Corporate Finance

Lecture 8: Corporate Investment and Payout Decisions

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Quick Review of Last Lecture

- Debt and Equity are two most common financing instruments for firms.
- Debtholders have higher priority than equityholders in claiming payoffs. There are various types of debt and equity that differ in the priority in claiming payoffs.
- Capital structure is captured by financial leverage ratio, often defined as $\frac{Debt}{Debt+Equity}$.
- Under certain assumptions, Modigliani and Miller (1958) derive the *MM Proposition I* (i.e., Capital Structure Irrelevance Proposition), which suggests that capital structure decisions do not affect firm value.
- MM Proposition II is $r_E = r_A + (r_A - r_D)\frac{D}{E}$.
- A firm following the trade-off theory sets a target debt-to-value ratio and gradually moves toward the target. The target is determined by balancing debt tax shields against bankruptcy costs.
- Persistent and powerful leverage determinants include median industry leverage, market-to-book assets ratio, tangibility, profits, log of assets, and expected inflation.
- The "beta" coefficient and elasticity can be used to capture how large the effects are.
- Firms seem to adopt a low leverage ratio. The low-leverage puzzle may arise from underestimated bankruptcy costs and/or overestimated tax benefits.
- Debt overhang refers to firms underinvest due to a high level of financial leverage.

Outline for This Lecture

1. Corporate Investment
2. Mergers and Acquisitions
3. Payout Policies

Part I: Corporate Investment

Objectives for Corporate Investment

- Corporations generate returns for investors by investing their funds in profitable projects (e.g., oil wells).
- They usually face more than one project to choose from.
- The investment policy of corporations addresses the issue of how to allocate their capital.
- Essentially, firms would like to allocate capital to the right investment projects that maximize their value.

Time Value of Money

- Time value of money: $20 today is worth more than the expectation of $20 tomorrow
- Simple Interest = amount of money (principal) $\times$ annual interest rate $\times$ time period
- A more popular measure is compound interests, which assume interests earned in each period are reinvested until maturity at the same interest rate.
- With compounding, the relation between present value and future value is:

$$FV = PV \times (1 + r)^n$$

$$PV = \frac{FV}{(1 + r)^n}$$

Capital Budgeting Decision Rules

- An investment is worth undertaking if it creates value for its owners.
- Capital budgeting: determine whether a proposed investment or project will be worth more, once it is in place, than it costs.
- How do you determine it is a good idea/project/investment?
- We need to ask ourselves the following questions when evaluating capital budgeting decision rules:
  - Does the decision rule adjust for the time value of money?
  - Does the decision rule adjust for risk?
  - Does the decision rule provide information on whether the project is creating value for the firm?

Rule 1: Net Present Value (NPV)

- The difference between an investment's present value of all future cash inflows minus the present value of all current and future cash outflows, i.e.,

$$\text{NPV} = \text{PV of all cash inflows} \; - \; \text{PV of all cash outflows}$$

- Capital budgeting process can be viewed as a search for investments with positive net present values (NPV > 0).
  - An investment should be accepted if the net present value is positive and rejected if it is negative.
  - Accept any project with a present value of future cash flows that exceed the initial investment.

Rule 1: Net Present Value (NPV)

- Discounted cash flow (DCF) valuation: How much value is created from undertaking an investment?
  - Estimate **future cash flows** we expect the business to produce
  - Estimate the **required return** for a project of its risk level
    - ⋆ We normally use the opportunity cost of capital (i.e., the best rate we could earn elsewhere if we did not invest in the project under evaluation) as the discount rate.
  - Compute **present value of each cash flow**
  - **Estimate NPV** as the difference between the present value of the future cash inflows and the present value of the cash outflows (including the cost of investment)

Example: NPV rule

Suppose we are asked to decide whether a new consumer project should be launched. Based on projected sales and costs, we expect that the cash flows over the five-year life of the project will be \$2,000 in the first two years, \$4,000 in the next two, and \$5,000 in the last year. It will cost \$10,000 to begin production. We use a 10 percent discount rate to evaluate new products. What should we do here?

