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Comparative Revenue Recognition in the Pharmaceutical Industry Across the United States, the United Kingdom, and India

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Abstract

A technical accounting challenge that has substantial implications for reported growth, margins and investor interpretation in the pharmaceutical sector is revenue recognition. In this paper, the authors will examine the nature of ASC 606, IFRS 15 and Ind AS 115, as well as the recent annual reports of U.S. Pfizer, Merck and Eli Lilly with the U.K. GSK, AstraZeneca and Hikma as well as the India firms Sun Pharmaceutical Industries, Cipla and Dr. Reddy's Laboratories, in order to compare the revenue recognition in the United States, the United Kingdom and India. The analysis reveals high formal convergence as all three frameworks employ a five-step model, where a control-based approach is applied, and involve a level of estimation for variable consideration. Practical divergence is caused by the structure of markets and the disclosure practice. The U.S. pharmaceutical industry reports gross revenue but has a heavy reliance on gross-to-net deductions, primarily rebates, chargebacks and sales returns. In the case of UK IFRS reporters, estimation problems are found to be similar in nature, as are problems in the separation of product sales and alliance and collaboration revenue in the case of AstraZeneca. Indian Ind AS reporting has the same model but can offer greater transparency around the reconciling of contracted price to recognized revenue as Sun Pharma demonstrates. The paper concludes with policy recommendations for standard-setters, regulators and auditors, and pharmaceutical preparers, that revenue recognition is not only possible once there is a converged standard, but rather disclosure of transparent, comparable and auditable transaction-price estimates, performance obligations and contract balances is essential for publication-quality revenue recognition.

Keywords: Revenue recognition, Pharmaceutical industry, ASC 606, IFRS 15, Ind AS 115, Variable consideration, Rebates, Chargebacks

1. Introduction

One of the most judgmental areas in pharmaceutical accounting is revenue recognition as the amount of revenue a manufacturer expects to keep is not likely to be equal to the invoice price of the medicine. Wholesalers, distributors, hospitals, government programs, private payers and pharmacy benefit structures are just some of the channels that pharmaceutical manufacturers sell through that result in rebates, chargebacks, discounts, price concessions, returns, and performance-based terms. These are typical examples of variable consideration that need to be estimated and limited prior to recognizing revenue, according to professional life-sciences guidance (RSM US LLP, 2023).

The accounting frameworks of the three jurisdictions studied for this paper are formally converge around a common five-step revenue model. In the United States, the Accounting Standards Codification Topic 606 outlines the accounting standards for contracts with customers, which state: (Financial Accounting Standards Board [FASB], 2014, p. 1-1): The logic in IFRS 15 is similar to the control-based logic and IFRS Foundation (n.d.) states that revenue is to be recognized as the transfer of promised goods and/or services in the amount of consideration to which the entity is expected to be entitled. The same objective of reporting useful information regarding nature, amount, timing and uncertainty of revenue and cash flows from customer contracts is mentioned in Ind AS 115 in India (Institute of Chartered Accountants of India [ICAI], 2018).

A key context in which comparative revenue recognition is important is in the pharmaceutical industry where there are high dollar transactions and material estimates. According to the European Federation of Pharmaceutical Industries and Associations (EFPIA), 2024 estimated world pharmaceutical sales were 54.8% in North America (2025). The turnover of the bioscience and health technology sector in the United Kingdom amounted to £98.9 billion in 2023/24 (Department for Science, Innovation and Technology [DSIT] 2025). The Department of Pharmaceuticals has reported that the pharmaceutical turnover in India for FY2024-25 was ₹4,71,898 crores. (Department of Pharmaceuticals, 2026). These figures allow comparison with a common currency in the statistics but retain the reporting currency for the purpose of accounting interpretation.

It is therefore not a problem if ASC 606 and IFRS 15 have the same architecture nor is it a problem if Ind AS 115 has the same architecture as IFRS 15; the problem is whether equivalent standards will create equally transparent reporting in a sector where the transaction price is estimated to a large extent. The question this paper poses is how is the revenue recognition rules and company disclosures differ among the United States, the United Kingdom and India in the pharmaceutical industry? The paper provides a pragmatic cross-jurisdictional comparison, by bringing together accounting standards, audited annual reports and industry statistics on a single framework.

