

Figure 1 consists of two vertically stacked graphs, labeled A and B. Both graphs plot the number of particles  $N$  on the vertical axis against the coordinate  $x$  on the horizontal axis. The horizontal axis is marked with  $-1$ ,  $0$ , and  $1$ . The vertical axis is marked with  $0$ ,  $1$ , and  $2$ . In both graphs, the curve is symmetric about  $x=0$  and shows a sharp peak at  $x=0$ . The peak height increases as the parameter  $a$  increases, with the peak reaching  $N=2$  at  $a=1$ . The curves are labeled 'A' and 'B' respectively.

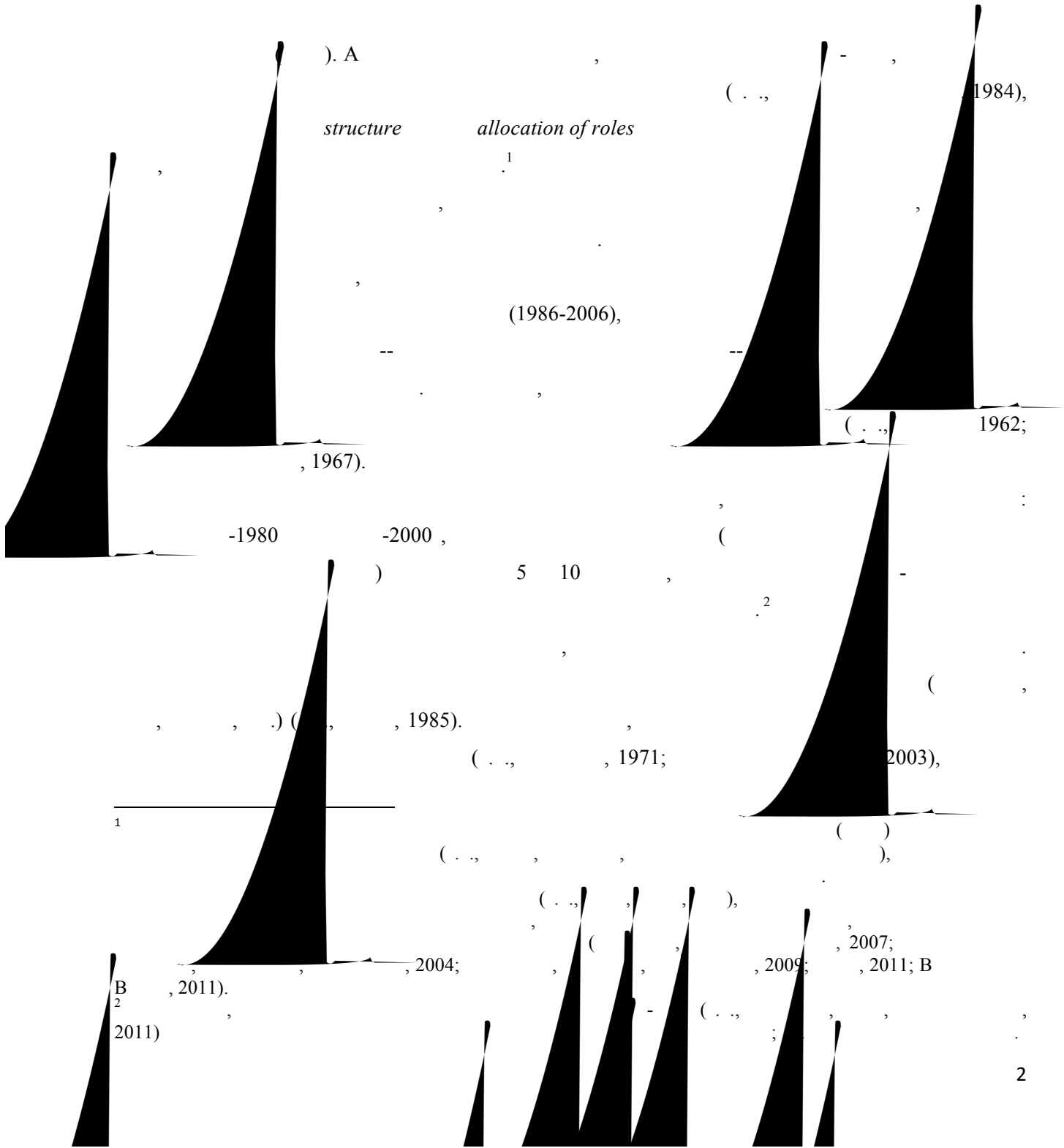
14, 2012

( . . , & )

(

I. Introduction

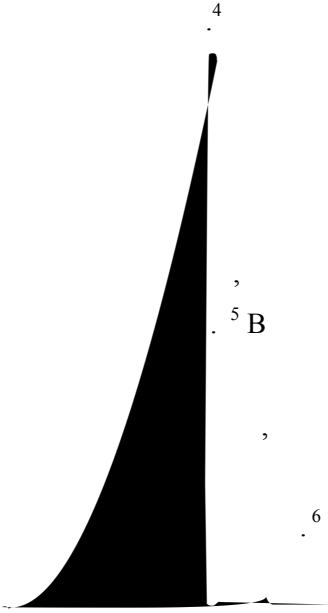
... ,  
A ... (1963)



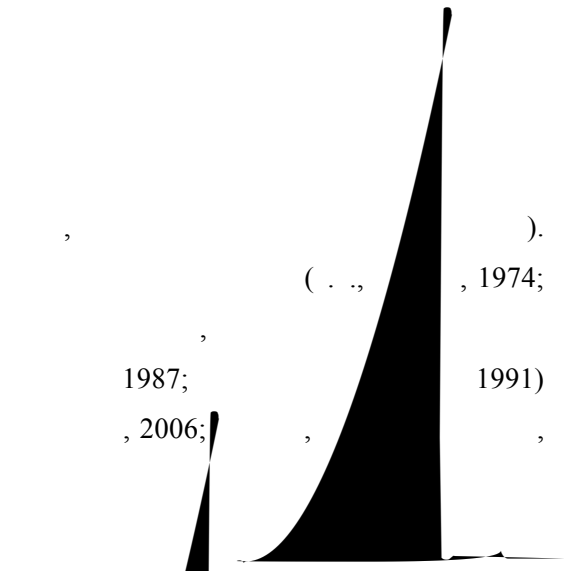
(  
 - )  
 , 1987; A , 1995).  
 ,  
 , 1974; , 1978).  
 ,  
 ,  
 ,  
 ( )  
 .  
 .  
 - / ( . . , ) ,  
 / ( . . , ) .  
 ;  
 .  
 ,  
 , - , ( ) 5.4  
 -

B -1990 . B , B  
 ,  
 ( . . , )  
 B 1993  
 B 1990 <sup>3</sup> ,  
 (A , 1995).  
 ,  
 ( B ).  
 ( 1).  
 ,  
 ,  
 , *Harper Collins*,  
 , . 77, 2002.

<sup>3</sup>  
 , , .



