Corporate Finance and Investment Banking
A Three-Part Research Paper

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***Abstract*—In this paper, I study three current issues in corporate finance and investment banking. In Part I, I look at the role that investment banks play in cross-border mergers and acquisitions (M&A) between India and the United States, which is one of the most important deal corridors for India.**

I describe the seven main jobs a bank does across the life of a deal from finding the deal in the first place to getting it approved and explain the regulations it has to deal with in India (FEMA, SEBI and the CCI) and in the US (the HSR Act and CFIUS). Table 1 summarises the size and growth of India-linked cross-border M&A and the wider Indian M&A market. In Part II, I compare the two main ways of pricing an initial public offering (IPO) in emerging markets: book-building and fixed-price offers. Using India as my main example, and drawing on the theories of Rock (1986) and Benveniste and Spindt (1989), along with real IPOs from 2021 to 2024, I argue that book-building improves price discovery and lowers average underpricing, but it does not remove valuation mistakes.

The IPOs of Paytm and LIC show that a book-built issue can still be overpriced, while IPOs like Tata Technologies show that it can still be heavily underpriced. In Part III, I test the popular claim that ESG investing means giving up returns, by comparing the S&P 500 ESG Index with the regular S&P 500 from 2015 to 2024. From its launch in January 2019 to April 2024, the ESG index returned about 16.5% per year compared with about 15.0% for the S&P 500, with a low tracking error of around 1.3%. This suggests that broad, sector-neutral ESG screening did not cost investors returns during this period. However, research on more aggressive ESG strategies gives mixed results, so this finding cannot be applied to all types of ESG investing.

***Index Terms*—cross-border M&A, investment banking, India–US corridor, IPO, book-building, fixed-price offer, underpricing, ESG investing, S&P 500 ESG Index, risk-adjusted returns, investor behaviour.**

I. PART I: THE ROLE OF INVESTMENT BANKS IN FACILITATING CROSS-BORDER M&A BETWEEN INDIA AND THE USA

1.1. Introduction

Cross-border M&A is one of the most difficult kinds of deals in corporate finance. Every merger or acquisition has the usual challenges working out what the company is worth, negotiating, arranging the money and then joining two organisations together. A cross-border deal has all of these, plus a whole extra layer: two legal systems, two tax systems, two currencies and two sets of politics. The corridor between India and the USA shows this complexity very clearly. The US is the biggest foreign source of strategic and private-equity money coming into India, and at the same time, Indian technology and pharmaceutical companies often buy American companies as their main way of growing into global players.

In this corridor, investment banks play a central role because they do many jobs at the same time. They find buyers and sellers for each other, value the companies, negotiate, arrange financing, advise on regulations and even help manage the reputation of the companies involved. In this part of my paper, I look at what exactly investment banks contribute to India–US cross-border M&A, using deal data from 2018 to 2025.

1.2. The India–US Economic Corridor: Scale and Momentum

A big reason for all this deal activity is the growth of the Indian economy itself. India's gross domestic product (GDP) grew from about US$1.8 trillion in 2013 to about US$3.9 trillion in 2024. When I calculated this, it works out to an increase of roughly 117% in other words, the economy more than doubled

in about eleven years. Income per person followed a similar pattern, rising from around US$1,400 to about US$2,700.

India's stock market has also become one of the largest in the world. It overtook Hong Kong in total market capitalisation and is now counted among the top four equity markets globally, and reports placed the free-float value of listed Indian companies at more than US$1.1 trillion by December 2024. Foreign direct investment (FDI) has also grown, with US$81.04 billion in gross FDI inflows in FY 2024–25 about 14% more than in FY 2023–24, according to the Government of India.

This money has fed directly into M&A. According to Grant Thornton Bharat, Indian M&A deal value from January to November 2024 was about US$36.1 billion, compared with about US$25.2 billion in the same period of 2023 an increase of roughly 43% while the number of deals rose by about 24%. This was a strong recovery after the slow global M&A market of 2022 and early 2023. Boston Consulting Group reported that Indian deal value jumped by 66% in the first nine months of 2024, supported by large deals.

The growth continued into 2025. EY India reports that the value of cross-border M&A involving India rose from about US$13 billion in 2024 to about US$33.2 billion in 2025, an increase of around 155%. What I found most interesting is that the *number* of cross-border deals actually fell by about 20% over the same period. Doing the maths, if total value is multiplied by about 2.55 while the number of deals is multiplied by about 0.8, then the average size of a deal went up by roughly $2.55 \div 0.8 \approx 3.2$ times. So, the market moved towards fewer, but much bigger, deals.

EY also notes that the United States has consistently been the leading source of strategic (company-to-company) interest in India. Deloitte estimates that more than 45% of cross-border M&A deals into India are influenced by geopolitical and supply-chain factors for example, the "China-plus-one" strategy, where US multinational companies try to reduce their dependence on China by building up operations in another country such as India. Table 1 summarises the main figures for India-linked cross-border M&A and the wider Indian M&A market.

Table 1. Headline indicators of Indian and India-linked cross-border M&A activity, 2023–2025. Figures are as reported by the cited advisory firms; different data providers define "deal value" in slightly different ways, so the numbers are not perfectly comparable with each other.

Indicator	Value	Period / Source
India GDP	≈ US$3.9 trillion (up from ≈ US$1.8 trillion in 2013)	2013 & 2024; World Bank
FDI inflows into India	US$81.04 billion (+14% year-on-year)	FY 2024–25 (provisional); Government of India
India M&A deal value	US$36.1 bn (Jan–Nov 2024) vs US$25.2 bn (Jan–Nov 2023)	2024; Grant Thornton Bharat
India-wide M&A deal value growth	+66%; deal volume −3% (first nine months)	2024 vs. 2023; BCG
Cross-border deal value	US$13 bn → US$33.2 bn (+155%)	2024 → 2025; EY India
Total India deal value	US$106.3 bn → US$123.8 bn (+18%)	2024 → 2025; EY India
Geopolitics-influenced cross-border deals	> 45% of cross-border M&A	2024; Deloitte India

1.3. What Investment Banks Actually Do in a Cross-Border Deal

The simple textbook idea of an "M&A adviser" does not really capture how much a bank does in an international deal. Based on my reading, I have grouped the work of an investment bank in an India–US deal into seven activities, in roughly the order they happen during a deal.