2. Method

2.1 Research Design and Source Selection

In this study a documentary comparative design is applied. The main accounting sources are FASB Topic 606 (USA), IFRS 15 (IFRS) and Ind AS 115 (India). The UK Endorsement Board has IFRS 15 listed in the UK Endorsement Board's list of UK adopted international accounting standards, and it is for this reason that the UK has been treated as an IFRS jurisdiction. The corporate sample includes nine pharmaceutical companies: Pfizer and Merck and Eli Lilly, the two U.S. GAAP reporters; GSK, AstraZeneca and Hikma, the two UK-listed IFRS reporters; and Sun Pharmaceutical Industries, Cipla and Dr. Reddy's Laboratories, the three Indian Ind AS/IFRS-reporting pharmaceutical companies. These sample will provide more cross country coverage, and will lessen reliance on two companies per jurisdiction.

The sample was selected due to the fact that these companies make revenue recognition policies, revenue broken down by category, geographic revenue, and material judgements with respect to rebates, returns, chargebacks and/or collaboration revenue available. The paper also includes reference to official or credible statistics sources for the context of the industry. The international market-share information is used from EFPIA, UK government is used for UK life-sciences turnover and, Department of Pharmaceuticals is used for Indian pharmaceutical turnover and trade figures. Descriptive statistical comparison is done by converting the values in GBP to USD values using the 2024 annual average exchange rate of the U.S. dollar against the GBP, which is 0.78271.2 (Federal Reserve Bank of St. Louis, 2026). World Bank Official Exchange Rate 2024 for India (83.7 local currency units to 1 U.S. dollar) is used for translation of figures for India in INR. The conversion is only applied for comparison purposes and does not restate the companies' audited financial statements for accounting purposes.

2.2 Analytical Framework

The analysis is based on three-part framework. First, it describes the formal aspects of each accounting standard, highlighting the elements of performance obligations, transaction price and the transfer of control and variable consideration. Secondly, it analyses how the requirements are applied at the company level, focusing on product sales, gross-to-net deductions and returns, licensing, collaboration revenue and contract balances. Third, it connects with accounting differences based on market context, which is illustrated by selected industry and company statistics.

For pharmaceutical product sales, the practical problem can be simplified as follows:

$$\text{Net revenue} = \text{gross contractual consideration} - \text{rebates} - \text{chargebacks} - \text{returns} - \text{discounts} - \text{other price concessions} \quad (1)$$

The equation (1) is not an accounting standard, but more like an analytical "shortcut" to the very recurrent estimation problem in Pharma, which is that of gross-to-net. The method is based on the practical life-sciences problem where the consideration of a variable product needs to be estimated correctly, and limited when there is a risk of large revenue reversals (RSM US LLP, 2023) and (Sahu, 2026).

2.3 Limitations

The analysis is constructed from information made public as opposed to contract information. The paper makes a U.S.-dollar conversion of the statistics more uniform, but does not completely eliminate the limits of comparability, since companies report on different reporting calendars, with different currencies, various labels for revenues, and different business mixes. The conversion is thus used as a means of descriptive analysis and the recognition analysis continues in the same way as per the previously audited disclosures and reporting frameworks.

3. Results

3.1 Formal Comparison of the Standards

First, it's a formal convergence. Table 1 indicates that the three jurisdictions have a significantly similar control-based model. The difference from the standard is not a concept but institutional - U.S. GAAP account for the United States, UK adopted IFRS account for the United Kingdom, and Ind AS 115 account for India.

Table 1. Comparative revenue-recognition framework in the three jurisdictions

Jurisdiction	Framework	Core model	Pharma-specific implication	Source
United States	ASC 606 / Topic 606	Five steps: contract, performance obligations, transaction price, allocation and control-based recognition.	Rebates, chargebacks, sales returns and discounts affect the transaction price before revenue is recognised.	FASB (2014)
United Kingdom	UK-adopted IFRS 15	IFRS 15 is included in the UK-adopted international accounting standards text.	UK listed pharmaceutical groups apply IFRS 15, often with material U.S. market revenue estimates.	UK Endorsement Board (2024)
India	Ind AS 115	Revenue depicts transfer of promised goods or services in the amount expected from the customer contract.	Indian listed pharmaceutical companies apply Ind AS 115 to goods, services, discounts, returns and contract liabilities.	ICAI (2018)

Note. The table compares the reporting framework used for the paper rather than reproducing the full legal text of each standard.