Example: NPV rule

Suppose we are asked to decide whether a new consumer project should be launched. Based on projected sales and costs, we expect that the cash flows over the five-year life of the project will be \$2,000 in the first two years, \$4,000 in the next two, and \$5,000 in the last year. It will cost \$10,000 to begin production. We use a 10 percent discount rate to evaluate new products. What should we do here?

Given the cash flows and discount rate, we can calculate the total value of the product by discounting the cash flows back to the present:

$$\begin{aligned} PV &= 2,000/(1+10\%) + 2,000/(1+10\%)^2 + 4,000/(1+10\%)^3 \\ &+ 4,000/(1+10\%)^4 + 5,000/(1+10\%)^5 \\ &= 1,818 + 1,653 + 3,005 + 2,732 + 3,105 \\ &= 12,313 \end{aligned}$$

The present value of the expected cash flow is \$12,313 and its cost is \$10,000. Thus, its net present value (NPV) is \$12,313-\$10,000=\$2,313. Since the NPV is positive, we should take on the project.

Rule 1: Net Present Value (NPV)

The NPV rule is the primary decision rule

- Accounts for the time value of money: discounting
- Accounts for risk of the cash flow: discount rate
- Indicates the increase in value

Rule 2: The Internal Rate of Return Rule

- Internal rate of return (IRR): the discount rate that makes the NPV of an investment 0.
  - Determine single rate of return summarizing the merits of a project
  - Often used in practice and intuitively appealing (a percentage return)
  - Most important alternative to NPV
- An investment is acceptable if the IRR exceeds the required return (e.g., the opportunity cost of capital) and rejected otherwise.

IRR Rule

Suppose you were now looking at an investment that costs $100 and has a cash flow of $60 per year for two years.

- What is the return on this investment?
- Should the project be accepted given a required return of 10%?

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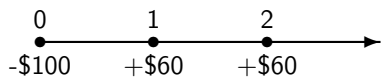


Set the NPV equal to zero and solve for the discount rate:

$$NPV = 0 = -100 + 60/(1 + IRR) + 60/(1 + IRR)^2$$

$$\Rightarrow IRR = 13.1\%$$

Since the IRR is higher than the required rate of return, the project should be undertook.

NPV and IRR

- IRR rule and NPV rule are identical if
  - Future cash flows are non-negative
  - Projects are independent (not mutually exclusive)
- Multiple IRR may exist for projects with negative cash flows.
- Given two or more mutually exclusive investments, the best one is the one with the highest NPV.

NPV and IRR

$$NPV = \sum \frac{CF_t}{(1+r)^t}$$

- $CF_t > 0$: cash inflows; $CF_t < 0$: cash outflows
- Accept If $NPV \geq 0$; Reject if $NPV < 0$.
- r: discount rate (i.e., risk-adjusted return: risk-free rate+risk premiums); r increases with risk.
- More risk averse investors require higher r.

$$0 = \sum \frac{CF_t}{(1+IRR)^t}$$

- Accept If IRR $\geq$ Required Rate of Return; Reject if IRR $<$ Required Rate of Return.
- Always use the NPV method if the results based on NPV and IRR conflict with each other.

Part II: Mergers and Acquisitions

Mergers and Acquisitions: Overview

1. M&A Definition and Importance
2. M&A Motives
3. Offer Premium and Market Reactions
4. Cross-Border M&As
5. Merger Waves

What are M&As?