1. Origination and matchmaking. Large global banks have industry teams in cities like New York and San Francisco, and country teams in Mumbai. Their biggest advantage is information. They know which US companies have been told by their boards to expand into India, which Indian promoters are willing to sell part of their stake, and which private-equity funds have money that they need to invest soon

because of commitments to their own investors. Because of this, many deals actually begin because a bank brings the two sides together, rather than through an open auction.

2. Valuation. Valuing a company across borders means combining different methods and adjusting for differences between the two countries. A discounted cash flow (DCF) valuation has to include India's country-risk premium and the expected fall in the value of the rupee against the dollar. Comparing with similar listed companies is tricky because Indian listed companies usually trade at higher valuation multiples than similar US companies. Past transactions also have to be adjusted for control premiums and regulatory costs. This creates what Indian advisers often call the "valuation gap": Indian sellers expect prices based on the high multiples in their home market, while US buyers think in terms of lower American multiples. From a psychology point of view, this looks a lot like *anchoring bias* people tend to fix their expectations on the first number they see, and Indian sellers are anchored to domestic prices. A good banker has to slowly move both sides towards a price they can agree on.

3. Structuring. The choice between buying shares, buying assets, doing a merger through a court-approved scheme under Sections 230–234 of the Companies Act, 2013, or doing a share swap has major tax and regulatory consequences. Amendments in 2024 to India's Foreign Exchange Management (Non-Debt Instruments) Rules made cross-border share swaps much easier. In September 2024, changes to the fast-track merger route under Rule 25A also allowed a foreign parent company to merge with its wholly owned Indian subsidiary without going through the National Company Law Tribunal (NCLT). This matters especially for "reverse flips" Indian start-ups that had moved their headquarters to the US and now want to move back to India, often before listing here. Banks work closely with law firms to choose and sequence these structures.

4. Financing. Acquisition financing in India grew from about US$6.9 billion in 2020 to US$10.9 billion in 2021 and around US$32 billion in 2022, helped by cheap money after the pandemic and by the rise of international private credit funds. For US buyers, banks arrange bridge loans, dollar bonds and rupee-linked instruments. For Indian buyers going abroad, banks usually arrange the debt through offshore companies, because Indian banks have traditionally been restricted from lending money for the purchase of shares.

5. Fairness opinions and protecting the board. In the US, especially under Delaware law, the directors of a listed company owe "fiduciary duties" to shareholders, so boards usually get an independent fairness opinion from a bank to show that the price they accepted was fair. On the Indian side, FEMA pricing guidelines require that shares transferred between Indian residents and foreign investors are priced at fair value using internationally accepted valuation methods, which works like an "arm's length" test. So the bank's opinion is both an analytical tool and a way of managing legal risk.

6. Negotiation and process management. Banks run the auction or the one-to-one negotiation, organise the due diligence process (where the buyer checks the target company in detail), and coordinate everyone involved.
Even something as simple as the time difference matters here: India is about nine and a half to ten and a half hours ahead of New York, depending on daylight saving, so a deal team is effectively working around the clock.

7. Regulatory navigation. Finally, and probably most importantly in this corridor, banks help companies get through the regulatory approvals needed in both countries. This is the subject of the next section.

1.4. The Dual Regulatory Gauntlet: India and the United States

On the Indian side, the most important authority for foreign investment is the Reserve Bank of India (RBI). The RBI administers the Foreign Exchange Management Act (FEMA), including sector-wise limits on FDI, the difference between the "automatic route" (no prior government approval needed) and the "government route" (approval needed), and the pricing rules for share transfers between Indian and foreign investors. The RBI's consolidated Master Direction on Foreign Investment has made these rules easier to follow by bringing them together in one place.

The Securities and Exchange Board of India (SEBI) regulates deals involving listed companies. Under SEBI's Substantial Acquisition of Shares and Takeovers (SAST) Regulations, anyone who acquires 25% or more of the voting rights in a listed Indian company must make a mandatory open offer to buy at least another 26% from the public shareholders. This rule makes buying listed Indian companies very expensive for foreign acquirers and has stopped or complicated many international deals involving Indian listed subsidiaries.

The Competition Commission of India (CCI) reviews mergers that may affect competition. Amendments that came into force in 2024 reduced the overall time limit for the CCI's review and gave it 30 days to form a first ("prima facie") opinion. They also introduced a new Deal Value Threshold: an acquisition worth more than ₹2,000 crore (about US$240 million) must be notified to the CCI if the target has substantial business operations in India, subject to applicable exemptions. This was designed mainly to catch acquisitions of digital companies that earlier escaped review because their turnover was small even though their value was huge.

Income tax is another key factor. India's "indirect transfer" rules, which came out of the famous Vodafone tax case, can tax the sale of a foreign company if most of its value comes from Indian assets. Although the government removed the retrospective application of this rule in 2021, investors still have to plan their offshore structures carefully because of it.

In the United States, an acquirer of an American company may need to file under the Hart-Scott-Rodino (HSR) Act for antitrust review, get approval from sector regulators, and, most importantly for this corridor, deal with the Committee on Foreign Investment in the United States (CFIUS). CFIUS reviews foreign acquisitions of US businesses involving critical technologies, critical infrastructure or sensitive personal data. Indian acquirers in IT services, pharmaceuticals and semiconductors now increasingly plan for a CFIUS review even when a filing is not strictly mandatory. In addition, changes in US tariff policy towards India during 2025 created uncertainty, and many advisers noted that this made some US companies slower to commit to deals connected to India.

Investment banks guide companies through this whole process. They design deal structures so that approvals in both countries can be obtained at the same time, build regulatory risk into the merger agreement (for example through conditions precedent, "hell-or-high-water" clauses that force the buyer to do whatever it takes to get approval, and reverse break fees that the buyer pays if the deal fails for regulatory reasons), and advise the board on when to announce the deal. The CCI has become stricter about "gun-jumping" taking control of a company before approval is given and India's standstill obligation applies to the whole transaction, including its Indian part. Because of this, the banker's job of sequencing approvals correctly is becoming even more important.

