured in the preceding analysis by the influence of inflow. To test for this possibility homogeneous subgroups of funds were selected for a simultaneous study of the three variables: performance, portfolio turnover rate, and net inflow. Within each subgroup, the funds were classified into either the upper or lower half with respect to each characteristic for each of the six time periods.

The performance and turnover figures employed in this analysis were the same as those used in the preceding section, and the net inflow relative was defined as dollar net inflow during the period

⁴⁵ Fifty-eight percent of low turnover funds recorded low performance in the following year, but 66 percent of the high turnover funds were in that class. The greater frequency of low performance by common stock funds is attributable to the characteristics of the 1957 common stock market discussed earlier.

⁴⁶ Purchase plus sales minus net inflow divided by beginning net assets plus ending net assets.

divided by average net assets of the period.⁴⁷ The analysis was then based upon a series of contingency tables similar to table V-18a. This sample table has been constructed for balanced funds of the largest size class⁴⁸ that were in the upper half with respect to inflow in the 1958 period. Of the 13 funds in this category, 2 were in the lower half with respect to both performance and turnover and 4 were in the upper half with respect to both variables. These six funds, thus, were in the same half with respect to the two variables while the remaining seven funds were in opposite halves. The figure 46 percent (six-thirteenths) is presented in table V-18b for this subgroup for 1958 under the caption "Higher Inflow." The remaining figures of table V-18b were obtained in precisely the same manner, using a series of contingency tables similar to V-18a.

TABLE V-18a.—Sample table of performance—Portfolio turnover analysis with stratification by inflow (balanced funds with net assets over \$10,000,000, upper half in net inflow relative, 1958)—Number of funds

Performance, 1958	Portfolio turnover rate, 1958		
	Lower half	Upper half	Total
Lower half.....	2	4	6
Upper half.....	3	4	7
Total.....	5	8	13

NOTE.—All 1958 data are for 1st 9 months.

TABLE V-18b.—Percentage of funds in the same half with respect to portfolio turnover rate and performance stratified by net inflow, 1953—September 1958

Year	LOWER INFLOW			
	Balanced funds		Common stock funds	
	Funds with net assets less than \$10,000,000 ¹	Funds with net assets \$10,000,000 and over ¹	Funds with net assets less than \$10,000,000 ¹	Funds with net assets \$10,000,000 and over ¹
1953.....	50	69	33	54
1954.....	50	31	100	41
1955.....	55	62	42	36
1956.....	55	38	38	46
1957.....	38	38	78	54
1958 ²	62	62	60	54
Arithmetic mean.....	52	50	58	48

Year	HIGHER INFLOW			
	Balanced funds		Common stock funds	
	Funds with net assets less than \$10,000,000 ¹	Funds with net assets \$10,000,000 and over ¹	Funds with net assets less than \$10,000,000 ¹	Funds with net assets \$10,000,000 and over ¹
1953.....	70	69	67	50
1954.....	36	46	20	38
1955.....	45	62	14	37
1956.....	42	54	62	54
1957.....	42	69	55	61
1958 ²	42	46	64	41
Arithmetic mean.....	46	56	47	47

¹ Size classification is based upon net assets on Sept. 30, 1958.

² 1st 9 months of 1958.

⁴⁷ Average net assets were computed as beginning net assets plus ending net assets divided by 2.

⁴⁸ Funds were divided into two size classes for this analysis, contrary to the four classes used elsewhere in the study. The smallest of the four classes was retained as one group and the other three were combined for this section. This specific division was deemed appropriate since the smallest size group typically recorded performance relatives that were somewhat lower than those of the larger funds.

A figure in table V-18b of precisely 50 percent (e.g., the smallest size balanced funds with low inflow in 1953) indicates no suggestion of either a positive or negative relationship between turnover rates and performance. Figures greater than 50 percent suggest a positive relation and those less than 50 percent suggest a negative relation. The larger the deviation from 50 percent, the stronger the relationship observed with 100 percent meaning a perfect positive relation and 0 percent, a perfect negative one.

The results of the analysis confirm the previous conclusion. There does not seem to have been any persistent relationship between annual portfolio turnover rates and performance results of the same period. There were suggestions of either a positive or negative relationship for certain of the subgroups during specific years, but the relationship was not uniform throughout the period for a particular subgroup nor for all subgroups within a specific year.

The unweighted arithmetic mean for the 6 years did not differ from 50 percent by as much as 10 points for any of the subgroups and only two differed by more than 5 points. The lack of a general pattern is also shown by the distribution of the unweighted means around 50 percent: three were above that figure, four were below, and the remaining one was precisely 50 percent. The same kind of results were also observed within each subgroup over the six different periods. None of the subgroups deviated in the same direction from the a priori 50 percent in each of the periods and only one deviated in the same direction in five of the six periods. This group, the high inflow small balanced funds, seemed to indicate a negative relation in every year except 1953 but the percentage agreement fell below 40 percent in only one instance while the one positive year reached 70 percent. The low inflow common stock funds of the smaller size group yielded the largest unweighted mean (58 percent), but their result was less than 50 percent in 1953, 1955, and 1956.

