

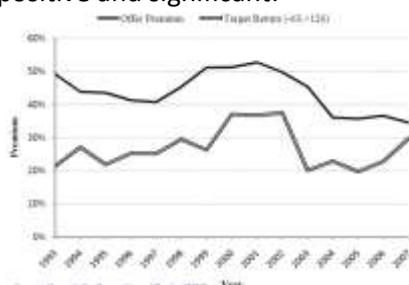
## Week 1: Introduction

### - Terminology

- **Merger:** Combination of two corporations in which only one survives. Generally a negotiated, friendly deal between equals (e.g. HP-Compaq)
- **Tender Offer:** Offer made 1) directly to the firm's shareholders to 2) buy their shares for a given price 3) with or without target management's consent
- **Acquisition:** Is basically any deal and includes mergers and tender offers

### - Aggregate offer premium and target stock returns

- Offer premium (%):  $(\text{offer price} - \text{target stock price pre-announcement}) / \text{target stock price pre-announcement} * 100$
- As shown below, the target return is always below the offer premium and the target stock return is always positive and significant:



- **Reason for gap:** The gap reflects the probability that the deal will not go through.
  - Target stock return divided by offer premium = probability deal will go through. Since target return = probability deal with go through \* offer premium.
  - Note that just before the GFC, the gap narrows as the likelihood that deals will go through increased significantly before the crisis.

### 1.1 Does M&A Pay?

- For the bidder's shareholders, it is arguably a 'no' because it is hard to justify the premium.
- For the target company, shareholder wealth is always created (premium)
- There is a vast number of M&A studies in academia on whether M&A creates value or not.
  - **Press:** The press shows M&A in a negative light due to restructuring etc. and people losing jobs (which can have broader implications e.g. family problems)
  - **Academic findings:** do not conform to the press view. The general finding is that M&A does seem to create value of shareholders. The distinction seems to whose point of view we are looking at. Academic findings generally look at shareholder value while press focuses on employee.
    - When we evaluate an M&A deal in finance, you do it from the perspective of shareholder value. We don't look at stakeholders in general (e.g. employees or society as a whole).

#### - 1.1.1 Classes of tests of M&A profitability:

##### ○ 1) Event Studies:

- There are different classes of tests of M&A Profitability:

- Weak form:  $P_{\text{after}} > P_{\text{before}}$  or  $\text{Return} > 0$

- Semistrong form:  $\text{Return}_{\text{M\&A firm}} > \text{Return}_{\text{Benchmark}}$

- Strong form:  $\text{Return}_{\text{Firm with M\&A}} > \text{Return}_{\text{Firm without M\&A}}$

- (with P = stock price and Return = stock return)

- From a finance perspective and in event studies, we simply look at stock returns to see whether M&A created value.

- **Weak form test:** compare stock price before the announcement with stock price after announcement. If it increases, it creates value.
  - Disadvantage of this approach is that it is a naïve approach since the stock price would be subject to contamination events – it is exposed to many other factors/events (e.g. IR, oil price, war etc) that could lead to an increase in stock price.
- **Semi-strong form:** Calculate the stock return of the M&A firm (acquirer or the target) and compare the event return with the benchmark return within the same window (e.g. the event window could be 2 days before and after the announcement).
  - Advantages: better able to rule out the confounding or contamination events.
    - Note that it assumes the events affect the benchmark and the M&A firm in the same way.
    - Thus it would isolate the value creation from M&A.
  - What can we choose as a benchmark?
    - Comparable companies that are typically in the same industry and has similar size that doesn't go through M&A transaction. WE can also use the industry or the whole stock market. We can also use our own market.
  - Another one is 'market model approach' – clarify it. It is a type of semi-strong form
- **Strong-form:** the return of event firm minus the return of the same firm without the event.
  - This is the best way.
  - The difference is the value effect of the event. The difficulty is that it is very hard to implement – we can't reverse the effect of the M&A and calculate the return of the firm as if the M&A did not happen. However, researchers are trying to get around this.
- **Steps in Event Study (Semi-strong):**
  - **1) Define the event period**
    - The event period is typically defined as an interval around an announcement
    - For takeover studies, it is customary to use an event period spanning several days around an event as market participants may begin speculating about the possibility of a takeover in the days prior to an announcement.
    - Determining the length of the event period window is subject and influenced by a range of factors such as: nature of the event, data availability, possible confounding event and industry effects
  - **2) Measure 'expected' performance**
    - Although the normal performance of a firm subject to an event is not directly observable, particular assumptions and model can be utilised to produce estimates
    - **1) Mean adjusted return method**
      - This assumes that the average return of a given security is **constant in time**
      - That is, the return in one period is on average expected to be insignificantly different from the return in another period
      - This thus requires one to select a '**clean period**' - one that is not affected by any material or significant events. Note that the clean period never includes the event period
      - **Calculations:** Basically takes an average of all the returns in the clean period e.g. if 150 days, the return is divided by 150.
    - **2) The market model method**
      - Calculates expected return by relating the return of a firm to the market portfolio over a period of time → use the CAPM
      - Advantages
        - Seen as better than mean adjusted return method because it removes the portion of the return that is related to the variation in the market's return