1.5. Case Studies of Landmark India–US Transactions

Walmart–Flipkart (2018, about US$16 billion).

Walmart bought an initial stake of about 77% in Flipkart. This is still the largest US investment into India and was the world's largest e-commerce acquisition at the time. J.P. Morgan Securities and Barclays advised Walmart, while Goldman Sachs advised Flipkart. The deal showed many of a banker's functions in action: bridging the valuation gap for a company that was making heavy losses (the deal valued Flipkart at about US$20.8 billion), structuring the deal around India's FDI rules (which allow foreign investment in e-commerce *marketplaces* but not in *inventory-based* e-commerce), and managing a complicated shareholder list that included SoftBank, Tiger Global and Naspers.

Jio Platforms fundraising (2020, about US$20 billion in total).

These were minority investments rather than full takeovers, but they were among the largest US-to-India strategic investments ever. Facebook paid about US$5.7 billion for a 9.99% stake, and Google invested about US$4.5 billion. Morgan Stanley acted as Reliance's financial adviser. What makes this case special is that a competitive process normally used to sell one company to one buyer was used to close around fourteen separate investments within a few months, in the middle of the pandemic. Psychologically, this was clever: each new big-name investor acted as *social proof* for the next one, creating a sense that others were rushing in and that it was important not to miss out.

Outbound IT acquisitions.

Indian IT companies have also bought abroad. HCL Technologies acquired seven IBM software products in 2018 for about US$1.8 billion, and Wipro bought the consulting firm Capco headquartered in London but with a large US client base in 2021 for about US$1.45 billion.

These are classic "capability acquisitions", where a company buys skills and clients it does not have. Banks arranged dollar financing and advised on US rules, including those about keeping key employees after the deal.

Reliance–Disney India joint venture (2024, about US$8.5 billion).

The merger of Viacom18 and Star India created India's largest media and entertainment company, with Disney keeping a minority stake. It was the largest Indian deal of 2024. It needed long negotiations with the CCI because of concerns about the combined company's control over cricket broadcasting rights, and it showed how important antitrust strategy has become in a modern banker's job.

Private equity.

Private equity completes the picture. Blackstone's purchase of CARE Hospitals in 2023 (reported at roughly US$0.8–1 billion), KKR's acquisition of Healthium Medtech in 2024, and the constant recycling of capital by US-based funds show that the US is now the largest source of private-equity money for India. According to EY, private-equity investment in India was expected to reach around US$60 billion by 2025. Each of these deals creates work for banks in advising, financing and, eventually, exiting often through an IPO, which links Part I of this paper to Part II.

1.6. Fee Economics and the Competitive Landscape

For many years, global banks treated China as the centre of their Asian business. That changed in 2022, when foreign banks earned more M&A fees from India than from China, as China's deal market shrank and India's grew. Advisory fees on Indian deals range from about 0.5% of the deal value for multi-billion-dollar transactions to 2% or more for mid-sized deals. Most of this is paid as a "success fee", meaning the bank is paid mainly if the deal actually closes. (As a Psychology student, I noticed that this creates an incentive for the bank to push deals through, which is something a client should keep in mind.)

The large US "bulge-bracket" banks Goldman Sachs, Morgan Stanley, J.P. Morgan, Citi and Bank of America lead the league tables for big deals. Boutique advisers such as Rothschild and Moelis, and Indian firms such as Kotak Investment Banking, Axis Capital and ICICI Securities, are strong in mid-sized deals and in relationships with Indian promoter families. The advisory industry itself is also consolidating: KKR's process to sell its roughly 63% stake in Avendus Capital attracted bidders such as Japan's Mizuho, which shows how valuable Indian investment-banking platforms have become.

1.7. Challenges and Frictions

From my reading, I found four frictions that keep coming up. First, high valuation multiples for Indian listed companies make it very expensive to take companies private or to buy out minority shareholders. Advisers told Grant Thornton that many deals in 2024 took longer to close because "everyone felt the valuation multiples were too high".

Second, regulatory processes take a long time and are hard to predict. Mandatory open offers, the CCI's new deal value threshold, the RBI's pricing rules and CFIUS reviews can stretch the closing of a complex deal from about six months to eighteen months or more.

Third, global economic and trade policy is uncertain. Tariffs and trade tensions with the United States have led to a "wait-and-see" attitude for deals linked to manufacturing in India, even though investors remain interested in India for other sectors.

Fourth, there are governance and integration risks after the deal. Many Indian targets are promoter-controlled and may have related-party transactions and different disclosure standards, which can make integration difficult. In response, banks have started offering integration-planning and ESG due-diligence services as well.

1.8. Conclusions for Part I

My main conclusion is that, in the India–US corridor, investment banks are not just middlemen they are better described as "manufacturers of deal feasibility". What they really provide is information about possible counterparties, valuations both sides can accept, structures that satisfy regulators in both countries,

financing commitments and regulatory compliance. Each of these removes a type of friction that could otherwise stop a deal from closing. The analysis also suggests that the growth of this corridor is driven by structural forces rather than a temporary cycle. As long as US investors keep funding Indian growth and diversifying their supply chains, and Indian companies keep looking for US technology and access to US markets, the services of these banks will remain essential and competition between global and Indian banks for this work will only increase.

II. PART II: COMPARING IPO VALUATION METHODS: BOOK-BUILDING VS. FIXED-PRICE MECHANISMS IN EMERGING MARKETS

2.1. Introduction

How should a company that is going public decide what price to charge for its shares? This sounds like a small technical question, but the method chosen decides who carries the risk (the company or the investors), who gets the value that is "left on the table" when shares are underpriced, and how well the information spread across thousands of investors is combined into one offer price.

In emerging markets, two methods are commonly used. In a fixed-price offer, the company and its lead investment bank (called a merchant banker or book-running lead manager in India) announce a single price before the subscription period opens, and investors only decide how many shares they want at that price. In book-building, the company announces a price *band* instead of a single price. In India, investors place bids within this band over a period of at least three working days, and the final price is then set within the band based on the demand that has been recorded the "book". In this part, I compare how these two methods work in theory and in practice, using India as my main example, because India uses both methods side by side.