The shared core model provides a rationale for the three jurisdictions being more similar than different on the level of principles. ASC 606 requires the entities to allocate the transaction price consistently with the allocation rules in the standard (FASB, 2014) and to estimate the variable consideration. Similarly, IFRS 15 calls for variable consideration to be estimated and recognized as a performance obligation is satisfied by transferring control (IFRS Foundation, n.d.). The objective based approach is the same as in the Indian reporting (ICAI, 2018) in Ind AS 115.

3.2 United States: ASC 606 and Gross-to-net Revenue

The U.S. evidence demonstrates the importance of gross to net accounting. Pfizer claims that product sales are made at the time that control is transferred to the customer, usually with shipment or delivery, at which time the title passes (Pfizer Inc., 2025). Pfizer also notes that its revenue deductions consist of chargebacks, rebates, sales allowances and sales returns, all of which are variable consideration (Pfizer Inc., 2025). That also implies that the accounting transaction isn't just "date of shipment" – it's also the "best guess" of what portion of the sale will likely be kept.

Here is a more concrete numerical example given by Merck. In 2024, Merck's total sales were $64.168 billion, with $57.400 billion from its pharmaceutical division (Merck & Co., Inc., 2025). Merck records revenue after providing for sales discounts, chargebacks and rebates at the time of sale (Merck & Co., Inc., 2025). Its U.S. provision for chargebacks and rebates was $13.3 billion in 2024, compared with $12.5 billion in 2023 and $12.3 billion in 2022 (Merck & Co., Inc., 2025). It is equivalent to about 20.7% of Merck's total reported sales for 2024, but is not a company-wide gross-to-net ratio due to the fact it is only related to chargebacks and rebates in the U.S. region.

The U.S. market is significant due to the fact that the global medicine sales are skewed towards North America. According to EFPIA, projected global pharmaceutical sales in 2024 are 54.8% of the world in North America (EFPIA, 2025). As per Pfizer's own revenue table, the U.S. accounted for around 60.8% of the company's total revenue in 2024, with the U.S. revenue showing to be $38.691 billion, out of a total of $63.627 billion (Pfizer Inc., 2025). These are all signs why U.S. revenue recognition policies can sometimes be the key to the global pharmaceutical companies' financial statements.

This is confirmed by the larger U.S. sample. In 2024, the net product revenue amounted to US$40.748 billion, with collaboration and other revenue being US$4.295 billion (Eli Lilly and Company, 2025). In the notes to the financial statements, the auditor noted that its Sales rebate and discount accruals for Medicaid were identified as a critical audit matter and the accruals of US$11.539 billion for these items at 31 December 2024 was the auditor's critical matter (Eli Lilly and Company, 2025). The new U.S. data bolsters the case that gross-to-net estimation isn't a university phenomenon but is one of the consistent and consistent practices in the U.S. pharmaceutical revenue stream.

3.3 United Kingdom: IFRS 15, U.S. Exposure and Collaboration Revenue

Even though the legal framework of IFRS is different to that of U.S. GAAP, the UK evidence shows that there is an economic pressure on IFRS reporting. The company reports products' revenue upon delivery which represents the point when the company has transferred control to the customer (GSK plc 2025). In addition, product sales contain certain components that are not directly related to the main product, including product discounts, allowances, estimated future product returns and rebates; and revenue is not recognised until it is highly probable that a significant reversal will not occur (GSK plc, 2025).

The U.S. returns and rebates are highlighted as an audit matter in GSK's 2024 annual report. The report defines returns, rebates and chargebacks as variable consideration and how they impact the revenue is explained via gross-to-net adjustments (GSK plc, 2025). The report also indicates that the returns and rebates earned by the U.S. Commercial Operations at 31 December 2024 was £5.2 billion (GSK plc, 2025). Although the accrual is not directly comparable with annual revenue deductions, the amount is material since the total turnover for Gsk in 2024 is £31.376 billion.