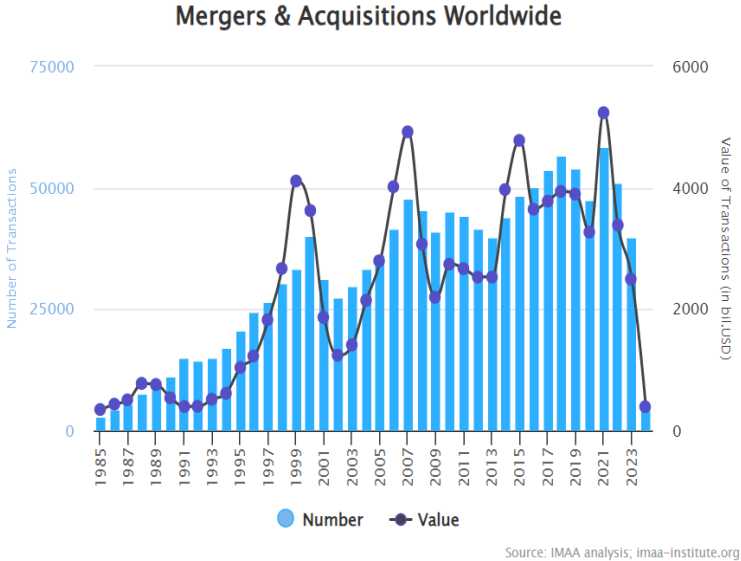
- Mergers and acquisitions (M&As) involve the consolidation of companies or assets.
  - Mergers typically mean the joining of two companies into a single entity.
  - Acquisitions refer to one company taking over another.

- A typical completed M&A transaction consists of three phases:[1]
  - Phase 1: private execution (preparations)
  - Phase 2: public deal announcement until the closing
  - Phase 3: the post-merger integration

[1] A typical transaction takes around 12 months from initiation to closing (phases 1 and 2), with the private phase requiring slightly more time.

Why should we care about M&As?

- M&As are among the largest investments that a company will undertake, resulting in tremendous reallocation of resources.
  - Since 2000, more than **790,000 transactions** have been announced worldwide with a known value of over **57 trillion USD**.
- M&As shape firm boundaries, driving business expansion or efficiency improvements.
- M&As are strategic tools for companies to achieve growth, efficiency, and competitive advantage, requiring careful planning and execution to realize their potential benefits.
- As the "the market for corporate control", few economic phenomena attract as much public attention and empirical research as M&As.
- M&As have broad implications for the merging parties, their competitors, suppliers, customers and employees.


Mergers & Acquisitions Worldwide
75000
50000
25000
0
6000
4000
2000
0
Number of Transactions
Value of Transactions (in bil.USD)
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
Number
Value
Source: IMAA analysis; imaa-institute.org

M&A Motives

- **Synergy Motives**
  - M&As are typically associated with an increase in the value of the combined firm.
  - The value creation is mainly tied to synergy gains, driven by post-transaction cost reductions, revenue synergies, financial synergies, etc.
- **Market Power Motives**
  - Firms sometimes seek to enhance their market power through M&As.
- **Behavioral Motives**
  - Psychological factors and managerial behaviors significantly influence M&A decisions.
- **Agency Motives**
  - Conflicts between management and shareholder interests may lead firms to initiate M&As.

Synergy Motives

- Synergy gains can stem from cost reductions, revenue synergies, and financial synergies.
- Cost reductions can be achieved through various channels, e.g.,
  - economies of scale and scope (e.g., Houston, James, and Ryngaert, JFE 2001)
  - more efficient investment and capital spending (Devos, Kadapakkam, and Krishnamurthy, RFS 2009)
  - elimination of redundant and inefficient operations (Maksimovic, Phillips, and Prabhala, JFE 2011)
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- Besides cost synergies, acquirers also strive to achieve revenue synergies via, e.g.,
  - new market entry
  - development of new products (Hoberg and Phillips, RFS 2010)
  - better innovation (Bena and Li, JF 2014)

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  - better innovation (Bena and Li, JF 2014)
- Financial synergies stem from targeting undervalued or inefficient firms.
  - Such motives often involve strategic and financial bidders (e.g., Gorbenko and Malenko, JF 2014).
  - Relieving the financial constraints of a target firm with available growth opportunities is one way to seek financial synergies (Erel, Jang, and Weisbach, JF 2015).
  - Providing liquidity to financially distressed firms is another one (Almeida et al., JFE 2011).

