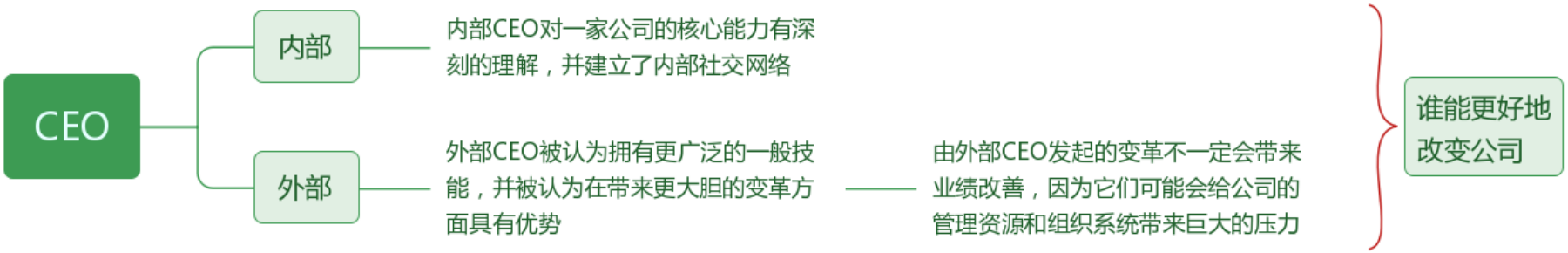
What do outside CEOs really do? Evidence from plant-level data

JFE 2023.01

汇报人：崔易

2023年7月5日

1.Introduction


CEO
内部
外部
内部CEO对一家公司的核心能力有深刻的理解，并建立了内部社交网络
外部CEO被认为拥有更广泛的一般技能，并被认为在带来更大胆的变革方面具有优势
由外部CEO发起的变革不一定会带来业绩改善，因为它们可能会给公司的管理资源和组织系统带来巨大的压力
谁能更好地改变公司

What do outside CEOs really do?

- 决定CEO更替的因素以及招聘外部人士的决定
  - 绩效和外部CEO招聘之间存在很强的反向关系，业绩不佳会增加任命外部人士的可能性
- 考察内部和外部首席执行官的相对表现
  - 外部继任与工厂业绩之间的正相关关系在先前业绩良好的公司，在面临快速技术变革的公司(即高科技公司)和更复杂的公司中更强
    - 以CEO换届年份为中心的七年面板，其中包括换届年份、换届前三年和换届后三年。
    - 关注的是人员更替后的三年，因为之前的研究表明，大多数变化是在首席执行官被任命后的头两年半内做出的
- 外部CEO可能产生绩效变化的机制
  - 通过资产剥离和新工厂的开设来检查公司运营结构的变化
    - 拥有外部CEO的公司更有可能从生产率较低的项目中撤出资源
    - 拥有外部CEO的公司通过剥离外围业务重新聚焦于核心竞争力
    - 拥有外部CEO的公司关闭的IT强度更低工厂数量更多
    - 拥有外部CEO的公司关闭的工会关联度更高的工厂数量更多
  - 通过详细分析全要素生产率的四个组成部分
    - 拥有外部CEO的公司的投资支出削减幅度更大，并且改变了投资的构成
    - 拥有外部CEO的公司员工数量和平均工资大幅下降，而运营效率有所提高，生产类员工增加，更多地采用结构化管理做法
    - 拥有外部CEO公司的材料成本有更大的下降
    - 拥有外部CEO公司销售额的增加并不是来自更多样化的产品供应，而是来自产品供应范围的缩小

2.Sample and variables

- BoardEx：CEO’s age, tenure, and affiliation with the firm.
- A successor is classified as an **outside CEO** if their total tenure at the firm (as an executive or a director) is one year or less at the time of appointment to the CEO position.
- Compustat：accounting information
- CRSP ：stock return data
- Annual Survey of Manufactures(ASM) and the Census of Manufacturers (CMF)：firms’ micro-level behavior，such as total shipments, employment, capital ex-
- penditures, and material and energy costs.
- Longitudinal Business Database (LBD)：plant closures and openings
- 时间：2000-2015年

