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Author(s)	MASUDA, Tatsuyoshi
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# A Note on Brozen's Approach to the High Rates of Return in the Highly Barriered Industries

Tatsuyoshi MASUDA\*

Faculty of Business Administration and Information Science  
Hokkaido Information University

Abstract : A purpose of this note is to re-examine Brozen's disequilibrium hypothesis of high rates of return in the highly barriered industries. For this purpose, as an index that indicates the extent and continuity of a disequilibrium situation, we will adopt the relative variance value and variation coefficient of difference in rates of return among entry barrier classes. As a result, we will reach a conclusion that verifies Brozen's disequilibrium hypothesis.

## 1. Introduction

Mann [5] verified that a positive correlation between average accounting rates of return on net worth (profitability) and the concentration ratio is reinforced by the entry barrier (He approved the shared-asset model). That is to say, from the top 8 company value of shipments concentration ratio above 70 percent, he divided manufacturing industries (21) into three groups according to the height of barrier to entry, and calculated the average rates of return in each barrier class.

	1950-60
Very High Barrier Class Mean (eight industries)	16.4%
Substantial Barrier Class Mean (eight industries)	11.1
Moderate-to-Low Barrier Class Mean (five industries)	11.9

Among the highly concentrated industries, those with very high barriers (the highly concentrated-high barrier class) earned rates of return distinctly higher than the other barrier classes. In a later paper [6] that increased the number of industries and extended the period covered, the same conclusion was reached.

Brozen [3], [4] re-examined Mann's studies with the disequilibrium hypothesis. He states that the difference in rates of return among industries indicates a situation of disequilibrium in process whose market tends to move toward the long-run equilibrium situation. Furthermore, he claims that the Harvard

School's (Bain, Mann) studies analyzed only a particular period in the equilibrating process, and he hypothesizes that, if we extend the period covered, the difference in rates of return among industries will decrease gradually and will tend to equate with the average rates of return in the total number of industries (Brozen considered this rate of return as the long-run equilibrium rate selected for this study). The existence of difference in rates of return is a source that facilitates entry or rivalry, he believes.

To test his hypothesis, he accepted the following procedures: To begin with, he extends Mann's period covered (1950–60) to 1961–66. And as an index when the difference in rates of return decreases and tends to equate his long-run equilibrium rates of return, he makes use of the following two indexes. The first index is that the average rate of return in each industry will decline between 1950–60 (the first period) and 1961–66 (the second period). The second index is that the difference in average rates of return between each industry and the total industries will see a greater decline in the second period than in the first period. Thus, in the longrun, the average rate of return and its difference in the highly concentrated-high profitability industries will decline distinctly. In his paper [4] that re-examined Bain's study [1] and Stigler's study [9], he reached a conclusion which supported his hypothesis. In the same way, as to the entry barriers, Brozen hypothesizes that, in the longrun, the highly barriered-high profitability industries will facilitate entry, and the average rate of return and its difference in those industries will decline generally. Thus, the existence of high barriers is also a source that facilitates entry or rivalry, he believes.

In this note, our purpose is to re-examine the disequilibrium hypothesis that Brozen examined in Mann's studies [5], [6]. For this purpose, as an indication of the extent and continuity of a disequilibrium situation, we will calculate the relative variance value and variation coefficient in an average rate of return and its difference. Then we will examine the hypothesis that, when the dispersion of difference in rates of return tends to be small, those markets have a competitive tendency which is stable or strengthened. As a result, when we examine the movement of difference in average rates of return, we concluded that the shared-asset model (Table 1 in Section 3) is validated. On the other hand, when we examine a movement of the extent and continuity in dispersion of average rates of return (Table 2 in Section 4), at a glance we reach the conclusion that approves Brozen's hypothesis. Finally, when we examine a movement of the extent and continuity in dispersion of difference (Table 3 in Section 4), again we reach the conclusion that approves his hypothesis.

## 2. Brozen's Study

Brozen [3], [4] examined Mann's study [5] with only the first index of

his disequilibrium indexes. That is to say, in his paper [3, Table 1. p.852] that selected 19 industries from within Mann's study [5], he examined each barrier class on a movement in average rates of return from the first period (1950-60) to the second period (1961-66).

	1961-66	1950-60	
Very High Barrier Class Mean (eight industries)	(13.1%	- 16.1%	= -3.0%)
Substantial Barrier Class Mean (seven industries)	( 8.9	- 11.3	= -2.4 )
Moderate-to-Low Barrier Class Mean (four industries)	(10.0	- 12.7	= -2.7 )
All Mfg. Corporations Mean	(11.2	- 11.1	= 0.1 )

Because of a remarkable decline in the very high barrier class, he approved the hypothesis that "If we were to use the amount of decline in accounting rates of return as an index to the rapidity of entry, it would appear that high barriers facilitate entry" ([3] p.852).