Another pharmaceutical-specific problem is that not all the revenue comes from product sales—this is AstraZeneca's example. According to AstraZeneca (2025a), revenue consists of the following: Product Sales, Alliance Revenue and Collaboration Revenue. According to AstraZeneca PLC (2025b), Total Revenue for its FY 2024 was $54.073 billion, which included Product Sales of $50.938 billion, Alliance Revenue of $2.212 billion, and Collaboration Revenue of $0.923 billion. The complexity of this composition highlights the need for a sales-based approach to licensing, collaboration arrangements and sales-based milestones, as well as the delivery of finished goods, in revenue-recognition analysis.

Hikma takes the same example as the one in the IFRS sample and applies the same reasoning to a business model with more generic examples. Hikma's revenue for the year 2024 amounted to US$3.127 billion and it reported the revenue generated by Injectables, Generics, Branded and Other businesses (Hikma Pharmaceuticals PLC, 2025). Hikma Pharmaceuticals PLC's revenue note also included the following data on refunds (US$151 million) and on indirect rebates/other allowances (US$173 million) at 31 December 2024, which would make it an interesting comparator for gross-to-net disclosures under IFRS (Hikma Pharmaceuticals PLC, 2025).

3.4 India: Ind AS 115 and Explicit Reconciliation of Adjustments

There is no difference in the Indian evidence except for the disclosure of adjustments which is useful. Sun Pharma's revenue from contracts with customers was ₹226,258.8 million during FY2024-25, while the revenue from operations was ₹230,033.3 million (Sun Pharmaceutical Industries Limited, 2025). It tracks and reconciles your contracted price and reported revenue as well as details adjustments for sales returns, rebates, discounts, price reductions and more (Sun Pharmaceutical Industries Limited, 2025). This total adjustment revealed in that reconciliation amounted to ₹6,053.6 million (roughly 2.7% of revenue from contracts with customers).

Sun Pharma also reports contract balances, comprising of trade receivables of ₹117,014.3 million and contract liabilities of ₹4,995.5 million (Sun Pharmaceutical Industries Limited, 2025). The reason it is important for these disclosures because it's not just the income statement that will get impacted by Ind AS 115. Also impacts the balance sheet because of contract assets, contract liabilities and receivables, particularly when performance obligation is not yet fulfilled when the consideration is received.

Another example of Cipla is an Indian company. According to its annual report, for FY2024-25, its revenue from operations was ₹27,548 crore, with a year on year growth rate of 7% from previous year's ₹25,774 crore (Cipla Limited, 2025). According to the audit discussion in the Cipla report, one of the audit matters is revenue recognition as it involves making significant judgments as per the Ind AS 115 (Cipla Limited, 2025). The Indian comparison, then, establishes the same fundamental issue seen in the U.S. and UK cases: the revenue of a pharmaceutical depends on the estimation of the final transaction price, following the variable consideration.

Dr. Reddy's Laboratories introduces a third Indian comparator and expands the Indian sample size, going beyond Sun Pharma and Cipla. As per the Ind AS consolidated Financial Results of Dr. Reddy's Laboratories Limited for FY2024-25 (Dr. Reddy's Laboratories Limited 2025), the total revenue from operation is ₹326,439 million. The annual report integrated by the company states that Ind AS 115 sets out a five-step model and that revenue is recognised when a transfer of goods or services to the customer takes place, it is expected that the consideration will be received (Dr. Reddy's Laboratories Limited, 2025). This helps in supporting the paper's thesis which is as follows: Conceptual alignment of Indian reporting with IFRS 15 with Indian specific disclosure and audit contexts.

3.5 Comparative Statistical Evidence

Details summary for the companies are summarized in Table 2. a common dollar equivalent is added for comparison with statistics. All the amounts reported if originally in U.S. dollars have been left as is and those in GBP and INR have been translated into U.S. dollars based on the exchange-rate basis reported in the Method section. The common currency amounts should be regarded as scale measure and not restatements as if they were audited amounts. The accounting analysis is then contextualised in country and market in Table 3.