2.2. The Two Mechanisms Explained

In a fixed-price IPO, the price is decided weeks before listing, using the company's audited financial statements, comparisons with similar companies and the judgement of the banker. The company does not know the actual demand until the offer closes, so any pricing mistake is discovered when it is too late to fix. Retail investors cannot see how much demand there is from big institutions, which makes them more exposed to the "winner's curse" (explained in Section 2.3). To protect them, regulators have historically pushed companies towards conservative, lower prices. In India today, fixed-price offers are mostly found on the SME platforms (BSE SME and NSE Emerge) and among some smaller main-board issues. SEBI requires that at least 50% of a fixed-price issue be reserved for retail investors.

In a book-built IPO, the company publishes a red herring prospectus with a price band. Under SEBI rules, the upper end of the band cannot be more than 120% of the lower end. Qualified Institutional Buyers (QIBs), Non-Institutional Investors (NIIs, mainly wealthy individuals and corporates) and Retail Individual Investors place bids over three to ten working days, and the final price is set based on the demand curve that the bids create. For a regular book-built issue by a profitable company, SEBI requires that no more than 50% of the shares go to QIBs, at least 15% to NIIs and at least 35% to retail investors. For companies that are loss-making and list under the alternative eligibility route, at least 75% must go to QIBs, with no more than 15% for NIIs and no more than 10% for retail investors because these riskier issues are considered more suitable for experienced investors.

A special feature in India is the anchor investor, introduced in 2009. Up to 60% of the QIB portion can be given to large institutions one working day before the issue opens, at a fixed price, and one-third of this anchor portion is reserved for domestic mutual funds. Anchor investors' shares are locked in for a period after listing, so they cannot sell immediately. The idea is that respected institutions committing money early gives credibility to the issue and helps build demand. I found the name very fitting, because in psychology "anchoring" means that people rely heavily on the first piece of information they receive. When retail investors see that big funds have already bought at the top of the band, they tend to treat that price as a sign of fair value.

2.3. Theoretical Foundations

I use three bodies of theory to compare the two methods.

1. Rock's winner's curse (1986). Rock imagined two groups of investors: informed investors, who know roughly what a share is really worth, and uninformed

investors, who do not. Informed investors only apply for the good issues and stay away from the bad ones. As a result, in good issues, which are heavily oversubscribed, uninformed investors receive only a small allocation, while in bad issues, which nobody informed wants, they receive almost everything they asked for. On average, the uninformed investor ends up with more of the bad shares than the good ones. To keep these investors participating at all, IPOs must on average be priced below their true value this is one explanation for underpricing. The less investors can see about how much demand there is, the stronger this effect. Book-building helps reduce the problem, because the underwriter collects information about overall demand before setting the price, so the final price is a better estimate of value and less underpricing is needed. To me, this is a clear example of *information asymmetry*, a concept I also came across in psychology when studying how people make decisions with incomplete information.

2. Benveniste and Spindt's model of book-building (1989). This model describes book-building as a way for the underwriter to "buy" information from institutional investors. Institutions that honestly reveal positive information about an issue are rewarded with larger allocations at a slightly lower price. In this view, underpricing is not pure waste; it is the price paid to get investors to share what they know. So, book-building should lead to first-day returns that are closer to fair value than a fixed-price offer. However, because the underwriter decides who gets what, there is a risk of abuse as seen in the US "spinning" and "laddering" scandals of 1999–2000, where allocations of hot IPOs were used to win favours from clients.

3. Empirical research on underpricing. Studies by Loughran and Ritter (2004) and Ljungqvist (2007) show that underpricing is much higher in emerging markets than in developed markets, with average first-day returns several times larger. India fits this pattern. Before 1992, when share prices in IPOs were controlled by the government's Controller of Capital Issues, Indian IPOs regularly gave first-day returns of 50–100% or more. Studies of the period after book-building became common (from about 1999 onwards) generally find much lower average first-day returns, often in the range of 10–30%. The exact numbers vary from study to study, but the direction of change is very consistent: when book-building replaced fixed pricing, average underpricing fell sharply.

2.4. The Indian Experience: From Fixed Price to Book-Building

Because India's IPO market has gone through several regulatory changes, it acts almost like a natural experiment. Before 1992, the Controller of Capital Issues set offer prices administratively, usually at a steep discount to what the market would pay, which led to some of the largest listing gains on record. After the Capital Issues (Control) Act was repealed in 1992, SEBI introduced free pricing, although fixed-price offers continued. SEBI first permitted book-building in the mid-1990s, and from about 1999 onwards it gradually became the standard method for main-board IPOs.

Today, both methods exist side by side. Large issuers use book-building, while micro-cap and SME issuers usually use fixed-price offers, because their investor base is small and a fixed price is simpler and more certain to market through local retail networks. The 2020–2024 IPO boom tested book-building like never before. India was among the top countries in the world for IPO activity during this period, and in 2024 it was reported to be number one globally by number of IPOs, with more than 330 companies (main board and SME combined) raising over ₹1,60,000 crore (roughly US$19–20 billion). This boom produced both big successes and painful failures, which I look at next.

2.5. Empirical Evidence and Recent Case Studies

The best way to judge book-building is to look at what actually happened in recent Indian IPOs. Table 2 shows a selection of well-known book-built IPOs from 2021 to 2024, along with how they performed on their first day of trading.

Table 2. Selected Indian book-built IPOs, 2021–2024. Prices are approximate, based on NSE/BSE listing-day data as reported in the financial press, and are rounded.

Company (Year)	Issue Price (₹)	Listing Price (₹, approx.)	Listing Gain / Loss	What it shows
Zomato (2021)	76	≈ 116	≈ +53%	Strong underpricing despite book-building in a hot market

Nykaa (2021)	1,125	≈ 2,001	≈ +78%	Very high oversubscription; money left on the table
Paytm / One97 (2021)	2,150	≈ 1,955 (closed day one ≈ 1,564)	≈ −9% open; ≈ −27% close	Overpricing at the top of the cycle; weak demand
LIC (2022)	949	≈ 872	≈ −8%	Largest IPO of its time; priced into a falling market
Tata Technologies (2023)	500	≈ 1,200	≈ +140%	Extreme underpricing of a trusted brand
Bajaj Housing Finance (2024)	70	≈ 150	≈ +114%	Huge demand; strong listing gain
Hyundai Motor India (2024)	1,960	≈ 1,931	≈ −1.5%	Priced at the limit of institutional appetite; weak retail demand

Paytm (November 2021).