In addition, in his paper [4] he ascertained a movement in average rates of return and the number of industries in which average rates of return declined from 1950-60 to 1961-66. In the very high barrier class, the decline in rates of return occurred in 6 out of 8 industries. In the substantial barrier class, it occurred in 6 out of 7 industries. In the moderate-to-low barrier class, it occurred in 3 out of 4 industries. In the total, it occurred in 15 out of 19 industries.

With these facts that shew the decline of an average rate of return and an increase in the number of such industries, Brozen concluded that Mann's study examined only the existence of differences in rates of return at a particular period, and, in the longrun, even the highly barriered-high profitability industries are exposed to competitive pressure from the other markets. In this regard, when we examined common industries (19) in both Mann's first paper [5] and his second paper [6], we found that the decline in rates occurred in 15 out of 19 industries. As long as we accept Brozen's approach, we think that Mann's conclusion should be reserved.

Even if we admitted Brozen's criticism against Mann's study as valid, it is not enough for us to approve his disequilibrium hypothesis. In his paper [4] Brozen himself did not examine a movement of difference in rates of return that indicated the second one of disequilibrium indexes.

### 3. Re-examination of Brozen's Study

Table 1 shows the same index that Brozen [4] adopted to support his own hypothesis against Bain's study [1] and Stigler's study [9]. The upper column

takes the total number of industries (19) and each entry barrier class as a criterion for the difference in rates of return. The lower column takes, as its criterion, an average rate of return in all manufacturing corporations.

When we regard the total industries as a criterion, that is, Brozen's long-run equilibrium rates of return, and examine a movement of the difference between each entry barrier class and its criterion, its difference in both the substantial barrier and moderate-to-low barrier classes declined as his hypothesis suggests. In the very high barrier class, however, the difference is great and still increases. This suggests that entry into this barrier class is still difficult. Primarily, an increasing difference in the very high barrier class that necessitates support of Brozen's hypothesis makes his hypothesis groundless. At a glance, we think that the shared-asset model may be supported.

Next, in the lower column, if we regard the average rate of return in all manufacturing corporations (a') as a criterion, the movement of difference in the very high barrier class(b') declined remarkably. Judging from the degree of difference, we think that the other barrier classes (c', d') in all manufacturing corporations represent depressed industries and are less attractive to potential entrance. This fact is especially remarkable in the substantial barrier class.

In this manner, examining a movement of difference, which is inevitable to support Brozen's hypothesis, we can recognize that his hypothesis is not always approved and that it also depends on a kind of criterion in the long-run equilibrium rate of return.

Table 1. Movement of Difference in Average Rates of Return for 19 Concentrated Industries

Height of Barrier Class (Number of Industries)	Difference						
	a-b, c, d		b-c, d		c-d		
	1950-60	1961-66	1950-60	1961-66	1950-60	1961-66	
a. Total Industries	(19)	13.6%	10.4%				
b. Very High Barriers	(8)	-2.5	-2.7	16.1%	13.1%		
c. Substantial Barriers	(7)	2.3	1.5	4.8	4.2	11.3%	8.9%
d. Moderate-to-Low Barriers	(4)	0.9	0.4	3.4	3.1	-1.4	-1.1
a'. All Mfg. Corporations		11.1%	11.2%				
b'. Very High		-5.0	-1.9				
c'. Substantial		-0.2	2.3				
d'. Moderate-to-Low		-1.6	1.2				

Source : Calculated from Data in Brozen's Study [4. Table 6, p.291]

#### 4. Continuity of the Rate of Return and Its Difference

From an efficiency point of view, the essential that market economy is

workable does not strictly equalize the rates of return in Neoclassical Economics. Some capital moves smoothly toward profitable markets, or even if the difference in rates of return remains, the point is whether or not the market has a flexibility which makes its difference liquidable. According to this economic thought, a more useful method is to inquire into the extent and continuity of a disequilibrium situation. As indexes<sup>1)</sup> in this section, we will calculate the relative variance value and variation coefficient in average rates of return and its difference. We hypothesize that, in Brozen's longrun (between two periods), when the relative variance value and variation coefficient in average rates of return and its difference declines through time, those industries have a competitive tendency which is stable or strengthened.

Table 2 signifies the extent and continuity of a disequilibrium situation related to average rates of return. In the total industries (19), as relative variance value declines through time, the extent of disequilibrium situation is reduced, but owing to an increase in the variation coefficient, the competitive tendency is still unstable. Among each entry barrier class, in the very high and moderate-to-low barrier class, as both the relative variance value and the variation coefficient are reduced, the competitive tendency is stable or strengthened. But, in the substantial barrier class, the extent and continuity of the disequilibrium situation is increased. As long as we judge from Table 2, we recognize that even the very high barrier class is exposed to competitive pressure from the other markets.