- **3) Market adjusted return method**
      - Calculates expected performance as the return of the market index
      - That is, the  $E(r)$  is the return on index and the actual return is return on stock, and then just calculate abnormal return
- **3) Calculating Abnormal returns in Event Studies: BHAR and CAR**
  - Abnormal returns represent the difference between actual and expected return
  - **Buy and Hold abnormal returns (BHAR):** buy the target 2 days before the deal is announced and you sell the target share 2 days after. The return over the period is the BHAR
    - **BHAR =** (The stock price  $t+2$  - the stock price  $t-2$ ) / stock price  $t-2$  \* 100.
  - **Cumulative abnormal return (CAR):** CARs are the aggregation of daily abnormal returns over the total test period
    - If event windows is 2 days before and 2 days after (so 5 days in total). So each days' daily abnormal returns are summed up i.e. cumulative. This way you do not consider compounding. But if event windows is very small such as 5 days, it is negligible.
- **Advantages and Disadvantages of Event Studies:**
  - **Advantages:**
    - it is a **direct measure** of the shareholder's wealth.
    - It is also **forward looking** because the stock price is an aggregation of all future news. If the stock market is efficient, it should be able to reflect all available information (i.e. if semi strong efficient, it will reflect all publicly available information)
  - **Disadvantages**
    - Strong assumptions about stock markets → assumes stock market is efficient – some markets are not.
    - Vulnerable to confounding events → normally that the event firm and the benchmark can both have confounding events. E.g. the event firm can announce two events at the same time e.g. M&A and also a dividend increase. The benchmark is also subject to confounding events. When deal is announced, there is also some industry turbulence – so the benchmark is also subject to confounding event due to the M&A.
- **2) Accounting studies:**
  - Instead of just looking at stock price, we also look at accounting or financial metrics.
  - Examine reported financial results (EPS, ROA etc. ) of acquirers before and after acquisitions. We calculate the change after the deal to see whether accounting profitability of the sample firm increased or decreased
  - Most M&A papers look at both event studies and accounting studies
    - Advantage:
      - Creditability (audited) and widely used by investors
    - Disadvantages
      - Data before and after might not be comparable
      - Backward looking
      - Across companies and countries often distorts accounting figures
- **3) Surveys of Managers**
  - Ask managers whether M&A creates value.
  - Advantages:
    - Might yield insights unknown by stock market analysts because managers are the ones that execute M&A deal.
  - Disadvantages:
    - Answers are typically biased
      - Since managers who had a bad deal may just skip to do the survey
    - Memories of past results can be hazy

- Typically very low rate of participation
- **4) In-depth case studies (Clinical Research)**
  - This involves analysing 1 or more transactions in great depth.
  - Case studies provide in-depth analysis on a specific deal.
  - Advantages:
    - in-depth analysis of actual experience
    - ideal for discovering new patterns
  - Disadvantages
    - it is ill-suited to hypothesis testing
    - Since it is a specific case study, results often not generalizable. There is only one observation
- **Conclusion of tests:** Event studies and accounting studies are the most 'scientific' – surveys and clinical studies are mainly descriptive
  - 'Scientific approach': means there is hypothesis that is formulated and tested.
  - Key test statistics = t-statistic. If t-stat > 2, results are significant with 95% confidence