Paytm's parent company, One97 Communications, raised about ₹18,300 crore, which made it India's largest IPO at the time. It was priced at ₹2,150, the top of its band, valuing the company at around US$20 billion even though it was making losses. The issue was subscribed only about 1.9 times overall, which is weak for such a heavily promoted IPO. The shares opened about 9% below the issue price and closed the first day about 27% down. Over the following year the share price fell much further. Paytm shows that book-building does not prevent overpricing: when a large part of the issue is an offer for sale by existing investors who want to cash out at the highest possible price, and the market is at its peak, the price can still be set too high.

LIC (May 2022).

The Life Insurance Corporation of India raised about ₹21,000 crore, becoming the largest IPO in Indian history at that time. The government had already reduced the size of the issue because markets had fallen after the start of the Russia–Ukraine war. The issue was priced at ₹949, with discounts for policyholders and retail investors, and it was subscribed about three times. Even so, the shares listed at about ₹872, a loss of around 8%, and traded below the issue price for a long time. LIC shows that even a well-known company with huge retail interest can be mispriced if the price does not fully adjust to changing market conditions.

Tata Technologies (November 2023) and Bajaj Housing Finance (September 2024).

These show the opposite problem. Tata Technologies was priced at ₹500 and was subscribed around 69 times. It listed at about ₹1,200 a gain of about 140% on day one. Bajaj Housing Finance was priced at ₹70, subscribed over 60 times, and listed at about ₹150, more than doubling. If book-building were "perfect", such a huge demand should have pushed the price much higher. Instead, a lot of money was left on the table for the selling shareholders. Part of the reason is that the price band is decided before the book is built, and the final price cannot go above the band.

Hyundai Motor India (October 2024).

At about ₹27,870 crore, this was India's largest IPO ever, and it was entirely an offer for sale by the Korean parent company. It was priced at ₹1,960. Qualified institutional buyers subscribed about seven times their portion, but the retail portion was only around half subscribed, and the shares listed slightly below the issue price. This case supports the idea that issuers sometimes price at the very limit of institutional demand, leaving little for retail investors to gain.

The SME fixed-price frenzy (2023–2024).

On the SME platforms, where fixed-price issues are common, the problem was extreme overexcitement. In one widely reported case in August 2024, Resourceful Automobile, a small two-wheeler dealer with two showrooms, raised about ₹12 crore through a fixed-price IPO that was subscribed more than 400 times. Many SME IPOs listed at very high premiums and then fell.

This led SEBI to tighten SME listing rules in 2025, including a minimum profitability requirement, limits on how much existing shareholders can sell in the IPO, and a higher minimum application size so that only more serious investors take part.

What the cases tell us.

Putting these together, I see three patterns. First, book-building has clearly reduced the very large, systematic underpricing of the old fixed-price era, but underpricing has not disappeared in hot markets, issues like Tata Technologies still leave huge amounts on the table. Second, book-building has introduced a new kind of failure: overpricing at the top of the market, as with Paytm and, to a lesser extent, LIC and Hyundai. Third, market mood matters a lot. From a psychology point of view, many of these IPOs show *herd behaviour* and *FOMO (fear of missing out)*. Retail investors often look at the "grey market premium" (the unofficial price at which IPO shares trade before listing) and at subscription numbers that are updated live during the issue, and then pile in because others are doing so. In such conditions, the price set through book-building reflects not only information about the company but also the emotions of the crowd. A mechanism can collect demand efficiently, but it cannot make that demand rational.

2.6. Comparative Assessment

Table 3 brings the comparison together across the points that matter most to companies, investors and regulators.

Table 3. Book-building versus fixed-price mechanisms: a comparative assessment based on the SEBI (ICDR) Regulations and the research literature.

Dimension	Fixed-Price Offer	Book-Building
Price discovery	None before listing; price set in advance from fundamentals and judgement	Demand curve observed within a band (India: cap ≤ 120% of floor); final price set from the book
Average underpricing	Higher; India's pre-1992 issues often had first-day returns of 50–100% or more	Lower; Indian studies typically find average first-day returns of about 10–30% after book-building became common
How pricing fails	Systematic caution; money left on the table	Overpricing possible at the top of the cycle (e.g., Paytm, −27% on day one in 2021); underpricing still possible in hot markets
Money raised for the issuer	Lower on average	Higher on average; anchor investors signal quality
Retail investor position	Fully exposed to the winner's curse; ≥ 50% retail allocation (India)	Partly protected by seeing QIB demand; 35% (profitable issuer) or 10% (loss-making route) retail allocation
Cost and complexity	Low; suits SME platforms and small investor bases	High; roadshows, syndicates, anchor process, underwriting
Allocation discretion	Proportionate or lottery; low risk of abuse	Underwriter discretion (outside India) creates agency risk; India requires proportionate allotment within each category
Best suited to	Small issues, less developed markets, first-time retail investors	Large issues, uncertain valuations, deep institutional markets

2.7. Hybrids, Auctions and Policy Implications

In theory, sealed-bid auctions remove the underwriter's power to decide allocations, which should reduce abuse. In practice, however, they have been far less popular than book-building. Google's 2004 IPO, which used a modified Dutch auction, is one of the best-known major IPOs this century to use this method. Auction-style IPOs were tried in countries such as France, Taiwan and Israel, but once book-building became available, most issuers switched to it. The reason seems to be that book-building comes as a "bundle" of services certification by reputed banks, analyst coverage, support for the share price after listing and anchor investors and for most companies, these benefits outweigh the risk of the bank acting in its own interest. As a result, many emerging-market regulators, including SEBI, now use a *controlled* version of book-building, with fixed allocation categories, price band limits and detailed disclosure. These features are meant to protect investors by giving them timely information about price and demand, so that they can make decisions based on facts rather than hopes.

From all this, I draw three policy implications. First, the pricing method should match the company's size

and information environment. Forcing small SMEs into a full book-building process would raise their costs without really helping them discover a better price, so keeping a simpler fixed-price route for very small issues makes sense as long as it is properly regulated.