Table 3 signifies the extent and continuity of the disequilibrium situation related to the difference from average rates of return in total industries (19). That is to say, we will conclude the following: When a ratio of dispersion between each barrier class and the total industries reduces through time, the difference in rates of return between each class and the total industries also tends to be reduced. When we observe a movement of two correlation ratios, the extent and continuity of the disequilibrium situation tends to be reduced in both the very high barrier class and the moderate-to-low barrier class, whereas the extent and continuity tends to increase in the substantial barrier class.

Furthermore, Table 4 shows the correlation ratio (C/D) indicating a ratio between variance (C) and variance (D) in the total industries. When we observe a movement of the correlation ratio, the difference in average rates of return among barrier classes tends to increase.

From the facts analyzed above, it can be seen that when we examine a movement of extent and continuity of the disequilibrium situation in average rates of return (Table 2), we can approve Brozen's hypothesis. Even though a movement of difference in average rates of return among the barrier classes (Table 4) tends to increase, the extent and continuity relating to differences from average rates of return in total industries (Table 3) tend to decrease, and again we can approve

Table 2. Stability of Average Rates of Return

Height of Barrier Class	Average		Relative Variance Value		Variation Coefficient	
	1950-60	1961-66	1950-60	1961-66	1950-60	1961-66
Total Industries	13.6%	10.4%	1.033011	.997065	.275602	.309631
Very High	16.1	13.1	.933851	.722424	.240838	.234834
Substantial	11.3	8.9	.570417	.660674	.224676	.272457
Moderate-to-Low	12.7	10.0	.223228	.0385	.132578	.062048
All Mfg. Corporations	11.1	11.2	—	—	—	—

Source : Same as for Table 1.

Table 3. Extent and Continuity of Difference

Height of Barrier Class	Correlation Ratio			
	Relative Variance Value Each Class/Total Industries		Variation Coefficient Each Class/Total Industries	
	1950-60	1961-66	1950-60	1961-66
Very High	.904009	.724551	.873862	.758432
Substantial	.552189	.662619	.815219	.879941
Moderate-to-Low	.216095	.038613	.481049	.200393

Source : Same as for Table 1.

Table 4. Movement of Correlation Ratio over Two Periods

Height of Barrier Class	A.	B.	C.	D.	Correlation Ratio (C/D)	
	Average Rates of Return in Each Class	Average Rates of Return in Total Industries	Variance Value between A and B	Variance Value in Total Industries		
1950	Very High	16.1%				
60	Substantial	11.3	13.6%	4.116667	14.048947	.293023
	Moderate-to-Low	12.7				
1961	Very High	13.1				
66	Substantial	8.9	10.4	3.233333	10.369473	.311813
	Moderate-to-Low	10.0				

Source : Same as for Table 1.

Brozen's hypothesis.

## 5. Concluding Remarks

In this note, Brozen's disequilibrium hypothesis was re-examined. We adopted the relative variance value and variation coefficient as an indication of the extent and continuity of a disequilibrium situation. That is to say, when we examined the

second one of his disequilibrium indexes (Table 2,3), the dispersion of difference from average rates of return in total industries tended to decrease in the high barrier class. This suggests that entry into this class is still possible. From these facts, it is shown that Brozen's reasonings [2] can be accepted, and as a guideline to anti-monopoly policy, should receive more attention in market performance (rates of return) than in market structure (concentration ratio and entry barriers).

In this manner, by calculating movement of the dispersion in average rates of return and its difference, we can understand more clearly Brozen's disequilibrium hypothesis. However, it is necessary to investigate further any elements (for example, advertising and R&D investment) that make market competitive.

### Footnote

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1) Stigler [8] adopted, as these indexes, the standard deviation in average rates of return. He hypothesizes that "the dispersion of average rates of return (over a substantial period) among competitive industries will be smaller than that of monopolistic industries" (p.69). He then arrived at a conclusion that supported this hypothesis, but this index tends to be biased by the level of rates of return. That is to say, we recognize that, as the rates of return are high, the index tends to enlarge. Thus, we adopted, as these indexes, the relative variance value and the variation coefficient. Stern and Morgenroth [7] analyzed, by means of these indexes, that a non-price competition among oligopolistic industries are cooperative. However, they compared only the amount of these indexes in oligopolistic industries with that in competitive industries. They did not compare the amount of these indexes relating to the movement of average marketing resources and their difference. Namely, they did not analyze the extent and continuity of the competitive or monopolistic tendency.

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