Market Power Motives

- Mergers between firms in the same industry (i.e., horizontal deals) potentially increase market share and reduce competition.
- Horizontal mergers may lead to lower competitiveness and higher prices (Kepler et al., JF 2023).
- While aiming for greater efficiency, such mergers can affect industry rivals positively but may lead to adverse outcomes for consumers (Fathollahi, Harford, and Klasa, JFE 2022).
- Due to potential anticompetitive effects, such mergers could be challenged by regulators.
  - There is a trade-off between efficiency gains and regulatory risks.
  - Acquirers appear to structure their acquisition strategy to avoid scrutiny from antitrust regulators (Cunningham, Ederer, and Ma, JPE 2021; Kepler et al., 2023).
- The negative spillovers go beyond higher prices if innovative targets are "killed" through acquisitions (Cunningham et al., 2021).

Behavioral Motives

- Firms may initiate mergers due to various behavioral reasons.
- Managerial Hubris and Overconfidence
  - Managers may overestimate their ability to generate value from M&As, leading to overly optimistic assessments of potential deals (e.g., Malmendier and Tate, JFE 2008).
- Market Misvaluations
  - Firms might initiate M&As based on perceived market misvaluations, aiming to capitalize on temporary discrepancies in market perceptions (e.g., Dong et al., JF 2006).
- Herding
  - Companies may simply follow industry trends or mimic competitors' M&A activities without a clear strategic rationale (Duchin and Schmidt, JFE 2013).
- While M&As motivated by behavioral reasons potentially destroy value, the imitation of rival firms as a merger motive is not always negative (e.g., Kaul, 2012).

Agency Motives

- Firms may initiate mergers for agency reasons (manager-shareholder conflicts of interest).
- Managers might pursue M&As to entrench themselves (i.e., solidify their position) and to decrease their chances of replacement (Shleifer and Vishny, JFE 1989).
- Entrenched managers are more likely to engage in value destroying acquisitions (Masulis, Wang, and Xie, RFS 2007).
  - Entrenched managers make value-decreasing acquisitions by avoiding private targets, relying less on all-equity offers, selecting targets with lower synergies, and overpaying for the targets (Harford, Humphery-Jenner, and Powell, JFE 2012).
- M&As can serve as a defense mechanism against potential takeovers, preserving managers' private benefits. In other words, firms "eat in order not be eaten" (Gorton, Kahl, and Rosen, JF 2009).
  - Defensive takeovers are associated with negative announcement returns (Phalippou et al., RF 2015).

Offer Premium

- Offer premium refers to the additional value that an acquirer proposes over the current market price of the target company's shares to acquire control.
  - It reflects the acquirer's incentive to shareholders for parting with their shares.
- Empirically, offer premium is often calculated as *Offer Price/Target Closing Price 4 Weeks Before the Announcement - 1*.
  - 1-week-prior closing price and 1-day-prior closing price are commonly also used.
- Offer premium is influenced by various factors such as
  - sales method
  - payment method
  - regulatory and competitive landscape

Market Reactions

- Market reactions to M&A announcements can provide insights into how investors perceive the value creation potential of the deal.

- Factors influencing market reactions include
  - expected synergies
  - deal financing
  - perceived strategic fit
  - regulatory environment

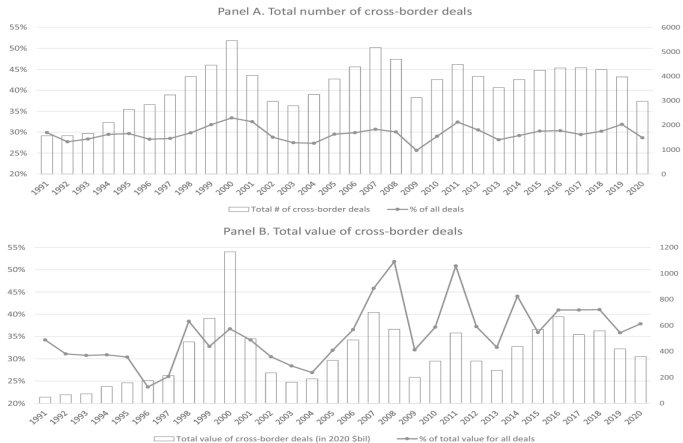
- Typical responses to M&A announcements:
  - Target companies: share prices often increase, reflecting the premium offered by the acquirer.
  - Acquiring companies: share price movement varies; can be positive if the market views the acquisition as strategically sound or negative due to concerns over payment or integration challenges.
  - Overall market reaction: generally positive if the merger is expected to create substantial value.