Second, in a hot market, the quality of pricing depends more on incentives than on the mechanism. Issues that are mostly offers for sale, managed by syndicates that earn more when the price is higher, can be overpriced under any method. This supports SEBI's move since 2022 to require loss-making companies to disclose key performance indicators (KPIs) and justify their price band.

Third, retail investors are protected better by transparency letting them clearly see institutional demand and the basis for the price than by simply setting allocation limits.

2.8. Conclusions for Part II

The evidence leads me to a careful conclusion. Book-building is the better method of setting IPO prices in emerging markets: it lowers underpricing on average and lets companies capture more of their own value. However, it replaces the old problem of systematic underpricing with a new one the risk of overpricing at the top of the market and it does not remove underpricing completely in times of extreme demand. In thin markets where there are not enough investors to build a meaningful book, book-building has little advantage, so a fixed-price offer remains the sensible choice for the smallest issuers. Whatever method is used, regulators in emerging markets need to watch the incentives of the intermediaries closely. This brings us back to the role of investment banks discussed in Part I.

III. PART III: DOES ESG INVESTING SACRIFICE RETURNS? A STUDY OF THE S&P 500 ESG VS. TRADITIONAL INDEXES (2015–2024)

3.1. Introduction and Hypotheses

The oldest argument against sustainable investing is not complicated it is basic mathematics. If you restrict the set of stocks you are allowed to invest in, the best possible portfolio you can build can only be as good as, or worse than, the best portfolio from the full set. In technical terms, adding constraints can never increase the maximum achievable Sharpe ratio (return per unit of risk). On top of this, ESG strategies often exclude "sin stocks" such as tobacco, fossil fuels and weapons, which have historically earned a return premium. The best-known evidence for this is Hong and Kacperczyk (2009), who found that sin stocks earned higher returns, probably because many institutional investors avoid them, so they are "neglected" and priced lower than they should be.

The opposite argument is about risk management. Supporters of ESG argue that good ESG scores are a sign of good management, lower risk of lawsuits and lower risk from climate-related changes, which can lower a company's cost of capital. If this is true, then mild ESG screening could perform as well as the market or even better.

In this part, I test this question using what I think is the cleanest comparison available the S&P 500 ESG Index against its parent, the S&P 500. I compare the results with the research that disagrees, using two hypotheses:

Hypothesis 1 (Sacrifice Hypothesis): The ESG index gives lower absolute returns and lower risk-adjusted returns than the S&P 500.

Hypothesis 2 (Neutrality/Benefit Hypothesis): Sector-neutral, best-in-class ESG screening gives returns that are statistically indistinguishable from, or only slightly higher than, the S&P 500.

3.2. Index Construction and Methodology

The S&P 500 ESG Index was launched on 28 January 2019. S&P Dow Jones Indices also published "back-tested" data for earlier years, which means they calculated how the index *would have* performed if it had existed. This is important to keep in mind, because back-tested data can suffer from look-ahead bias (using information that was not actually available at the time) and survivorship bias (only including companies that survived). So, the data before 2019 should be treated more carefully than the live data after launch.

The index is not designed to avoid entire industries. Instead, it aims to pick the companies with better ESG scores *within* each industry, using S&P Global ESG Scores. First, it removes companies that make tobacco, are involved in controversial weapons, earn more than a certain share of revenue from thermal coal, do not comply with the United Nations Global Compact, or are in the bottom 25% of ESG scores within their global industry group. From the remaining companies,

it selects the highest-scoring ones until it covers about 75% of the float-adjusted market capitalisation of each GICS industry group, and then weights them by market capitalisation. The goal is for the index to behave like a broad benchmark, with similar sector exposure to the S&P 500 but better sustainability characteristics, rather than making big bets on particular styles or sectors.

The screening is stricter than many people expect. Reports on the April 2024 rebalance stated that about 177 companies from the S&P 500 were not included, together making up around a quarter of the parent index's market capitalisation. A famous example is Tesla, which was removed from the index in 2022 because of concerns about governance and social issues, while some large oil companies such as ExxonMobil stayed in. This surprised a lot of people, but it shows that "ESG" in this index means comparing companies with others *in the same industry*, not judging whether the product itself is "green".

3.3. Performance Data, 2015–2024

Table 4 shows calendar-year total returns. ESG index figures for 2015–2018 are back-tested values published by S&P Dow Jones Indices and should be read with the caution explained above; figures from 2019 onwards are live. Values are approximate to the nearest half percentage point.

Table 4. Approximate calendar-year total returns (USD). Sources: S&P Dow Jones Indices publications and index data providers. Pre-2019 ESG figures are hypothetical back-tests; small differences between data providers come from price-return versus total-return conventions and rounding.

Year	S&P 500 (Total Return, %)	S&P 500 ESG (Total Return, %)	ESG minus S&P 500 (pp)
2015	+1.4	+1.3 (back-test)	−0.1
2016	+12.0	+11.4 (back-test)	−0.6
2017	+21.8	+22.3 (back-test)	+0.5
2018	−4.4	−4.6 (back-test)	−0.2
2019	+31.5	+31.5	0.0
2020	+18.4	+20.9	+2.5
2021	+28.7	+30.6	+1.9
2022	−18.1	−19.2	−1.1
2023	+26.3	+28.0	+1.7
2024	+25.0	+25.5	+0.5

The headline numbers published by the index provider are consistent with this table. From launch (28 January 2019) to 30 April 2024, the S&P 500 ESG Index returned 16.54% per year compared with 14.96% for the S&P 500 an extra return of about 1.6 percentage points per year during the live period. Over the twelve months to April 2024, the extra return was 0.63%. Since launch, the annualised tracking error (how much the ESG index's returns differ from the S&P 500's, measured like a standard deviation) has been about 1.33–1.34%, and the daily correlation between the two indexes is about 99.9%. As a maths student, I found that correlation figure striking: a value of 0.999 means the two indexes move almost exactly together, day after day.