In 1953 only one group of funds in table V-18b was below 50 percent and in 1954 only one group was above 50 percent. In every other year there were at least three groups on each side of 50 percent. These conflicting results reinforce the preceding statement that no consistent relationship emerged in the study of turnover and performance when turnover rates and performance measures for the same time periods are compared.

TABLE V-18c.—Percentage of funds in same half with respect to portfolio turnover rate in "t" and performance in "t+1", stratified by net inflow in "t", 1953-September 1958

Time period (t, t+1)	LOWER INFLOW			
	Balanced funds		Common stock funds	
	Funds with net assets less than \$10,000,000 ¹	Funds with net assets \$10,000,000 and over ¹	Funds with net assets less than \$10,000,000 ¹	Funds with net assets \$10,000,000 and over ¹
1953-54.....	50	31	67	58
1954-55.....	40	62	50	48
1955-56.....	45	31	36	46
1956-57.....	55	46	38	57
1957-58 ²	54	62	22	46
Arithmetic mean.....	49	46	53	51

HIGHER INFLOW				
1953-54.....	40	46	40	42
1954-55.....	64	62	20	37
1955-56.....	45	62	14	44
1956-57.....	25	62	38	50
1957-58 ²	50	46	33	32
Arithmetic mean.....	45	56	29	41

¹ Size classification is based upon net assets on Sept. 30, 1958.

² Performance for 1st 9 months of 1958.

Table V-18c has been constructed in a manner similar to V-18b, but in this case the analysis was based upon portfolio turnover rates in period "t" and performance in "t+1" with stratification by inflow in "t." The earlier analysis, which compared performance in period "t+1" with turnover in period "t," but which did not make any adjustment for net inflow, yielded a slight suggestion of a negative relationship, particularly for common stock funds, but a weak positive pattern was in evidence for balanced funds in two of the time periods. The results of table V-18c again show a negative pattern consistently for the common stock funds with high inflow, but no such pattern for the other subgroups of funds.

The small common stock funds in the high inflow category indicated a negative relationship between turnover in one period and performance in the following period in every instance. The unweighted mean for these funds was the lowest recorded (29 percent) and the maximum annual figure was 40 percent in the 1953-54 comparison.⁴⁹ The large common stock funds with high inflow also revealed a negative relation. The unweighted mean was 41 percent and four of the five comparisons showed the negative pattern while the fifth comparison yielded a precise 50 percent.

The remaining figures of table V-18c do not show any consistent relationship. Three of the six unweighted means exceed 50 percent and the remainder are less than 50 percent. None of these subgroups deviated in the same direction from the a priori 50 percent in as many as four of the five comparisons. The figures for specific time periods are equally inconsistent. At least two of the six comparisons are on each side of the base mark (50 percent) for each of the periods.

⁴⁹ This subgroup (small common stock funds) contained the fewest funds of any of the subgroups, and large variations from 50 percent were therefore more likely through chance alone. The consistency of the sign of the deviation, however, is no more likely with small samples than with large.

The analysis of portfolio turnover rates and performance after adjusting for inflow therefore yields much the same conclusion as the previous analysis in which no such adjustment was made. Neither a positive nor a negative relation emerges consistently when the data covered the same time period. When performance is lagged 1 year behind turnover, a negative pattern emerges for common stock funds with high net inflow but no such relationship is observed for other subgroups. These results indicate that high turnover has not led to superior performance.

RELATION BETWEEN PERFORMANCE AND INFLOW

A portion of the performance-turnover analysis in the preceding section included adjustments for inflow. These same data permit a study of the relation between performance and inflow. The basic question posed in the following analysis asks whether the funds with the better performance records in period "t" were the recipients of the higher inflows in period "t+1." The same subgroups are employed here as were employed in the performance-turnover study: similar size funds within the balanced fund group and similar size funds within the common stock fund group.

Two by two contingency tables were constructed for each subgroup of funds for each time period comparison. The funds within each subgroup were classified with respect to performance in period "t" and inflow in "t+1." The funds were divided into two halves for each characteristic and tables similar to table V-19a were constructed for each subgroup. This sample table has been constructed for the balanced funds of the smallest size class. Of the 25 funds in this subgroup, four were in the lower half in both 1957 performance and 1958 inflow and three were in the upper half in both characteristics. The resulting percentage of 28 percent (seven twenty-fifths) is presented in table V-19b in the appropriate cell.

TABLE V-19a.—Sample table of performance-inflow analysis (balanced funds with net assets less than \$10,000,000—1957 performance versus 1958 inflow)

NUMBER OF FUNDS			
1957 performance	1958 inflow ¹		Total
	Lower half	Upper half	
Lower half.....	4	9	13
Upper half.....	9	3	12
Total.....	13	12	25

¹ 1st 9 months of 1958.

The figures of table V-19b fail to show any consistent pattern in the relationship between performance in one year and net inflow of the following year within the balanced funds, but a weak positive relation seems to have existed within the common stock fund section of the industry. The unweighted mean for the small common stock funds was 60 percent and the annual figure did not fall below 50 percent on any occasion. The unweighted mean for the larger common stock funds was only 54 percent but the annual figure fell below 50 percent