Market Reactions

- Empirically, market reactions are often captured by cumulative abnormal returns over 3 days (i.e., CAR[-1, +1]) around deal announcements.
- Recently, some studies suggest that investor sentiment extract from social media is useful to measure market reactions, containing additional information beyond CAR (e.g., Schiller, 2021).
- There is a "feedback effect" between market reactions and corporate decisions (e.g., Edmans, Goldstein, and Jiang, JF 2012; Cookson, Niessner and Schiller, 2024)

Cross-Border M&As: Number and Value of Deals

- The vast majority of literature in M&As has focused on domestic deals.
- However, cross-border deals, constitute about 30% of the total number and 37% of the total volume of M&As around the world since the early 1990s.



Cross-Border M&As: Who Buys Whom?

Panel A. Acquirer and target type

Acquirer Type		Target Type			
		Private	Public	Subsidiary	Total
Private	N	13,107	447	8,118	21,672
	Percent (%)	12.7	0.4	7.9	21.0
Public	N	28,871	2,783	16,119	47,773
	Percent (%)	27.9	2.7	15.6	46.2
Subsidiary	N	20,300	1,470	12,210	33,980
	Percent (%)	19.6	1.4	11.8	32.9
Total	N	62,278	4,700	36,447	103,425
	Percent (%)	60.2	4.5	35.2	100.0

Panel B. Emerging vs. developed country

Acquirer Country		Target Country		
		Emerging	Developed	Total
Emerging	N	2,537	7,240	9,777
	Percent (%)	2.4	6.7	9.1
Developed	N	16,707	81,295	98,002
	Percent (%)	15.5	75.4	90.9
Total	N	19,244	88,535	107,779
	Percent (%)	17.9	82.1	100.0

Source: Erel, Jang, and Weisbach (2024)

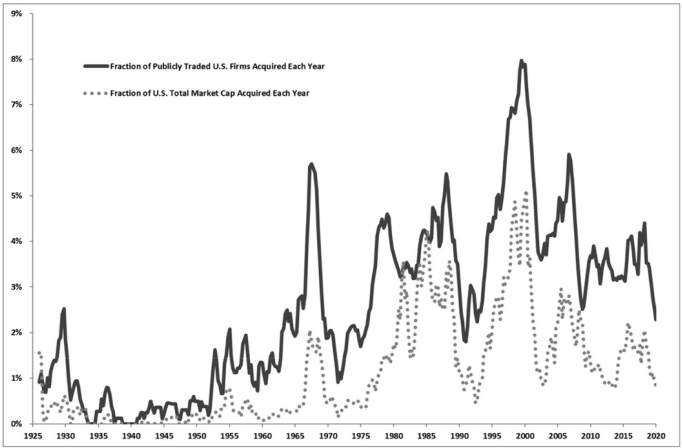
Cross-Border M&As: Motivating Factors

- Value in many cross-border acquisitions comes from similar sources as domestic ones, such as operational or financing synergies, and creating monopoly rents, among others.

- Some potential sources of value are unique to cross-border acquisitions. They include
  - legal protections of shareholders' rights (e.g., Rossi and Volpin, JFE 2004; Kim and Lu, 2013)
  - protection of intellectual property (e.g., Alimov and Officer, 2017)
  - tax heavens (Meier and Smith, 2023)
  - "regulatory arbitrage" (e.g., Houston, Lin, and Ma, JF 2012; Levine, Lin, and Shen, 2020)
  - cultural reasons (e.g., Ahern, Daminelli, and Fracassi, JFE 2015)
  - trade (e.g., Bhagwat, Brogaard, and Julio, JFE 2021)
  - politics (e.g., Dinc and Erel, JF 2013; Bonaime, Gulen, and Ion, JFE 2018)
  - valuation fluctuations due to changes in exchange rates/stock prices (Erel et al., JF 2012))
  - international expansion of specialized firms (e.g., Frésard, Hege, and Phillips, RFS 2017)

Merger Waves

- Merger activity, both in the aggregate and within industries, clusters abnormally in time, in a way that is inconsistent with random arrivals of merger events, and displays distinct peaks and troughs.