A



*nature*

<sup>4</sup> (B), 1994 A  
<sup>5</sup> & B : 2005 (A), (9-707-519, 2007, . 6-7).  
<sup>6</sup> A (2004),  
<sup>7</sup> (1991) ( . 33)

( )

--

--

, 1962; , 1975, 1985),  
, 1972)

( , 1988)

II: Defining Positions and Identifying Changes in F

B 1994 ( 1). A

--

--

( , , , , )

& ).

( -- ) ( -- ),

B , CMO responsibilities include “leading the company’s marketing organization; uniting and strengthening various departments’ own marketing plans; directing global marketing efforts, including branding, product marketing, and customer relationship marketing.” ( , 2008, . 67). A , &

, ( , 1988, 108). (1991) :

( .33).<sup>8</sup> A (1991) (1985) ( , , ) ( , - ); (1984) , ( , , ) - ( , ).

8 : , & , & , : ,

( , ) , ( - & B ) ( , ) ( B , 011). ( - )

6

A  
1980 ( , 2006),  
2  
(  
(1986-  
1999) B 43 ( 2004 2008).

10 ( 43 )  
,

2000

3.6  
( 1.6 2.9).

3.1 1980 6.7  
1.3

, 1

1

( , )

2

( . , ),

(0.29

/

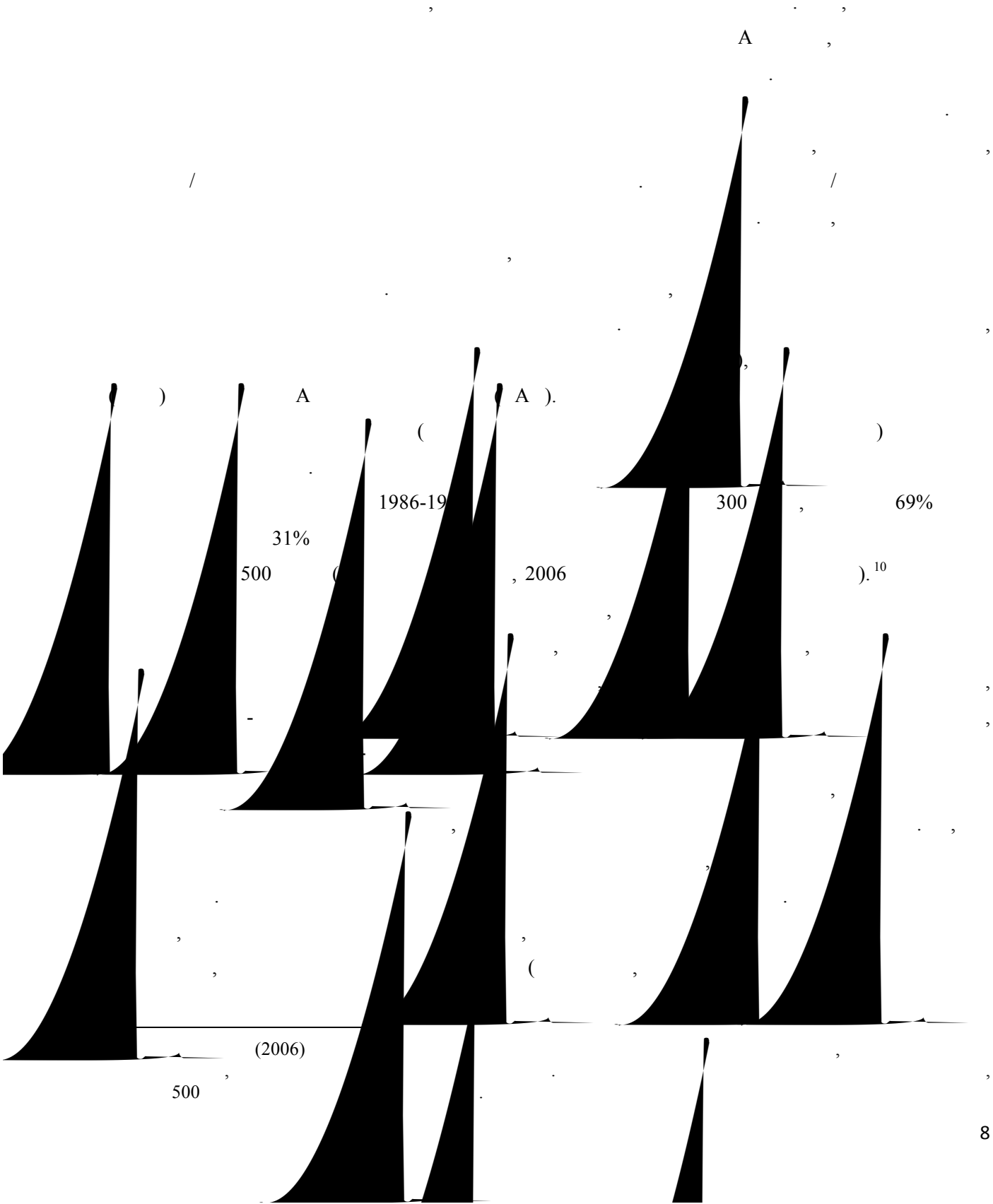
(0.21

9

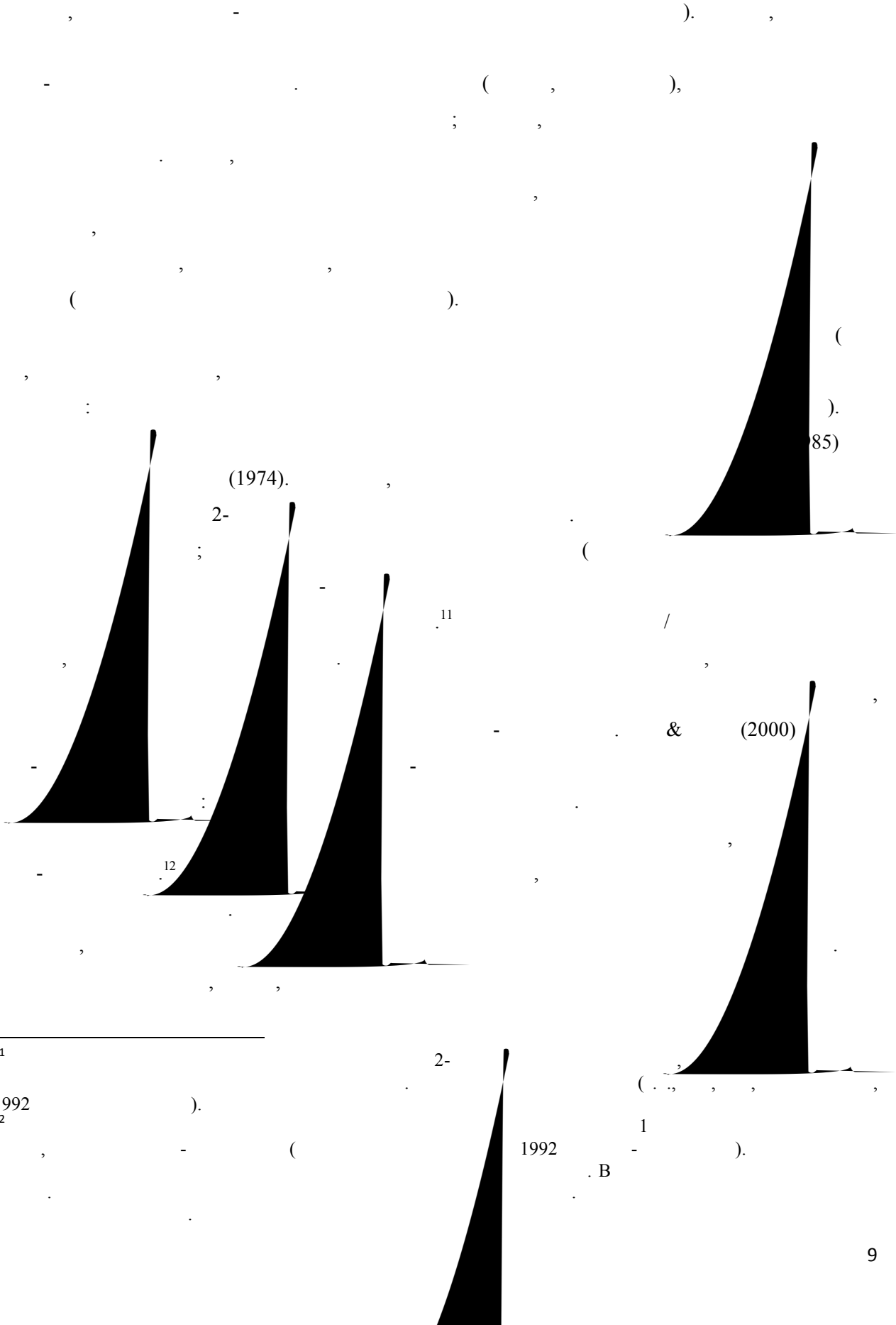
( , 2004).