Table 2. Company-level evidence on pharmaceutical revenue recognition

Company	Jurisdiction	Framework	Reported revenue	USD basis	Core revenue-recognition evidence
Pfizer	United States	ASC 606	US$63.627bn	US$63.627bn	Chargebacks, rebates, allowances and returns (Pfizer Inc., 2025).
Merck	United States	ASC 606	US$64.168bn	US$64.168bn	US$13.3bn U.S. chargebacks and rebates provision (Merck & Co., Inc., 2025).
Eli Lilly	United States	ASC 606	US$45.043bn	US$45.043bn	US$11.539bn rebate/discount accruals (Eli Lilly and Company, 2025).
GSK	United Kingdom	IFRS 15	£31.376bn	US$40.09bn	£5.2bn U.S. returns and rebates accrual (GSK plc, 2025).
AstraZeneca	United Kingdom	IFRS 15	US$54.073bn	US$54.073bn	Product, alliance and collaboration revenue split (AstraZeneca PLC, 2025b).
Hikma	United Kingdom	IFRS 15	US$3.127bn	US$3.127bn	Refund liabilities and indirect rebates/allowances (Hikma Pharmaceuticals PLC, 2025).
Sun Pharma	India	Ind AS 115	₹226.259bn	US$2.70bn	Contracted-price reconciliation with returns/rebates/discounts (Sun Pharmaceutical Industries Limited, 2025).
Cipla	India	Ind AS 115	₹27,548 crore	US$3.29bn	Revenue-recognition KAM for discounts, returns and rebates (Cipla Limited, 2025).
Dr. Reddy's	India	Ind AS / IFRS	₹326.439bn	US$3.90bn	Five-step customer-contract revenue model (Dr. Reddy's Laboratories Limited, 2025).

Note. Common USD equivalents are rounded and are used only for descriptive comparison. GBP amounts use 0.78271 GBP per US$ and INR amounts use ₹83.7 per US$..

Table 3. Market context for the United States, the United Kingdom and India

Country/market	Indicator	Original value	Common USD basis	Source
United States / North America	Share of estimated world pharmaceutical sales, 2024	54.8%	Percentage indicator; not converted	EFPIA (2025)
United Kingdom	UK biopharmaceutical turnover, 2023/24	£98.9bn	US$126.36bn	DSIT (2025)
India	Total annual pharmaceutical turnover, FY2024-25	₹4,71,898 crore	US$56.38bn	Department of Pharmaceuticals (2026)
India	Pharmaceutical exports and imports, FY2024-25	Exports ₹2,45,962 crore; imports ₹63,573 crore	Exports US$29.39bn; imports US$7.60bn	Department of Pharmaceuticals (2026)

Note. The U.S. market indicator is retained as a percentage because the cited EFPIA statistic is a market-share measure. UK and Indian monetary figures are translated only to provide a unified statistical basis.

Table 4. Currency conversion basis used for statistical comparison

Conversion item	Value used	Use in the revised analysis
GBP to USD	0.78271 GBP per US$ for 2024	Used to convert GSK turnover and UK biopharmaceutical turnover (Federal Reserve Bank of St. Louis, 2026).
INR to USD	₹83.7 per US$ for 2024	Used to convert Sun Pharma, Cipla, Dr. Reddy's and Indian pharmaceutical-sector figures (World Bank, 2025).
Scope	Illustrative statistical conversion only	Original reporting currencies remain controlling for accounting interpretation.

Note. Exchange-rate translation is applied for cross-country statistical readability, not as a substitute for the companies' audited reporting currency amounts.