Time-series of Merger Activity in the U.S., 1926-2020

Part III: Payout Policies

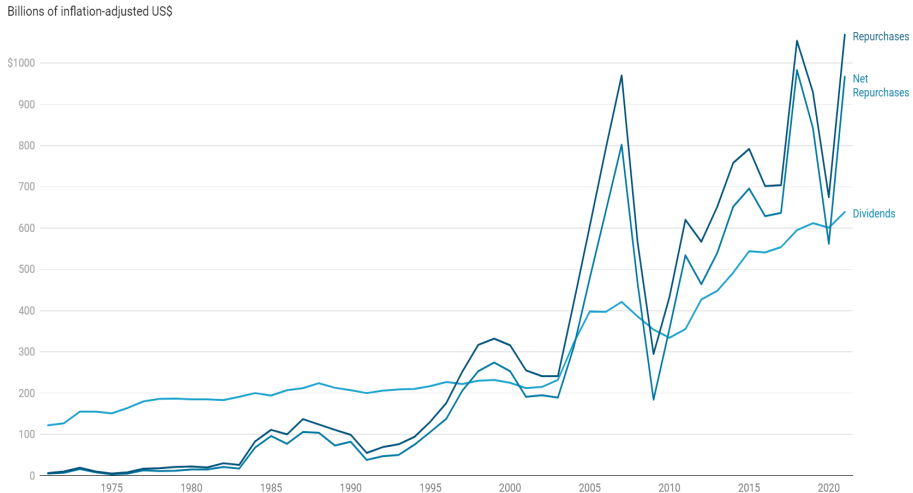
Payout Policies: Overview

1. What is Payout Policy?
2. Who Pays Dividends?
3. Disappearing and Reappearing Dividends
4. Investor Reactions to Dividends
5. Dividends v.s. Share Repurchases

Payout Policy

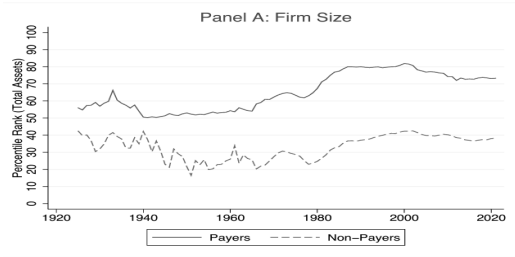
- Payout policy refers to the ways in which firms return capital to their **equity** investors.
- Payouts to equity investors take the form of either dividends or share repurchases.
- Understanding payout policy is important because
  - the amount of money involved is significant;
  - the decision is made repeatedly;
  - payout policy is closely related to corporate financial and investment decisions
  - the value of the stock is based on the present value of expected future dividends.

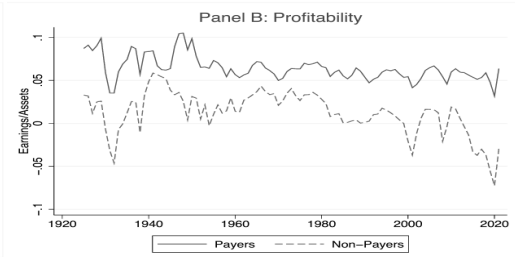
Aggregate Shareholder Payouts: US Public Firms

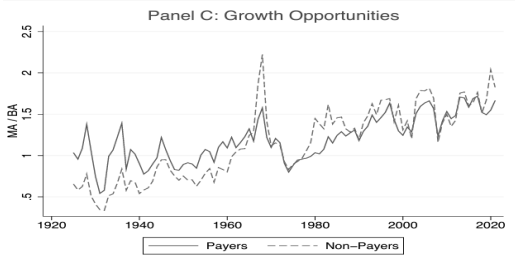


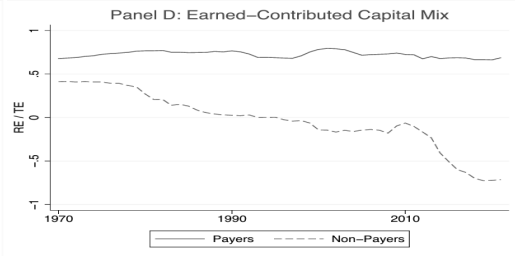
Source: CRSP/Compustat, produced by Dr. Alice Bonaimé

Who Pays Dividends?