)

III. Data Sources and Description







11

1992  
12

，  
13  
，

( B , B , 2002).

1986-1999

( , 2004).

( )

A

A

A

B

( A )

14

( ),

(

),

3

&

).

&

( &

13

(2000),

14 B

1)

2006.

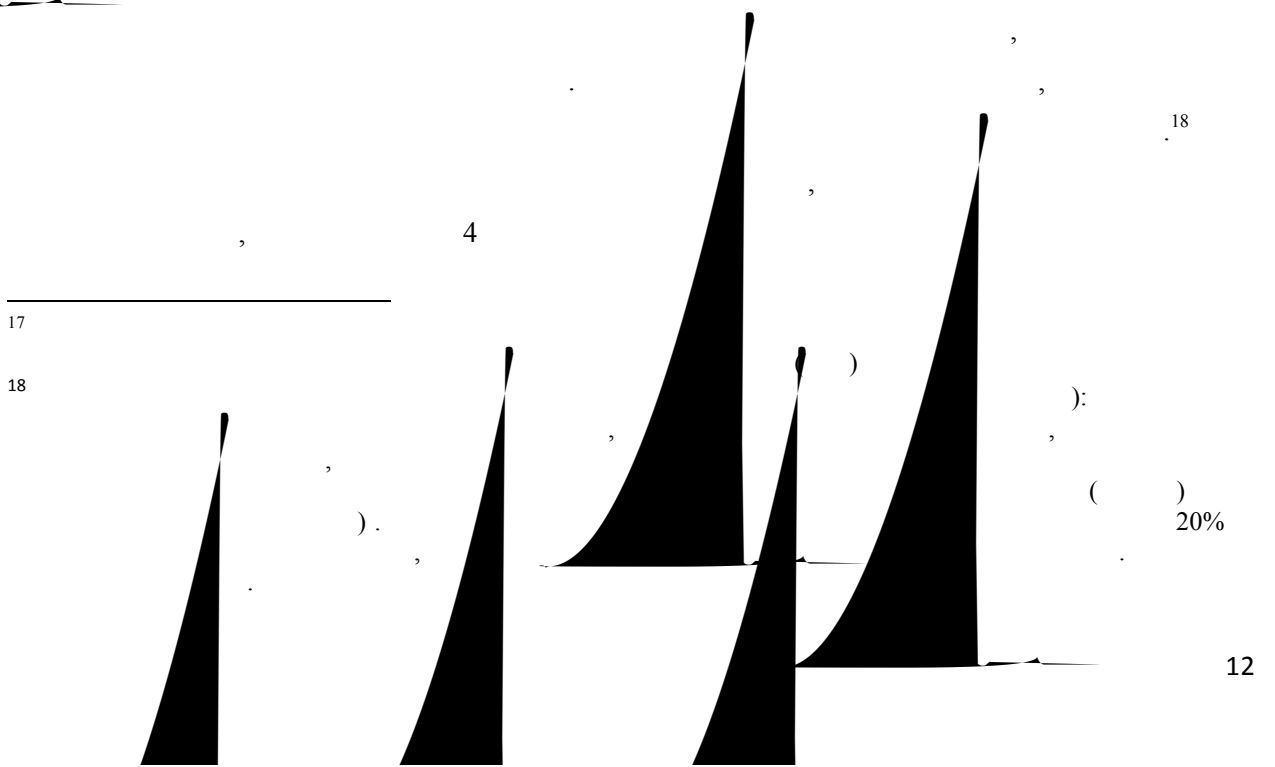
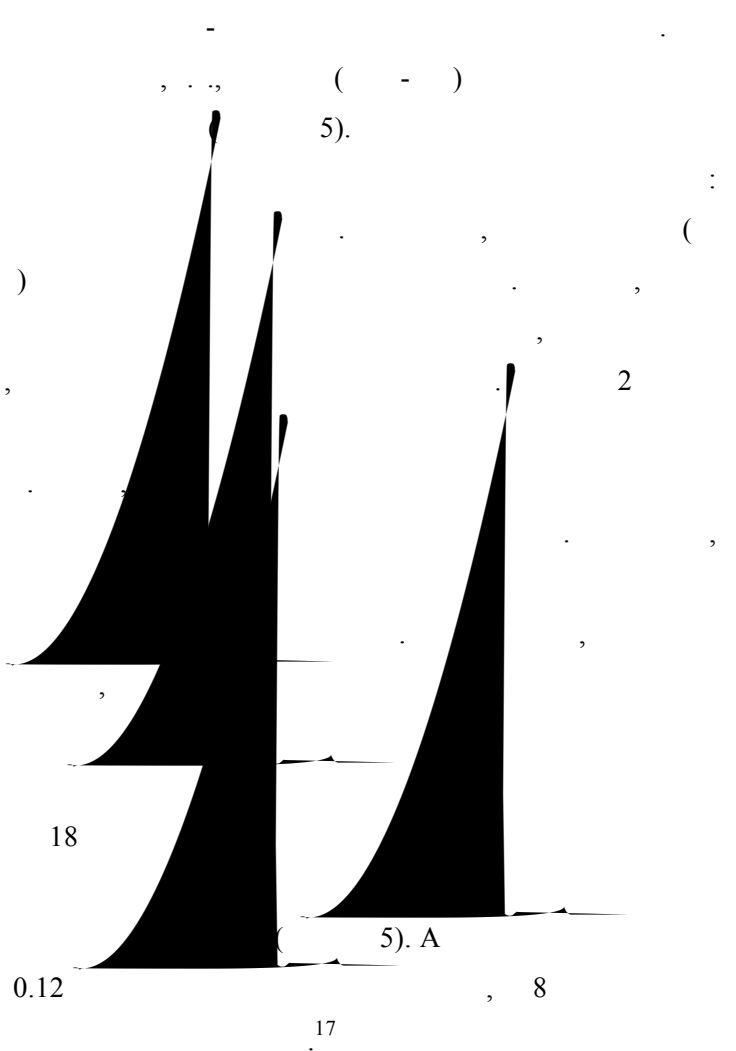
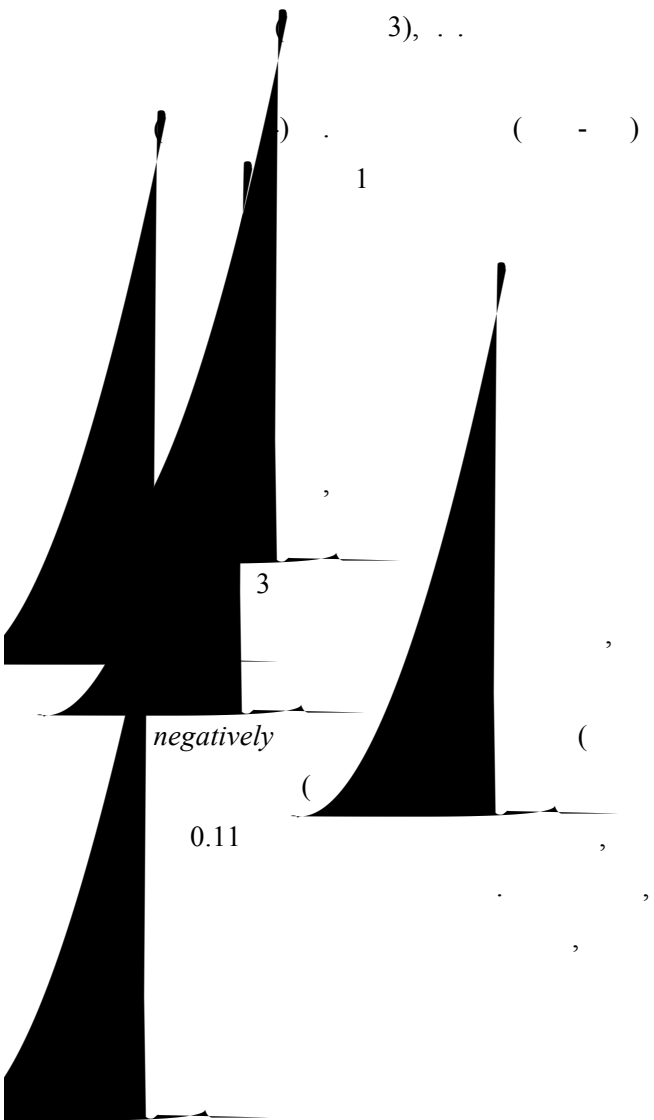
## IV. Results: Determinants of Executive Team Structure