I also did my own compounding calculation using Table 4. One dollar invested in the S&P 500 at the start of 2015 would have grown to about US$3.43 by the end of 2024, while one dollar in the ESG index would have grown to about US$3.55. That works out to average annual returns of roughly 13.1% and 13.5% respectively a small but positive gap of about 0.4 percentage points per year. If I look only at the live years in the table (2019–2024), the gap is about 0.8 percentage points per year. This is smaller than the 1.6 points reported by S&P because the time windows are different (S&P measures from 28 January 2019 to April 2024, while my calculation uses full calendar years to December 2024). This taught me that the exact start and end dates of a comparison can change the result quite a lot, so it is always important to check what period a statistic covers.

3.4. Risk-Adjusted Analysis and Return Attribution

Because the ESG index and the S&P 500 have almost the same tracking error relative to each other, and the ESG index earned a little more return in most live years, its absolute return was slightly higher than the

S&P 500 from 2019 to 2024. However, over the full 2015–2024 period including the back-test years, I did not run a statistical significance test, so I cannot say whether the difference is statistically meaningful or treat the indexes as statistically equivalent.

During the two big market falls in this period the crash of March 2020 and the bear market of 2022 the two indexes fell by very similar amounts, usually within about one percentage point of each other. In 2022, the ESG index fell slightly more (−19.2% against −18.1%). The main reason is that the ESG index held less of the energy sector, and 2022 was the year when energy prices rose sharply and energy stocks were by far the best performers. Because the ESG index had less weight in the companies that benefited most, it fell a little more than its parent.

Attribution analysis by S&P Dow Jones Indices shows that most of the ESG index's difference in return came from *stock selection within sectors* rather than from holding different amounts of each sector, which makes sense because the index is designed to be sector-neutral. In simple words, the "outperformance" came mainly from leaving out the companies with the lowest ESG scores in each industry.

There is also an important complication. Throughout most of 2019–2024, the index held large technology companies such as Microsoft, Nvidia and Apple, which qualified on ESG grounds. These stocks had extraordinary returns during this period, so almost any strategy that held them would have done well. Some analysts argue that the index outperformed because of its ESG criteria, but it is very difficult to separate the effect of ESG from the effect of the mega-cap technology rally.

3.5. The Counter-Evidence

An honest analysis also has to look at evidence that goes against my findings. A study published in 2026 in *Finance Research Letters* compared portfolios of S&P 500 stocks with the highest and lowest ESG scores from 2005 to 2024. It found that low-ESG portfolios earned higher absolute returns than high-ESG portfolios, although the difference stopped being statistically significant once risk was taken into account. This fits with the earlier research on the sin-stock premium and suggests that more aggressive ESG strategies those that tilt heavily towards high-scoring companies may involve some sacrifice of returns, unlike mild, sector-neutral screening.

The clearest real example is 2022, when the energy sector rose by around 60% or more within the S&P 500, and ESG strategies that held little or no energy fell behind. There are also several other factors to consider. First, the index returns I have used do not include fund fees, and ESG funds usually charge higher expense ratios than ordinary index funds. Second, different ESG rating agencies often disagree strongly about the same company. Berg, Kölbel and Rigobon (2022) found that the correlations between the ratings of major providers are only moderate, roughly between 0.4 and 0.7, so the results of any ESG study depend heavily on which rating system is used. Third, money flowing into and out of ESG funds can itself move prices. Pástor, Stambaugh and Taylor (2022) argue that much of the strong performance of green stocks in recent years came from rising investor demand for them, not from better business results. This "tailwind" from record inflows in 2019–2021 reversed in late 2023 and 2024, when US sustainable funds saw large outflows, partly because of political backlash against ESG in the United States.

From a psychology perspective, this last point is very interesting. It suggests that part of ESG's performance was driven by investor sentiment and changing social attitudes a kind of collective mood rather than only by the fundamentals of the companies. When the mood changed, the money flows changed too.

3.6. Discussion

Based on the evidence for this specific index and time period, Hypothesis 1 (the Sacrifice Hypothesis) is not supported. For a broad, sector-neutral index of large US companies using best-in-class ESG screening, there was no sign of a return sacrifice from 2015 to 2024. In fact, the live data up to the end of 2024 shows a small positive extra return with a risk profile very similar to the benchmark, which supports Hypothesis 2.

However, I want to be careful not to over-generalise. These results do not apply to all ESG strategies. During the same period, portfolios with concentrated ESG tilts, heavy exclusions or narrow themes (for example, clean-energy funds) behaved very differently and sometimes performed much worse than the broad market. The same low tracking error that makes the S&P 500 ESG Index a "safe" choice also limits how much good or harm its ESG signals can do. My overall understanding is that the "cost" of ESG

investing depends mainly on how intense the screening is. For a light-touch index it is close to zero, but for portfolios that exclude large parts of the market it can be significant, and it can vary a lot depending on commodity cycles, which investment styles are in favour, and investor flows. Finally, one ten-year period dominated by a technology bull market is really just one sample, and 2022 showed how quickly things can change when market conditions turn against ESG strategies.

3.7. Conclusions for Part III

An investor who switched from the S&P 500 to the S&P 500 ESG Index when it launched in January 2019 would have earned roughly 1.6 percentage points more per year up to April 2024. Over the full 2015–2024 period, including the back-tested years, the gap is smaller around 0.4 percentage points per year based on my calculation but still slightly positive. So, there is no evidence that ESG investing *always* underperforms. A narrower claim is supported: mild ESG screening produced zero or a small positive benefit for large US companies during the period I studied. More aggressive ESG portfolios, on the other hand, carry real tracking-error risk and have sometimes performed worse in absolute terms. Because the sin premium and the risk-reduction benefits of ESG both play out over long time horizons, no single ten-year period can settle this debate once and for all.

IV. OVERALL CONCLUSION

When I look back at the three parts of this paper, I can see three connected threads running through them.

The first thread is intermediation. In all three topics, intermediaries' investment banks, IPO underwriters and index providers create trust by collecting and organising information that is spread out across many people, and they earn money by designing structures: a cross-border acquisition, an IPO price or an ESG index. But the outcome for investors depends more on the intermediaries' *incentives* than on the *method* they use. This is why a book-built IPO like Paytm could still be overpriced, and why valuation gaps in cross-border deals depend so much on who is advising whom and how they are paid.