Table 1

Panel A: Firm and plant characteristics

	Outside successions		Inside successions	
	Mean	Standard Deviation	Mean	Standard Deviation
Firm-level characteristics:				
Assets (millions)	15.57	42.54	27.00***	77.14
Tobin Q	1.64	0.78	1.73**	0.99
Cash flow	0.07	0.11	0.09	0.09
Cash holdings	0.08	0.09	0.07	0.08
Leverage	0.31	0.17	0.26***	0.13
ROA	0.13	0.10	0.14	0.07
Buy-and-hold return	-0.49	3.69	-0.15*	2.03
Number of plants	10.05	17.10	14.33***	21.63
Plant-level characteristics:				
Value of shipments (millions)	0.23	0.72	0.25**	0.95
TFP	1.79	0.69	1.81***	0.64
Operating margin	0.33	0.25	0.32	0.33
Log material costs	10.98	1.58	10.83***	1.62
Sales growth	0.07	0.71	0.07	0.77
Log capital expenditure	6.55	2.56	6.44***	2.59
Capital intensity	4.95	1.05	4.80***	1.05
Plant size	11.11	1.48	10.97***	1.58
Log capital stock	10.03	1.51	9.80***	1.65
Number of observations	9,000		34,000	

Panel B: CEO characteristics

	Outside CEOs	Inside CEOs
Average age	52.43	52.94
Average number of current boards	0.81	0.73
Average number of total boards to date	2.05	1.75**
Experience in the same industry	20%	-
Prior CEO experience	14%	4%***
% MBA	52%	40%**
% Ivy league education	25%	23%

3. Determinants

Table 2

	Turnover		Outsider	
	(1)	(2)	(3)	(4)
Plant size	0.019*** (0.004)	-0.011* (0.006)	-0.039*** (0.015)	0.061 (0.036)
Number of products	-0.030** (0.012)	-0.046*** (0.018)	-0.049(0.044)	-0.109 (0.091)
TFP	-0.019** (0.009)	-0.052*** (0.014)	-0.205*** (0.050)	-0.087* (0.049)
Historical TFP volatility	0.068***(0.024)	0.080** (0.038)	-0.008 (0.036)	0.008 (0.140)
Three-year industry-adjusted operating margin	-0.021** (0.009)	-0.046*** (0.015)	-0.065*** (0.020)	-0.081*(0.050)
High-tech industry	-0.041 (0.028)	0.120* (0.071)	0.128** (0.061)	0.123* (0.070)
Industry and year fixed effects	Yes	Yes	Yes	Yes
Pseudo R^2	0.34	0.28	0.18	0.06
Number of observations	91,000	10,000	5,000	500

4. CEO origin and plant performance

Table 3

Panel A: Baseline estimation

	TFP (1)	TFP (2)	TFP–OP (3)	TFP–LP (4)	Operating margin (5)
Outsider × Post-turnover	0.048*** (0.018)	0.112*** (0.031)	0.046*** (0.018)	0.048*** (0.018)	0.024** (0.011)
Post-turnover	-0.010 (0.008)	-0.091*** (0.031)	-0.011 (0.008)	-0.010 (0.008)	-0.003 (0.004)
Outsider	-0.070*** (0.021)	-0.173*** (0.047)	-0.068*** (0.021)	-0.069*** (0.021)	-0.027** (0.011)
Assets	-0.030*** (0.008)	-0.010 (0.015)	-0.030*** (0.008)	-0.030*** (0.008)	-0.013*** (0.005)
Tobin's Q	-0.016*** (0.005)	0.012 (0.012)	-0.015*** (0.005)	-0.016*** (0.005)	0.012 (0.012)
Cash flow	-0.013 (0.038)	0.003 (0.056)	-0.009 (0.038)	-0.011 (0.038)	-0.008 (0.020)
Cash holding	0.004 (0.059)	-0.019 (0.115)	0.005 (0.059)	0.003 (0.059)	0.010 (0.033)
Leverage	0.075** (0.037)	0.105* (0.058)	0.073* (0.037)	0.074** (0.037)	0.063** (0.028)
ROA	-0.072 (0.060)	-0.041 (0.076)	-0.072 (0.060)	-0.074 (0.060)	0.032 (0.030)
Buy-and-hold return	-0.002*** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.000 (0.000)
Forced turnover dummy	0.011 (0.015)	0.043 (0.033)	0.011 (0.015)	0.011 (0.015)	0.024*** (0.009)
Forced turnover dummy × Post-turnover	0.009 (0.011)	0.029 (0.025)	0.010 (0.011)	0.009 (0.011)	-0.009 (0.009)
Board independence	0.010 (0.036)	0.001 (0.037)	0.009 (0.036)	0.009 (0.036)	0.009 (0.016)
Board independence × Post-turnover	0.005 (0.033)	0.005 (0.034)	0.005 (0.033)	0.004 (0.033)	-0.014 (0.016)
Plant size	0.205*** (0.011)	0.200*** (0.031)	0.207*** (0.011)	0.206*** (0.011)	0.192*** (0.020)
Plant and year fixed effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.78	0.80	0.78	0.78	0.46
Number of observations	43,000	13,000	43,000	43,000	43,000