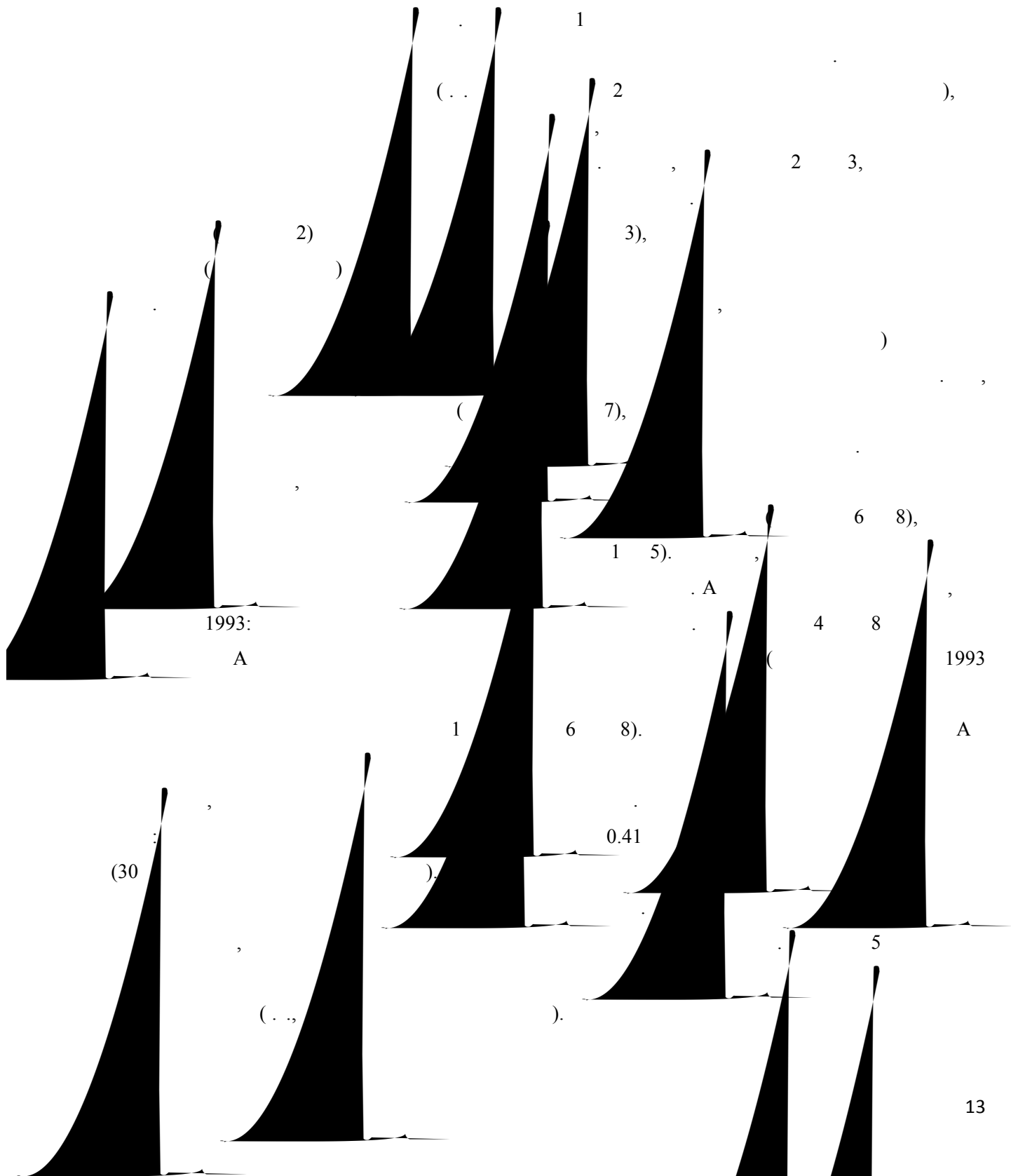
### IV.A. Firm Diversification, IT, and Executive Team Structure

$$Y_{it} = \alpha + \beta_1 F_{it} + \beta_2 IT_{it} + X_{it}'\theta + d_t + d_i + \varepsilon_{it}$$

15 (B, 1994; B, 2002; B, 2007; B, 2010).