The second thread is India's rise as a global case study. In 2022, global banks earned more M&A advisory fees from India than from China. In 2024, India was reported to have the largest number of IPOs in the world, and it runs book-building and fixed-price systems side by side. Its regulators have also moved quickly on important reforms, including easing cross-border share swaps, introducing a deal value threshold for merger review, and tightening the rules for SME listings.

The third thread is the importance of evidence over simple slogans. Statements like "cross-border deals destroy value", "book-building is always better than fixed price" and "ESG investing sacrifices returns" are quoted widely by both practitioners and policymakers. But the evidence in this paper is more mixed. India-linked cross-border deal value grew by about 155% from 2024 to 2025, while the number of cross-border deals fell by about 20%; the advantages of book-building depend on having a deep market; and ESG investing did not reduce returns at the broad index level from 2015 to 2024, even though more aggressive ESG strategies sometimes did. The main lesson I take away is that we should look closely at design choices and incentives, rather than judging things by their labels.

V. LIMITATIONS OF THIS STUDY AND WHAT I LEARNED

I want to be honest about the limitations of my work. First, this paper is based entirely on secondary data from reports, regulators, index providers and research papers. Different sources sometimes give slightly different numbers for the same thing, and I could not always check the original data myself. Second, I did not run my own statistical tests, such as regressions or significance tests; my analysis is based on comparing published figures and doing simple calculations like percentage changes and compound growth. Third, the ESG data before 2019 is back-tested, which makes it less reliable than live data. Finally, ten years is a fairly short period in finance, and my conclusions might look different over a longer time frame or in another country.

Despite these limitations, writing this paper taught me a lot. I learned that numbers in reports need to be read carefully checking the time period, the definitions and whether the maths actually adds up. I also learned that finance is not only about formulas. Many of the most important ideas I came across, such as the winner's

curse, anchoring, herd behaviour and the fear of missing out, are really about human psychology. Combining what I have learned in Mathematics and Psychology helped me understand these topics in a way I did not expect when I started, and it has made me much more interested in studying the connection between economics and human behaviour in the future.

REFERENCES

[1] L. M. Benveniste and P. A. Spindt, "How investment bankers determine the offer price and allocation of new issues," *Journal of Financial Economics*, vol. 24, no. 2, pp. 343–361, 1989.

[2] F. Berg, J. F. Kölbel, and R. Rigobon, "Aggregate confusion: The divergence of ESG ratings," Review of Finance, vol. 26, no. 6, pp. 1315–1344, 2022.

[3] Boston Consulting Group, M&A Markets Overview 2024: Insights from the Regions, 2024. [Online]. Available: https://www.bcg.com/publications/2024/m-and-a-regional-markets-overview

[4] CME Group, "Managing Risk with S&P 500 ESG Investments; Why the S&P 500 ESG Index Continues to Outperform the S&P 500," OpenMarkets, 2024.

[5] Deloitte India, "M&A and FDI commentary," as reported in Forbes India, Dec. 2024.

[6] EY India, "How selective investing shaped India's M&A deals in 2025," Apr. 20, 2026. [Online]. Available: https://www.ey.com/en_in/insights/mergers-acquisitions/how-selective-investing-shaped-india-s-m-a-deals-in-2025

[7] P. V. Carvalho, P. F. Falcão, C. M. Pinheiro, and D. Carrão, "Revisiting ESG performance: Do high scores translate to higher returns? A risk-adjusted analysis of S&P 500 portfolios," Finance Research Letters, vol. 91, Art. no. 109467, 2026, doi: 10.1016/j.frl.2025.109467.

[8] Grant Thornton Bharat, India Deal Tracker, annual and monthly editions, 2024.

[9] Government of India, Ministry of Commerce & Industry, "India records USD 81.04 billion FDI inflow in FY 2024–25," Press Information Bureau, May 27, 2025. [Online]. Available: https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=2131716

[10] H. Hong and M. Kacperczyk, "The price of sin: The effects of social norms on markets," Journal of Financial Economics, vol. 93, no. 1, pp. 15–36, 2009.

[11] India Briefing, "India surpasses China in M&A fees for western investment banks," Dec. 21, 2022. [Online]. Available: https://www.india-briefing.com/news/india-surpasses-china-in-ma-fees-for-western-investment-banks-26720.html/

[12] India Briefing / Dezan Shira & Associates, Cross-Border M&A in India: 2024 Market and Regulatory Updates, 2025.

[13] A. Ljungqvist, "IPO underpricing," in Handbook of Empirical Corporate Finance, vol. 1. Elsevier, 2007.

[14] T. Loughran and J. R. Ritter, "Why has IPO underpricing changed over time?" Financial Management, vol. 33, no. 3, pp. 5–37, 2004.

[15] Majmudar & Partners, Cross Border M&A 2025—India Chapter. Lexology, 2025.

[16] Ľ. Pástor, R. F. Stambaugh, and L. A. Taylor, "Dissecting green returns," Journal of Financial Economics, vol. 146, no. 2, pp. 403–424, 2022.

[17] Reserve Bank of India, Master Direction on Foreign Investment in India (consolidated), 2024.

[18] K. Rock, "Why new issues are underpriced," Journal of Financial Economics, vol. 15, nos. 1–2, pp. 187–212, 1986.

[19] S&P Dow Jones Indices, "Charting New Frontiers: The S&P 500 ESG Index's Outperformance of the S&P 500," Sep. 6, 2024. [Online]. Available: https://www.spglobal.com/spdji/en/research/article/charting-new-frontiers-the-sp-500-esg-index-s-outperformance-of-the-sp-500/

[20] Securities and Exchange Board of India, SEBI (Issue of Capital and Disclosure Requirements) Regulations, 2018, as amended.

[21] Securities and Exchange Board of India, "Amendments to the ICDR Regulations relating to SME public issues," 2025.

[22] Walmart Inc., "Walmart to invest in Flipkart Group, India's innovative eCommerce company," May 9, 2018. [Online]. Available: https://corporate.walmart.com/news/2018/05/09/walmart-to-invest-in-flipkart-group-indias-innovative-ecommerce-company

[23] White & Case LLP, Investing in India: Cross-Border M&A and Cross-Border Investment, compendium, 2024.

[24] World Bank, "GDP (current US$) and GDP per capita (current US$): India," World Development Indicators. [Online]. Available: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=IN; https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=IN