

# Diversification

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## 1 Diversification discount

*Diversified firms/conglomerate/multi-segmented* firms have relative lower value compared to sum of breakup values. This is *diversification discount*. This discount ranges from 5% to 20%. What are the determinants of diversification discount?

Hoechle et al. (2012) argue that poor governance could help to explain about 16%-21% of the discount. This finding contributes to the literature about agency could reduce the diversification value. They use a set of 14 governance variables to test the panel regression: dependent variable is excess value and main independent is *diversification dummy*, control for 14 governance variables.

**Governance variables** include: CEO (e.g., powerful), board, institutional ownership, pay-performance sensitivity of CO, GLM index, and so on.

Diversification discount in this paper is around 6%-15.2%. The main finding is the coefficient of diversification decreases in magnitude *after we control governance measures* compared to baseline model (without governance control), meaning that governance could help to explain the diversification discount about 16%-21%. Thus, without governance, the estimated coefficient of diversification is a bit higher in magnitude due to omitted variable from governance.

To measure **excess value**, they follow Berger and Ofek (1995) to take log of actual market value divided by its imputed value of all segments. Imputed value of a segment is calculated by *multiplying*

segment's sale/assets *by the median industry ratio* of market value to sale/assets of single segment firm in the same industry.

Endogeneity concern (between diversification, firm value, and governance) is important in governance papers. This paper attempts to solve this concern through several ways:

- Include firm and year fixed effects. One interesting method here is they allow fixed effects change over time (what so called time-varying fixed effect). It allows fixed effects change before and after 1997 (when accounting standard of reporting changes), positive and negative market return, and boom and recession periods (GDP growth lower than time series median). Although unclearly said in paper, we just need add interactions with fixed effects here.
- Heckman (1979) self-selection model in which diversification is endogeneously determined
  - First step: probit model if firms choose to diversify
  - Second step: add inverse Mill ratio to main regression
- GMM model: a dynamic SEM models
  - First step: Rewrite dynamic models with lagged performance (1 and 2 lags)
  - Second step: take first difference of all variables  $\Delta X_t = X_t - X_{t-1}$
  - Third step: GMM model with lagged independent variables (3 or more lags) as instruments
- Event study: CAR around diversification announcement effect: CAR less negative in governance controlled models

## 2 Diversification and cash holding

Duchin (2010) borrows two literature to build his paper:

1. Investment diversification benefit: if investors hold a portfolio of about >40 stocks, all idiosyncratic risks are removed and portfolio risk includes only systematic risk.
2. Precautionary motive of cash holding: precautionary motive has a first-order impact on decisions why firms hold cash. For example, Bates et al. (2009) find that US firms hold more cash over time because typical firms' cash flows are become riskier. Firms tend to be more R&D intensive and volatile in cash flows.

Similarly, if the conglomerate have a well diversified industries with low correlation in cash flows across divisions and smaller financing deficits, these diversified firms enjoy the coinsurance effect, so they tend to hold less cash because of low precautionary motive (low risk exposure). Multi-segment firms hold approximately half as much cash as other specialized firms do.

### 3 Allocation within conglomerate

There are two types of allocation within conglomerate:

1. Investment fund (i.e., capital expenditure) among divisions
2. Compensation (i.e., private benefits) among divisional managers

#### 3.1 Internal Capital Market (ICM) and fund allocation

While internal transfer could be good channel through coinsurance effect in Duchin (2010), it raises another dark side through social ties between CEOs and divisional managers as in Duchin and Sosyura (2013). This table represents their hypotheses:

Hypothesis	Capital allocation when connection increases	Investment efficiency and firm value
Favoritism	Increase for high connection	Decrease
Bridge building	Increase for no connection (to get voting)	Decrease
Information	Increase for high connection	Increase
No relation	No	NA

In cases weak governance the H1 will work (reduce value) and in cases high asymmetry the H3 will be more important (rise value).

#### Their main results:

- Capex increases positively with social connection between CEOs and managers. So supports both H1 and H3.
- By which channels:
  - Appointment channel: CEOs tend to appoint connected managers to capital-rich divisions (using lagged capex as historical capital allocation).
  - Extra investment fund: use an exogenous events (CEO changes) to check  $\Delta capex = (+)\Delta SocialConnection$  before and after the event (because new CEO so connection change). The evidence supports that CEO changes lead to change in connection, which, in turn, change capital allocation.
- Is this effect good or not? Use interaction with governance and asymmetry levels
  - Agency: GLM, manager ownership, IO
  - Information asymmetry index: Industry relatedness, geo-distance
  - Results show that  $Agency*Connection$  is negative and  $InformationAsymmetry*Connection$  is positive. So both H1 and H3 are supported.

### 3.2 Fund allocation and Compensation allocation

Some quick QA?

1. Do CEOs use compensation allocation to encourage divisional managers? Yes.
2. By which channels? Cash surplus (agency problem) and benchmarking effect (i.e., divisional managers use social ties to increase their pay when they see other managers enjoy a higher pay).
3. How firms choose to balance between these two types of allocation? Based on the condition of governance (compensation provisions voting, compensation committee is strong or not) and market competition condition, CEOs choose the best choice among two.
4. Overall effect of two type of allocation? Not good at all, negative to firm value (profit, Q, excess value).

All 4 questions are from a new paper of Duchin et al. (2017).

They use the exogenous shock *increase in industry pay* in one division to see how this increase could affect other divisional managers' pay. The answer is when there is an 1% increase in industry pay in one division, the manager in this division enjoy 0.7%-0.8% increase in pay too, while managers in other divisions receive half of this increase (0.3%-0.4%). This is called spillover effect but only within/inside conglomerate. It does not because there is a technological spread across industries because single-segment firms in other industries are not affected by the increase in one industry's pay.

**Two mechanisms** of the spillover effect:

1. Cash surplus: when firms have high excess cash or pay special dividend, firms tend to have higher spillover effect (i.e., the interaction  $\Delta Other\ division\ industry\ pay \times Excess\ Cash$  positive).
2. Benchmarking:  $\Delta Other\ division\ industry\ pay \times Social\ Ties$  positive; asymmetric effect, only significant when pay rises rather than pay drops.
3. Not because internal transfer between divisions because *Industry relatedness* among divisions and managers' experience do not affect the  $\Delta Pay$  of divisional managers.
4. When governance is good (low G-index, board independence, block ownership, better compensation adviser), the effect is lower (interaction is negative).

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