16 (B, 2010).







，

：

$$\ln(W_{pit}) = \alpha + O_{pit}'\beta + F_{it}'\delta + X_{it}'\theta + d_t + d_{pi} + \varepsilon$$

$\ln(W_{pit})$ ,

( )

( , )

$p$   $i$ ,  $t$ .

： ( ),

,

,

$(F_{it})$

). A

$X_{it}$

-

(

1

11

15

. A

1.5

3

6,

(7

)

(13

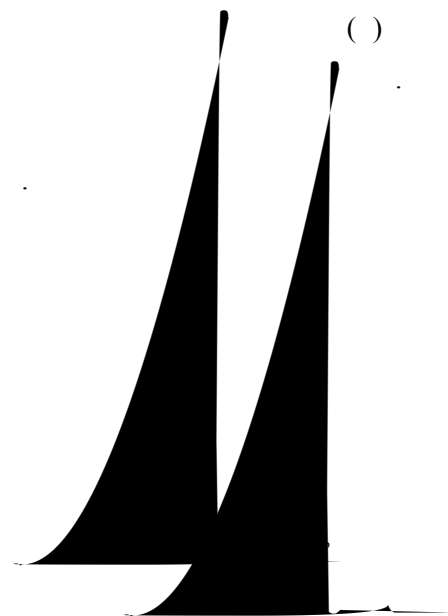
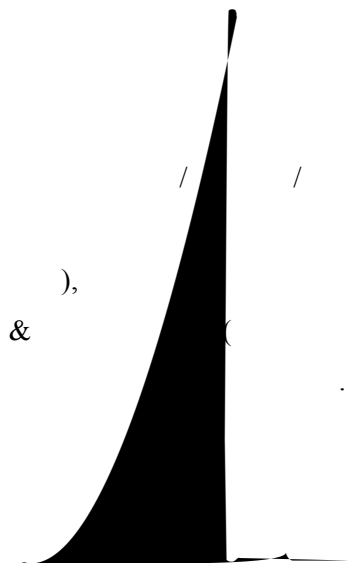
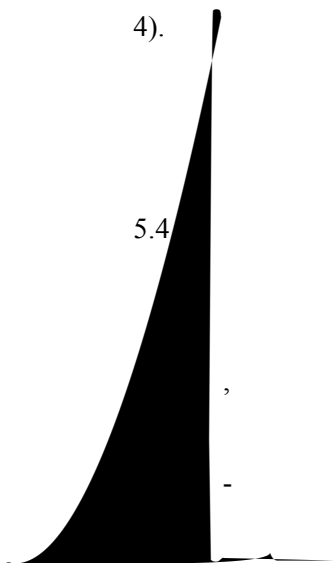
)

3

19

72

15



## V. Discussion

### V. A. Relationship between Executive Team and Diversification

. A ( . . , 1974, 1982)



,  
 ; ,  
 (1987) A (1995)  
 .<sup>20,21</sup>  
 ,  
 ,  
 ( , 1992  
 , 2010 ).  
 ,  
 ,  
 ,  
 / - ;  
 / - .  
 ( )  
 1991, ,  
 ),

## V.B. Relationship between Executive Team and IT Investments

,  
 -  
 ( . . , 1974, , 1978). A  
 ( . . , 1987; , 1991).<sup>22</sup> -

<sup>20</sup> , ( ) / , 1967; B , 1993)  
 ( . . , 1999; , 2005; , 2006;  
 , 2010). (2008), A ;  
 (2008)

<sup>21</sup> (1988), (1987) , (1992)  
 ,  
 ( )

<sup>22</sup> , ( 2000, B 2011)  
 ; ,

1978) ( ,  
.  
 ,  
( )  
( )  
 ;

23  
A ,  
 ,  
 ,  
 ;  
( )  
 ,  
 -  
 ,  
 ,  
 ,  
 .

**V.C. Enriching the Information-Processing View of the Firm**

,  
 .  
24  
 ,  
 ,  
 ,  
 -  
 ,  
 ,  
 . A  
 ;  
24  
 :  
( )  
 ,  
 .

: ( & )  
 , ( )  
 )  
 .  
 ( . . )  
 . , ,  
 , ;  
 ,  
 . ,  
 , ( )  
 , ( )  
 - .  
 ,  
 ( - ),  
 - . ,  
 ,  
 ( - ),  
 - , -  
 . ,  
 ;  
 , .  
 .  
 , A .B,  
 . , ,  
 :  
 - *and*  
 , . -  
 ,  
 . ,  
 ; -  
 ,  
 - ,  
 ; ,  
 -

25

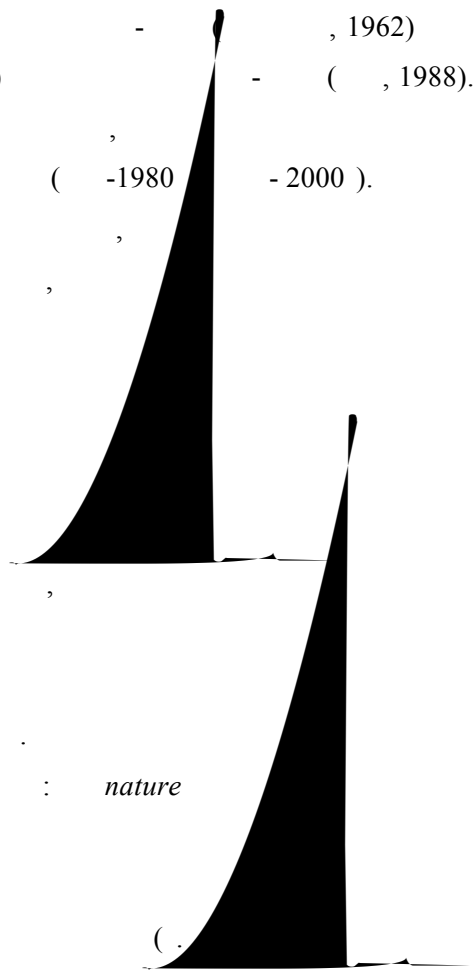
( )

,

Figure 1 shows a graph of the function  $f(x) = \frac{1}{1+x^2}$  for  $x \in [0, \infty)$ . The curve starts at  $(0, 1)$  and decreases towards the x-axis. The area under the curve is shaded, and the limit of the function as  $x$  approaches infinity is indicated as 0.

## VI. Conclusion

1972) (1962) (1988).  
 (1980 - 2000 ).



: *nature*

(1962)

500

<sup>26</sup> A (2007) :

, B B (2011) :

, 1995; B , B , 2002; , 2004).

. A ,

## References

- A , , & (2008).  
? *The American Economic Review*, 98(1): 145-179.
- A , . (1995).  
 , *Journal of Economic Behavior & Organization*, 28(3), 337-353.
- A , . B . (2004). & ,  
 , *Strategic Management Journal*, 25 (8/9):  
929-958.
- , , A , (2011).  
A ? .  
(1993). B -  
 , *Strategic Management Journal*, 14: 23-46.
- A , (2007). A  
 , *Quarterly Journal of Economics*, 122 (4): 1721-1758.
- B , . B (2011). B :  
( ), *Handbook of  
Management Team Research*. , . 49-70.
- , .  
B F (2011).  
 : - , *Quarterly  
Journal of Economics* : 339-376.