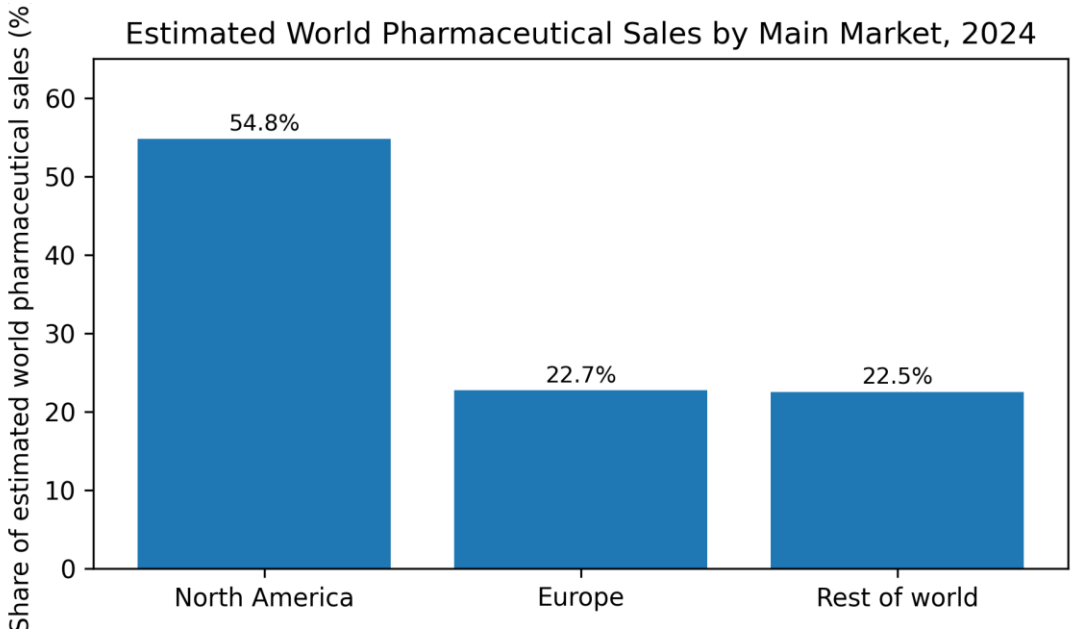

Figure 1. Estimated world pharmaceutical sales by main market, 2024

Note. North America and Europe values are reported by EFPIA (2025). Rest of world is calculated as 100% less the two reported percentages.

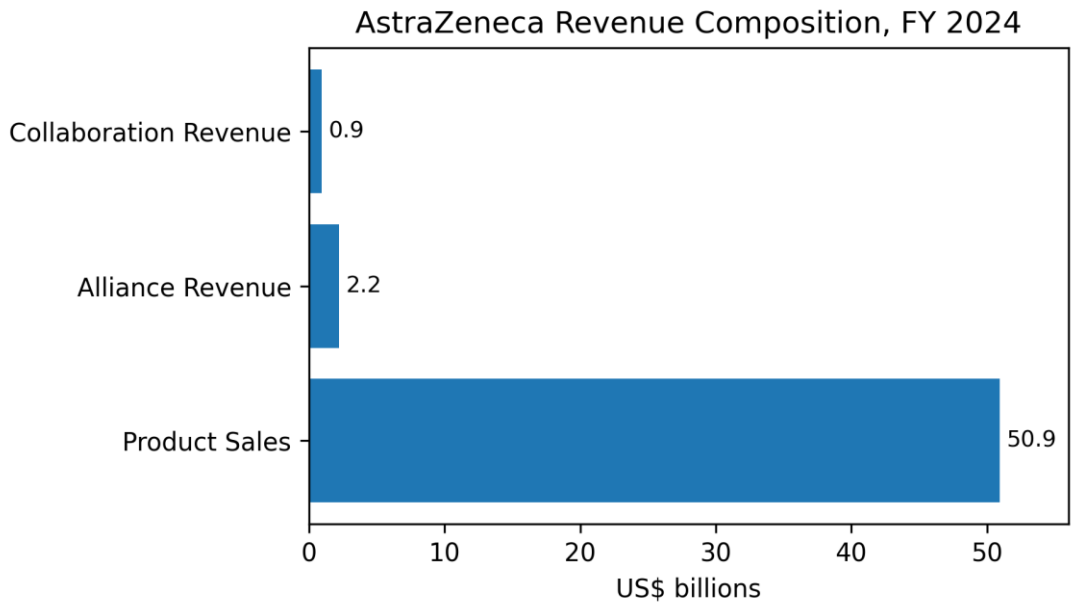

Figure 2. AstraZeneca revenue composition, FY 2024

Note. Values are taken from AstraZeneca PLC (2025b). Product Sales dominate total revenue, but Alliance Revenue and Collaboration Revenue show that pharmaceutical revenue is broader than product delivery.