Panel B: Year-by-year changes

	TFP	Operating margin
	(1)	(2)
Outsider × (t+0)	0.015 (0.016)	-0.001 (0.012)
Outsider × (t + 1)	0.040** (0.016)	0.004 (0.012)
Outsider × (t + 2)	0.045*** (0.016)	0.020* (0.012)
Outsider × (t + 3)	0.044*** (0.017)	0.026** (0.012)
Outsider and time dummies	Yes	Yes
Firm and plant controls	Yes	Yes
Plant and year fixed effects	Yes	Yes
Adjusted R^2	0.78	0.46
Number of observations	43,000	43,000

Panel C: Cross-sectional variation

	TFP	**TFP**	**TFP**
	(1)	**(2)**	**(3)**
Outsider × Post-turnover × High performance	0.031*** (0.014)		
Outsider × Post-turnover × High-tech industry		0.082** (0.039)	
Outsider × Post-turnover × Complex			0.045** (0.018)
Double interactions and main effects	Yes	Yes	Yes
Firm and plant controls	Yes	Yes	Yes
Plant and year fixed effects	Yes	Yes	Yes
Adjusted R^2	0.80	0.79	0.79
Number of observations	43,000	43,000	43,000

5. Endogeneity

内生性

CEO离职的时间通常不是随机的，可以由公司、行业或经济表现系统地决定

如果先前生产率较低的公司有更大的改进空间，那么我们的发现可能是均值回归的结果，而不是与聘请外部CEO相关的改进。

创建一个具有相似离职前特征的工厂的对照样本

新任首席执行官是从内部晋升还是从外部聘用的决定同样是内生的，因为这代表了公司的深思熟虑的选择

很难分别确定新CEO的影响和董事会决定推动新方向的影响

关注经历过CEO因死亡或与业绩无关的健康问题而离职的公司

Table 4

Panel A: Distributional properties of key covariates between outside vs control firms.

	Outsiders (Mean)	Controls (Mean)	*t*-statistic
TFP	1.79	1.84	-1.04
Operating margin	0.33	0.36	-0.92
Assets (millions)	15.93	21.22	-0.99
Tobin's Q	1.64	1.81	-1.23
Cash flow	0.08	0.08	-1.19
Cash holdings	0.08	0.08	1.24
Leverage	0.31	0.28	2.10
ROA	0.14	0.14	-0.46
Buy-and-hold return	-0.44	-0.15	-1.39
Plant size	11.21	11.22	-0.04

Panel B: Matching analysis, exogenous turnovers, and placebo test

	Industry-TFP-Size match		Exogenous turnovers		Placebo test	
	TFP	Operating margin	TFP	Operating margin	TFP	Operating margin
	(1)	(2)	(3)	(4)	(5)	(6)
Outsider × Post-turnover	0.049** (0.023)	0.028*** (0.012)	0.044* (0.026)	0.061 (0.049)	-0.000 (0.011)	-0.005 (0.006)
Post-turnover	-0.010 (0.019)	0.002 (0.010)	0.006 (0.015)	-0.738 (1.166)	0.002 (0.013)	-0.002 (0.006)
Outsider	-0.019 (0.031)	-0.024 (0.013)	-0.049 (0.039)	0.036 (0.045)	0.004 (0.008)	0.005 (0.004)
Firm and plant controls	Yes	Yes	Yes	Yes	Yes	Yes
Plant and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.76	0.58	0.77	0.44	0.76	0.46
Number of observations	22,000	22,000	3,000	3,000	43,000	43,000

6. Channels

Table 5

Panel A: Plant closures and openings			
	Ln (1+ # closed)	Ln (1+ # opened)	Net decrease
	(1)	(2)	(3)
Outsider × Post-turnover	0.029** (0.014)	0.006 (0.012)	0.199*** (0.052)
Post-turnover	0.006 (0.007)	-0.013* (0.008)	0.057 (0.046)
Outsider	-0.022** (0.011)	-0.003 (0.009)	-0.102* (0.059)
Firm controls	Yes	Yes	Yes
Firm and year fixed effects	Yes	Yes	Yes
Adjusted R^2	0.35	0.35	0.35
Number of observations	3,000	3,000	3,000

Panel B: Plant characteristics				
	Ln (1+ # low TFP closed)	Ln (1+ # peripheral closed)	Ln (1+ # low IT closed)	Ln (1+ # high union closed)
	(1)	(2)	(3)	(4)
Outsider × Post-turnover	0.024** (0.012)	0.027** (0.013)	0.022* (0.013)	0.028* (0.016)
Post-turnover	0.005 (0.008)	0.007 (0.010)	0.006 (0.010)	0.010 (0.011)
Outsider	-0.019* (0.011)	-0.022 (0.015)	-0.019 (0.012)	-0.021* (0.012)
Firm controls	Yes	Yes	Yes	Yes
Firm and year fixed effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.33	0.33	0.33	0.33
Number of observations	3,000	3,000	3,000	3,000