B , , , A (1994).  
 ? , .40, .12 .1645-1662.  
 , A., A. (2004).  
 : A , , *Journal of Management*, 30 (6): 749-778.  
 , A . (1962). *Strategy and Structure: Chapters in the History of the Industrial Enterprise*,  
 : .  
 (1991). , *Strategic Management Journal*,  
 12: 31-50.  
 , , (2007). , ,  
 , *Strategic Management Journal*, 28 (4): 383-405.  
 , A (2007). ,  
*Quarterly Journal of Economics*, 112 (1): 373-407.  
 , , (2010). , *American Economic Journal: Microeconomics*. 2: 77-114.  
 , (2006). A , *Journal of Political Economy*, 114 (5): 956-995.  
 , (2004). :  
 , *Journal of Labor Economics*, 22 (2): 397-430.  
 . . . . (2000). : A A  
 . *Journal of Business*, 73 (4): 629-660.  
 , , A A. (2009). ,  
*Strategic Leadership: Theory and Research on Executives, Top Management Teams, and Boards*,  
 , p. 121-63.  
 , (1985). A 1919-1979,  
*American Sociological Review*, 50(3), 377-391.  
 . (197) -  
*Business Economics*, 14(1), 29-40.  
 - , *Interfaces*, 4(3)  
 , (20) *Journal of Political Economy* (5): 874-904.  
 , *Who Says Elephants Dance*, : . 77.  
 , B , B (20) - ,  
*Harvard Business Review*, 89 (3): 60-68.



(2010).  
 , *American Economic Journal: Applied Economics*, 2 (4): 105-127.  
 , & (1991).  
 , *Communications of the Acm*, 34(1), 59-73.  
 , A. (1984).  
 , *Academy of Management Review*, 9 (2): 193-206.  
 (2005).  
*Journal of Political Economy*, 113 (4): 675-702.  
 (1988).  
 , *Journal of Industrial Economics*, 37(1), 67-87.  
 (1992).  
*Organization Science*, 3(4): 501-521.  
 (1987).  
*Academy of Management Review*, 12 (2), 331-341.  
 (1988).  
*Corporate Strategy: A Post R&D, 1902-1980*.  
 , B , & (1995).  
*Organization Science*, 6 (3), 383-397.  
 1967. *Organization Environment*.  
 , & . B  
 , *Communications of the Acm*, 30(6), 484-497.  
 (2011).  
 A , *Journal of Management*, (2).  
 (1995).  
*Journal of Accounting & Economics*, 19 (2/3): 179-208.  
 (2008). : A  
 , *Journal of Marketing*, 72 (1): 65-81.  
 (2012). ? *Harvard Business Review*. 90 (4): 112-119.

(1985).  
*Strategic Management Journal*, 6 (3): 239-255.

(1985). *The Competitive Advantage: Creating and Sustaining Superior Performance*,  
 : .

(2006).  
*Journal of Political Economy*, 114 (2): 366-402.

(2006).  
*Review of Economics & Statistics*, 88 (4): 769-773.

(2003). B  
*Management Science*, 49 (3): 290-311.

(2004).  
 1990 - B *Journal of Economics & Management Studies*, 453-487.

(1990). *Structure, and Performance*, :

(1982). *Strategic Management Journal*, 3(4), 359-369.

A *My Years with General Motors*, : .

*Journal of Finance*, 57 (5): 1891-1921.

A. (1978).  
*Academy of Management Review*, 3: 617.

(1975). *Markets and Hierarchies*, .

(1985). *The Economic Institutions of Capitalism*, .

(2012). - A *Coming, California Management Review*.

(2004). : A  
*American Sociological Review*, 69 (7): 4.

Figure 1: IBM Senior Executive Team, 1994

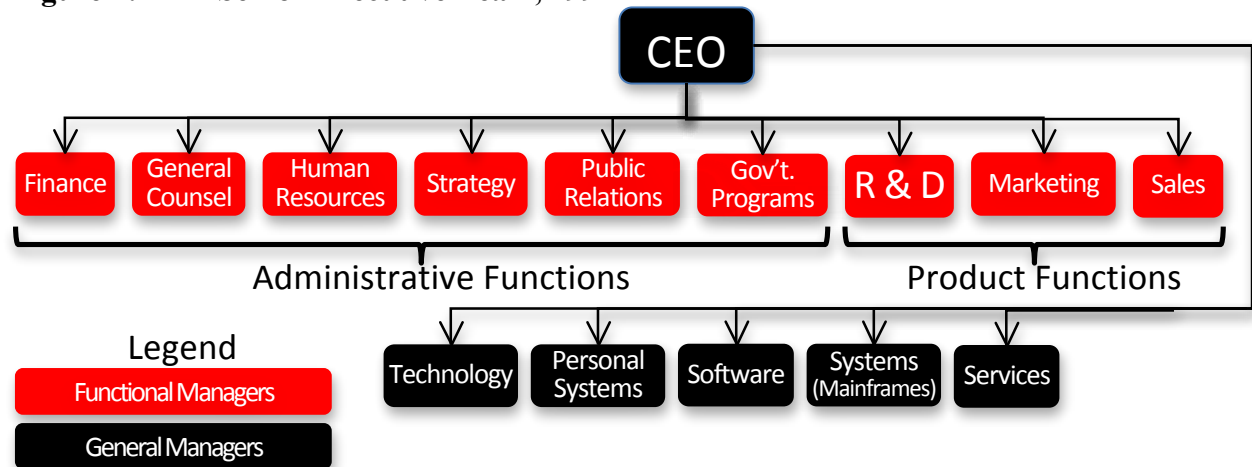
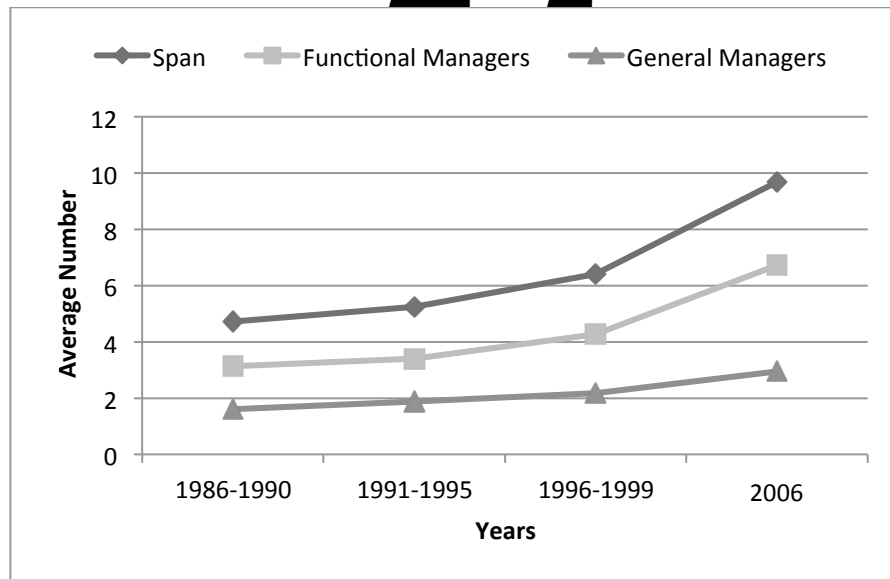