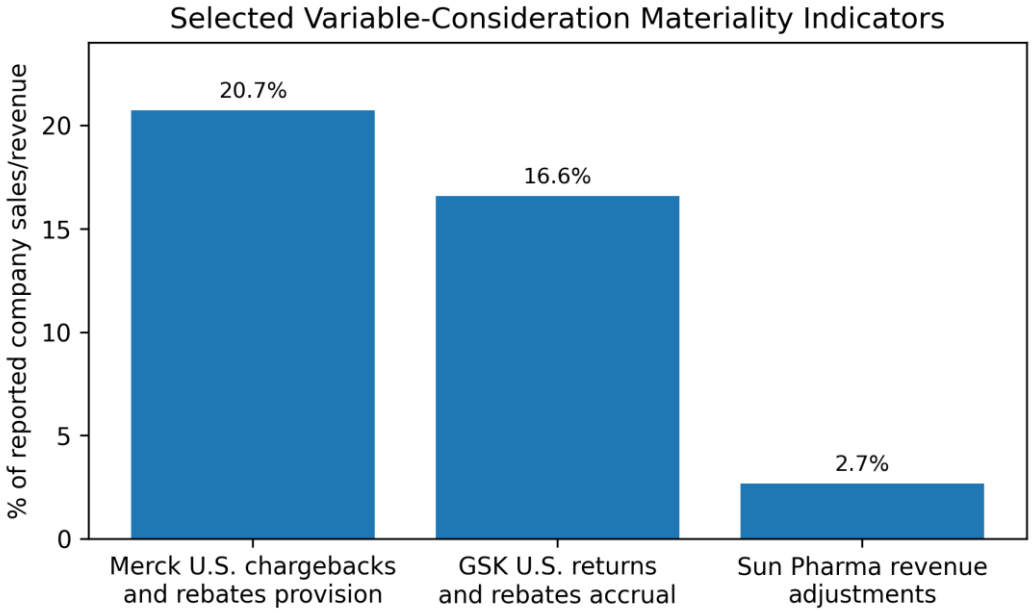

Figure 3. Selected variable-consideration materiality indicators

Note. Merck uses Merck & Co., Inc. (2025). GSK uses GSK plc (2025). Sun Pharma uses Sun Pharmaceutical Industries Limited (2025). The bars are materiality indicators, not fully comparable gross-to-net ratios.