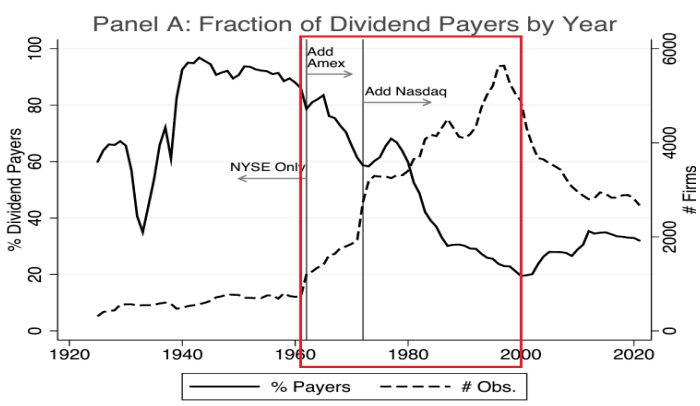




Source: Leary and Nukala (2024)

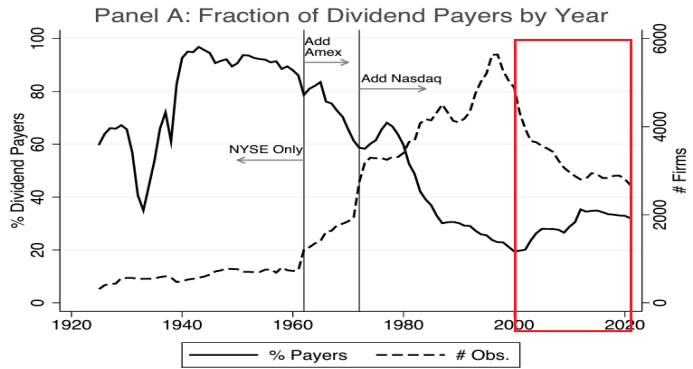
Disappearing Dividends

- Fama and French (2001) document a large reduction in the fraction of dividend-paying US public firms in the last two decades of the 20th century.
  - from **nearly 70%** in the late 1970s to **just over 20%** by the end of the century
  - one potential reason: an in influx of new firms entering the CRSP-Compustat universe



Reappearing Dividends

- The reappearance of dividends since the early 2000s is apparent.
  - There was a higher rate of delisting among non-dividend paying firms, primarily due to mergers and acquisitions (Michaely and Moin, 2022).
  - However, most of the reappearance remains unresolved.



Miller – Modigliani Dividend Irrelevance Proposition

- Miller and Modigliani (1961) showed that in perfect and complete capital markets, a firm's dividend policy does not affect its value.

- Intuition behind the Miller – Modigliani proposition:
  - Dividend policy involves choices between paying dividends and reinvesting retained earnings;
  - If the firm reinvests capital now, it will grow and can pay higher dividends in the future.

- Perfect and complete capital markets have the following elements:
  - No taxes;
  - Symmetric information;
  - Complete contracting possibilities;
  - No transaction costs;
  - Complete markets.

Investor Reactions to Dividend Decisions

- Stock prices respond sharply to announcements of dividend changes, suggesting dividend announcements convey value-relevant information.