Figure 2: Span, Functional Managers and General Managers over Time (1986-2006) (sample averages)



**Table 1: Mean and Correlations between Executive Team Positions**

|                           | Mean  | Gen. Mgrs. | CFO      | General Counsel | CHRO    | Strat. Planning | Sales & Marketing | R&D     | Manufacturing |
|---------------------------|-------|------------|----------|-----------------|---------|-----------------|-------------------|---------|---------------|
|                           | (1)   | (2)        | (3)      | (4)             | (5)     | (6)             | (7)               | (8)     | (9)           |
| General Mgrs.             | 1.790 | 1          |          |                 |         |                 |                   |         |               |
| <i>Admin. Functions:</i>  |       |            |          |                 |         |                 |                   |         |               |
| CFO                       | 0.728 | 0.12***    | 1        |                 |         |                 |                   |         |               |
| General Counsel           | 0.672 | 0.11***    | 0.29***  | 1               |         |                 |                   |         |               |
| CHRO                      | 0.522 | 0.13***    | 0.19***  | 0.29***         | 1       |                 |                   |         |               |
| CIO                       | 0.063 | 0.08***    | 0.074*** | 0.04            | 0.14*** |                 |                   |         |               |
| Strat. Planning           | 0.237 | 0.14***    | 0.07**   | 0.03            | 0.08*** | 1               |                   |         |               |
| <i>Product Functions:</i> |       |            |          |                 |         |                 |                   |         |               |
| Sales & Marketing         | 0.113 | -0.02      | -0.013   | -0.03           | 0.02    | -0.01           | 1                 |         |               |
| R&D                       | 0.150 | 0.10***    | 0.09***  | 0.04            | 0.06**  | 0.08***         | 0.08***           | 1       |               |
| Manufacturing             | 0.053 | 0.01       | -0.04*   | -0.06**         | -0.01   | 0.03            | 0.21***           | 0.14*** | 1             |

Notes: \*\*\*, \*\*, and \* represent statistical significance at 1%, 5%, and 10% levels respectively. The following variables are included in this table: General managers is the number of general managers (includes COO, group managers and division managers) reporting directly to the CEO; All other variables are dummy variables for whether a given functional position reports directly to the CEO. CFO stands for Chief Financial Officer, CHRO stands for Chief Human Resource Officer, and CIO stands for Chief Information Officer. For each of these functions (Administrative and Product), the mean (Column 1) represents the fraction of the sample that has the position reporting directly to the CEO. Columns 2 through 10 show the correlation between pairs of positions. These correlations are calculated on our full sample (2321 firm-year observations).

**Table 2: Descriptive Statistics**

|                                     | Mean     | S.D.     | Observations |
|-------------------------------------|----------|----------|--------------|
| <i>Firm variables:</i>              |          |          |              |
| Sales (000s)                        | 9267.44  | 16106.13 | 2321         |
| Assets (000s)                       | 10826.57 | 21852.34 | 2321         |
| Number of Employees (000s)          | 48.28    | 81.36    | 2321         |
| Number of Segments                  | 2.76     | 1.66     | 2321         |
| Functional Managers                 | 3.19     | 1.53     | 2321         |
| Administrative Functional Managers  | 2.55     | 1.41     | 2321         |
| Product Functional Managers         | 0.32     | 0.60     | 2321         |
| General Managers                    | 1.79     | 1.52     | 2321         |
| Span (Size of Executive team)       | 4.98     | 2.34     | 2321         |
| CAO                                 | 0.33     | 0.47     | 2321         |
| COO                                 | 0.48     | 0.50     | 2321         |
| PCs per Employee                    | 0.22     | 0.21     | 2321         |
| Industry Avg. Price-Cost Margin     | 0.18     | 0.10     | 2321         |
| Foreign Affiliates Sales (%)        | 0.23     | 0.21     | 2321         |
| ln Number of LAN nodes              | 4.25     | 4.03     | 2321         |
| <i>Firm scope variables:</i>        |          |          |              |
| Unrelated Diversif. (Entropy)       | 0.37     | 0.41     | 2321         |
| Vertical Relatedness                | 0.02     | 0.04     | 1502         |
| Complementarity                     | 0.40     | 0.31     | 1502         |
| <i>Compensation variables:</i>      |          |          |              |
| ln Func. Mgrs. Base Compensation    | 12.43    | 0.38     | 5317         |
| ln Func. Mgrs. Total Compensation   | 13.28    | 0.70     | 5317         |
| ln General Mgrs. Base Compensation  | 12.05    | 0.41     | 8866         |
| ln General Mgrs. Total Compensation | 12.75    | 0.65     | 8866         |
| ln CEO Base Compensation            | 13.49    | 0.35     | 2340         |
| ln CEO Total Compensation           | 14.65    | 0.75     | 2340         |

Notes: Number of segments is the number of business segments (COMPUSTAT segment data). Functional managers is the number of functional manager positions reporting directly to the CEO. Administrative functional managers include CFO, General Counsel, Human Resources, Public Relations, Planning, and Chief Information Officer. Product functional managers include heads of R&D, marketing, sales, sales & marketing, and manufacturing. General managers is the number of general managers reporting directly to the CEO (COO, group managers and division managers). Span is the total number of positions reporting directly to the CEO. PCs per employee is PCs per 1000 employees. The Industry average price-cost margin is computed at 3-digit SIC (COMPUSTAT). Foreign Affiliate Sales (%) is the fraction of sales reported by foreign affiliates as a share of total firm sales (COMPUSTAT Geographic Segment data). ln Number of LAN nodes is the log of the number of Local Area Network nodes. Unrelated diversification is the entropy measure used in Palepu (1985). Vertical Relatedness and Complementarity are based on Fan and Lang (2000) definitions, using 1992 US Input-Output tables and COMPUSTAT segment data. See footnotes 13, 14 and 15 for exact definitions. Base Compensation is an employee's base salary, while Total Compensation includes base salary along with bonuses and long-term incentives.