Table 6

	Ln (capital expenditure)	% Building	% new machinery	% computer expenditure	% vehicles	Capital intensity
	(1)	(2)	(3)	(4)	(5)	(6)
Outsider × Post-turnover	-0.015** (0.007)	-0.021** (0.009)	0.024** (0.010)	0.036*** (0.010)	0.005** (0.002)	0.042*** (0.014)
Post-turnover	-0.049 (0.030)	-0.005 (0.004)	0.006 (0.004)	-0.003 (0.005)	-0.001 (0.002)	0.007 (0.007)
Outsider	0.012 (0.077)	0.007 (0.009)	-0.007 (0.009)	-0.007 (0.011)	-0.015*** (0.004)	-0.105*** (0.024)
Firm and plant controls	Yes	Yes	Yes	Yes	Yes	Yes
Plant and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.61	0.20	0.14	0.30	0.30	0.92
Number of observations	43,000	40,000	40,000	36,000	33,000	43,000

Table 7

	Ln (employ ment)	Ln (average wage)	Ln (value added/ employee)	Ln (value added/ hour)	Production worker ratio	Change in mgmt practices
	(1)	(2)	(3)	(4)	(5)	(6)
Outsider × Post-turnover	-0.022** (0.011)	-0.018** (0.007)	0.048** (0.020)	0.075*** (0.022)	0.008** (0.004)	-
Post-turnover	-0.006 (0.006)	-0.000 (0.003)	-0.007 (0.010)	-0.004 (0.010)	0.000 (0.002)	-
Outsider	0.041** (0.018)	0.028*** (0.010)	-0.087*** (0.028)	-0.082*** (0.030)	0.001 (0.006)	0.035** (0.017)
Firm and plant controls	Yes	Yes	Yes	Yes	Yes	Yes
Plant fixed effects	Yes	Yes	Yes	Yes	Yes	No
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.96	0.81	0.78	0.76	0.81	0.12
Number of observations	43,000	43,000	43,000	43,000	43,000	2,000

Table 8

	Ln(Materials)	Sales growth	Number of products
	(1)	(2)	(3)
Outsider × Post-turnover	-0.041** (0.014)	0.029** (0.015)	-0.023** (0.010)
Post-turnover	0.004 (0.007)	-0.015 (0.009)	0.002 (0.006)
Outsider	0.057*** (0.020)	-0.031 (0.021)	-0.040 (0.031)
Firm and plant controls	Yes	Yes	Yes
Plant and year fixed effects	Yes	Yes	Yes
Adjusted R^2	0.96	0.23	0.68
Number of observations	43,000	35,000	43,000

Abstract

- Using rich plant-level data, we analyze the relative performance of firms with inside and outside CEOs.
- We show that firms with outside CEOs achieve greater productivity improvements compared to firms with inside CEOs.、
- Contrary to conventional wisdom, the relation is stronger in well-performing, rather than poorly performing, firms.
- Although part of the productivity growth differential comes from divesting low-performing, peripheral, low-tech, and unionized plants, most productivity improvements arise from streamlining continuing plants.

- Here, productivity is increased by consolidating products, changing the composition of investments toward newer capital, shifting to more capital-intensive production, adopting structured management practices, and improving labor productivity.

THANKS !

企业全要素生产率的测算

[1]鲁晓东,连玉君.中国工业企业全要素生产率估计:1999—2007[J].经济学(季刊),2012,11(02):541-558.

对生产率的测算是很多实证研究的基础，它通常被解释为总产出中不能由要素投入所解释 的 “剩 余”。这个剩余一般被称为全要素生产 率（TFP），它反映了生产率作为一个经济概 念的本质 。首 先TFP反映了生产过程中各种投入要素的单位平均产出水平，也就是投入转化为最终产出的总体效率。虽然 TFP在很多研究中被用来表示技术水平，但是这并非是一个准确的描述，TFP除了与技术进步有关之外，还反映了物质生产的知识水平、管理技能、制度环境以及计算误差等因素，因此将其统称为生产率水平更为恰切。

方法	优（缺）点
OLS法	有同时性偏差和样本选择性偏差
固定效应估计法	能够缓解同时性偏差的问题
LP法	可以根据可获得数据的特点灵活选择代理变量
OP法	解决同时性偏差问题
GMM法	需要对样本进行大量的差分和滞后值处理，以创建合意的工具变量