		Abnormal Announcement Returns			
Paper	Sample period	Increases	Decreases	Initiations	Omissions
Petttit (1972)	1967 - 1969	+2%	-6%		
Charest (1978)	1962 - 1969	+1.4%	-6%		
Aharony and Swary (1980)	1963 - 1976	+0.7% / +1.0%[1]	-3.8% / −2.8%[1]		
Asquith and Mullins (1983)	1963 - 1980			+3.7%	
Eades, Hess and Kim (1985)	1962 - 1980	+1%	-2%		
Lang & Litzenberger (1989)	1979 - 1984	+0.8% / 0.3%[2]	-2.7% / −0.3%[2]		
Bajaj & Vijh (1990)	1962 - 1987	+1%	-1.8%		
Yoon & Starks (1995)	1969 - 1988	1.5% / 0.7%[3]	-5.3% / −4.6%[3]		
Michaely, et al. (1995)	1964 - 1988			+3%	-7%
Grullon, eta l. (2002)	1967 - 1993	+1.3%	-3.7%		
Baker, et al. (2016)	1926 - 2009	+1.5%	-4%		

1 Earnings announcement precedes / follows dividend announcement
2 Firms with Tobin's Q< 1 / Q> 1 ; includes only announcement day
3 Firms with Tobin's Q< 1 / Q> 1

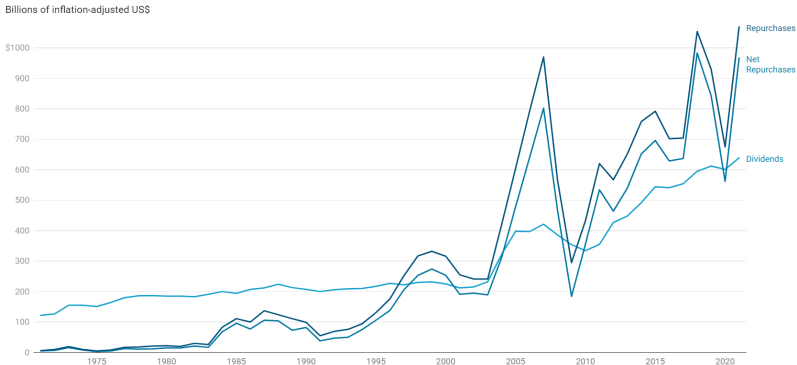
- Two interesting facts:
  - Announcement returns are larger for dividend cuts than for increases.
  - Announcement returns are larger for dividend initiations than for subsequent increases.

Dividends and Share Repurchases

- Share repurchases refer to the process when corporations buy back their own shares from the equity market, leading to a reduction in the number of shares outstanding.
- Share repurchases are a method for returning cash to shareholders without committing to regular payments.
  - They are more flexible compared to dividends, allowing companies to adjust payout strategies based on current financial health.
- Share repurchases offer more favorable tax treatment for shareholders compared to dividends.
  - Dividends are taxed as income in the year received, while repurchases may allow shareholders to defer taxes until shares are sold.
- Share repurchases are often seen as a signal of undervaluation or confidence in the company's future prospects.
- Many firms use both to return value to shareholders, each serving different strategic and financial roles within the company's broader capital allocation framework.

Trends in Share Repurchases

- Repurchases have grown over the past few decades.
  - Repurchases were heavily regulated by SEC because it is unlawful for firms to use share repurchases to manipulate stock prices.
  - Rule 10b-18 introduced in 1982 protects repurchasing firms from liability for price manipulation, provided they adhere to guidelines regarding the manner, timing, price, and volume of repurchases.



Do Repurchases Substitute for Dividends?

- **Substitution Hypothesis**: Firms use dividends and repurchases interchangeably. Repurchases should increase as dividends decrease and vice versa.
- While some firms substitute dividends with repurchases, the relationship is not straightforward.
  - Managers view dividends as sticky but repurchases as flexible (Brav et al., 2005).
  - Dividend stickiness suggests firms rarely cut them to switch to repurchases (Wang et al., 2021).
  - Some firms use debt-financed buybacks to optimize their capital structure (Lei and Zhang, 2016).
  - Firms may cut dividends and repurchases amid increased competition (Hoberg et al., 2014).
- Banyi and Kahle (2014) conclude that dividends and repurchases are imperfect substitutes.
  - Repurchases are substitutes for dividends for younger firms but are supplements to dividends for older firms that have historically paid dividends.
- Thus, the decision to repurchase or pay dividends is influenced by factors beyond mere substitution, including firm maturity, market conditions, and internal policies.

Scholars to Follow for Corporate Investment

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- Steven N. Kaplan (Chicago)
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