**Table 3: Changes in Executive Team Structure**

| VARIABLES                       | (1)<br>Span          | (2)<br>Gen. Mgr.     | (3)<br>Func. Mgrs.   | (4)<br>Product<br>Func. Mgrs. | (5)<br>Admin.<br>Func. Mgrs. |
|---------------------------------|----------------------|----------------------|----------------------|-------------------------------|------------------------------|
| Unrelated Diversif. (Entropy)   | 0.741*<br>(0.411)    | 0.625**<br>(0.270)   | 0.116<br>(0.297)     | -0.262**<br>(0.133)           | 0.378<br>(0.245)             |
| PCs per Employee                | 0.268<br>(0.440)     | -0.370<br>(0.245)    | 0.638**<br>(0.301)   | 0.0902<br>(0.134)             | 0.548**<br>(0.236)           |
| # of Segments                   | -0.0551<br>(0.0810)  | -0.0571<br>(0.0534)  | 0.00205<br>(0.0549)  | 0.0423**<br>(0.0194)          | -0.0402<br>(0.0480)          |
| CAO                             | 0.464**<br>(0.183)   | 0.106<br>(0.117)     | 0.358***<br>(0.121)  | 0.0602<br>(0.0532)            | -0.702***<br>(0.0978)        |
| COO                             | -0.870***<br>(0.168) | -0.412***<br>(0.111) | -0.459***<br>(0.106) | -0.190***<br>(0.0403)         | -0.269***<br>(0.0860)        |
| Foreign Affiliates Sales (%)    | 1.595**<br>(0.672)   | 0.758<br>(0.487)     | 0.837**<br>(0.407)   | 0.103<br>(0.167)              | 0.734**<br>(0.345)           |
| Ln(Sales)                       | -0.381<br>(0.349)    | -0.0186<br>(0.217)   | -0.363<br>(0.234)    | -0.122<br>(0.0809)            | -0.241<br>(0.205)            |
| R & D / Sales                   | -5.389<br>(7.430)    | -7.024<br>(5.077)    | 1.635<br>(4.458)     | 2.759<br>(1.755)              | -1.124<br>(3.990)            |
| Industry Avg. Price-Cost Margin | -1.794<br>(1.616)    | -1.784*<br>(1.062)   | -0.0102<br>(1.019)   | -0.386<br>(0.439)             | 0.376<br>(0.847)             |
| Observations                    | 2,321                | 2,321                | 2,321                | 2,321                         | 2,321                        |
| R-squared                       | 0.156                | 0.084                | 0.128                | 0.059                         | 0.168                        |
| Number of firms                 | 290                  | 290                  | 290                  | 290                           | 290                          |
| Year Dummies                    | Yes                  | Yes                  | Yes                  | Yes                           | Yes                          |
| Firm FE                         | Yes                  | Yes                  | Yes                  | Yes                           | Yes                          |

Notes: \*\*\*, \*\*, and \* represent statistical significance at 1%, 5%, and 10% levels respectively. Standard errors are clustered by firm. Span is the total number of positions reporting directly to the CEO (i.e., the sum of functional managers and general managers). General managers is defined the number of general managers reporting directly to the CEO. General managers include COO, group managers and division managers. Functional manager is defined as the number of functional manager positions reporting directly to the CEO. Product functional managers include heads of R&D, marketing, sales, sales & marketing, and manufacturing. Administrative functional managers include CFO, General Counsel, Human Resources, Public Relations, Planning, and Chief Information Officer.

**Table 4: Types of Functional Managers, Diversification and IT**

|           | (1)                    | (2)                    | (3)                    | (4)                    | (5)                    | (6)                   | (7)                   | (8)                   |
|-----------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|
| VARIABLES | Product<br>Func. Mgrs. | Product<br>Func. Mgrs. | Product<br>Func. Mgrs. | Product<br>Func. Mgrs. | Product<br>Func. Mgrs. | Admin.<br>Func. Mgrs. | Admin.<br>Func. Mgrs. | Admin.<br>Func. Mgrs. |

# Related Segments

**Table 5: Pay and Changes in Executive Team Structure**

| VARIABLES                     | (1)<br>Func. Mgrs. Only<br>ln(Base Comp) | (2)<br>Func. Mgrs. Only<br>ln(Total Comp) | (3)<br>Gen. Mgrs. Only<br>ln(Base Comp) | (4)<br>Gen. Mgrs. Only<br>ln(Total Comp) | (5)<br>Gen. Mgrs. Only<br>ln(Base Comp) | (6)<br>Gen. Mgrs. Only<br>ln(Total Comp) |
|-------------------------------|--|---|---|--|---|--|
| Func. Mgrs.                   | -0.0147***<br>(0.00339)                  | -0.00282<br>(0.00737)                     | -0.00789**<br>(0.00352)                 | -0.00997<br>(0.00640)                    |   |  |
| Admin. Func. Mgrs.            |  |   |   |  | -0.00462<br>(0.00385)                   | -0.00107<br>(0.00789)                    |
| Product Func. Mgrs.           |  |   |   |  | -0.0240**<br>(0.0102)                   | -0.0539***<br>(0.0168)                   |
| Reports to CEO                | 0.106***<br>(0.0126)                     | 0.145***<br>(0.0244)                      | 0.0734***<br>(0.0210)                   | 0.127***<br>(0.0406)                     | 0.0745***<br>(0.0207)                   | 0.130***<br>(0.0396)                     |
| Division Depth                |  |   | -0.0706***<br>(0.0111)                  | -0.107***<br>(0.0178)                    | -0.0705***<br>(0.0111)                  | -0.107***<br>(0.0177)                    |
| PCs per Employee              | 0.0328<br>(0.0272)                       | 0.0871<br>(0.0557)                        | 0.00429<br>(0.0389)                     | -0.0136<br>(0.0851)                      | 0.00233<br>(0.0388)                     | -0.0189<br>(0.0854)                      |
| Unrelated Diversif. (Entropy) | -0.00204<br>(0.0284)                     | -0.0342<br>(0.0703)                       | -0.0182<br>(0.0301)                     | -0.0303<br>(0.0580)                      | -0.0214<br>(0.0298)                     | -0.0390<br>(0.0580)                      |
| Ln(Sales)                     | 0.140***<br>(0.0186)                     | 0.299***<br>(0.0386)                      | 0.0922***<br>(0.0245)                   | 0.209***<br>(0.0502)                     | 0.0931***<br>(0.0243)                   | 0.211***<br>(0.0489)                     |
| Observations                  | 5,317                                    | 5,317                                     | 8,866                                   | 8,866                                    | 8,866                                   | 8,866                                    |
| R-squared                     | 0.580                                    | 0.598                                     | 0.644                                   | 0.554                                    | 0.645                                   | 0.556                                    |
| Number of positions*firm      | 831                                      | 831                                       | 2,560                                   | 2,560                                    | 2,560                                   | 2,560                                    |
| Year Dummies                  | Yes                                      | Yes                                       | Yes                                     | Yes                                      | Yes                                     | Yes                                      |
| Position*Firm FE              | Yes                                      | Yes                                       | Yes                                     | Yes                                      | Yes                                     | Yes                                      |

Notes: \*\*\*, \*\*, and \* represent statistical significances at 1%, 5%, and 10% levels respectively. Standard errors are clustered by firm. Columns 1 and 2 are for the only three functional manager positions for which we have compensation data (CFO, General Counsel, and Human Resources). Columns 3 through 6 only include division (general) managers. Columns 7 and 8 only include CEOs. Base Compensation is an employee's base salary, while Total Compensation includes base salary along with bonuses and long-term incentives. All columns include controls for the number of segments, CAO, COO, Industry Avg. Price-Cost Margin, Foreign Affiliates Sales (%) and R&D / Sales, as in earlier tables. See Table 3 for other variable definitions.