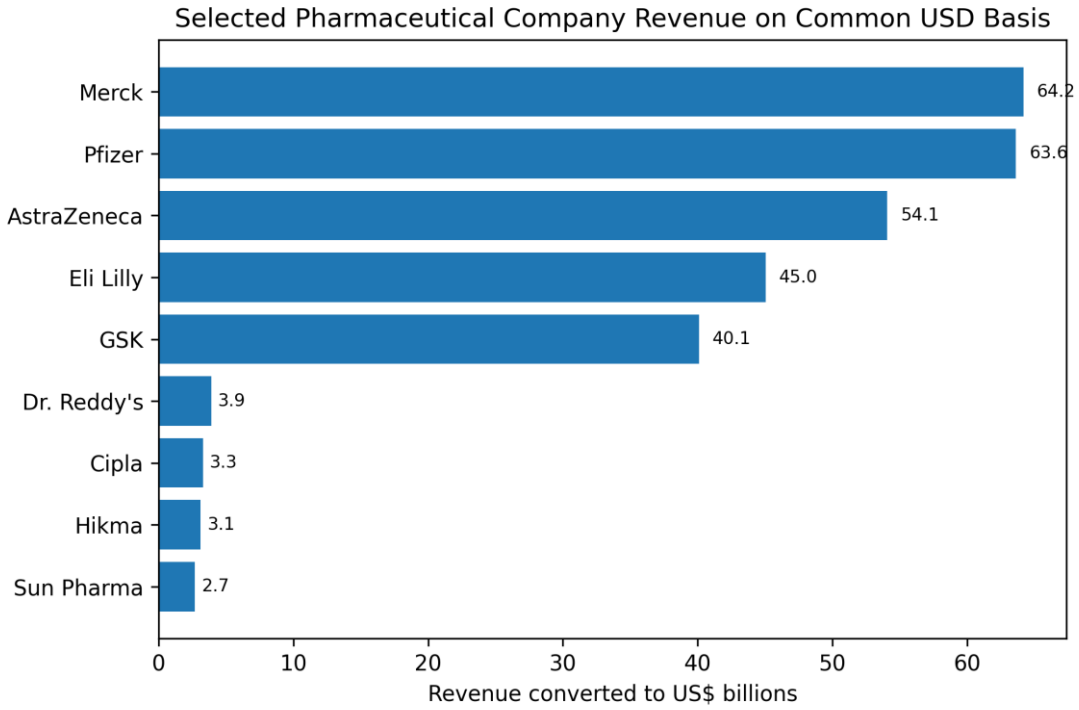

Figure 4. Expanded company sample revenue converted to a common U.S.-dollar basis

Note. The figure uses the nine-firm sample in Table 2. Converted values are rounded and are intended to support descriptive comparison of scale across reporting currencies.

4. Discussion

4.1 Convergence in Rules, Divergence in Estimation Risk

The results from the three jurisdictions lead to a simple conclusion: that three jurisdictions are united at the level of the accounting model, but differ in the economic pressure they put on that model. All of the above (ASC 606, IFRS 15 and Ind AS 115) require the preparer to identify obligations and determine the transaction price to recognise revenue upon the transfer of control. It is therefore helpful to have a common language to compare the five-step model. In reality, however, there are more variables to consider in determining comparability and that's where the quality of management's estimates of rebates, chargebacks, returns and other variable consideration comes into play, as pharmaceutical reporting shows.

The U.S. evidence is the most apparent. The Merck's chargebacks and rebates (US$13.3 billion) provision for the U.S. provides an example of a large portion of pharmaceutical sales being dependent on estimates at or close to the sale date (Merck & Co., Inc., 2025). Pfizer does the same, treating chargebacks, rebates, sales allowances and returns as revenue deductions, and considering them as variable consideration (Pfizer Inc., 2025). There are more than 1,800 pages of evidence submitted by Eli Lilly, and the US$11.539 billion sales rebate/discount accrual was one of the audit areas for Medicaid, Managed Care and Medicare arrangements (Eli Lilly and Company, 2025). This interpretation aligns with the market scale where the estimated world sales of pharmaceuticals in 2024 were 54.8% for North America (EFPIA, 2025).

The changes to IFRS 15 do not remove the U.S. style estimation problems for companies listed in the UK with material U.S. operations. Large estimates made by non-UK market structures (GSK plc, 2025) can be carried forward in the returns and rebates accrual account in the U.S. in the context of IFRS reporting. AstraZeneca includes a classification dimension as its Product Sales, Alliance Revenue and Collaboration Revenue have an impact on users' assessment of growth quality and sustainability (AstraZeneca PLC, 2025a). Hikma includes evidence from the generics sector because the company recently provided disclosures for this sector that include an allowance for refunds and indirect rebates, both of which are directly relevant to transaction-price estimation under IFRS 15 (Hikma Pharmaceuticals PLC, 2025).

The Indian cases are beneficial as they illustrate the way by which Ind AS 115 can give rise to clear bridges between contract price and recognised revenue. Sun Pharma's reconciliation of sales returns, rebates, discounts, price reductions and other adjustments provide enhanced transparency on the formation of transaction price (Sun Pharmaceutical Industries Limited, 2025). As mentioned in the audit discussion, revenue recognition includes a significant amount of judgement relating to the treatment of discounts, returns, rebates and other price adjustments, which impact recognised revenue (Cipla Limited, 2025). Dr. Reddy's strengthens the sample with a third Indian comparator – FY2024-25 revenue from operations (Dr. Reddy's Laboratories Limited, 2025), which includes explicit wording in the Ind AS 115.Dr. Reddy's strengthens the sample by adding a third Indian comparator – FY2024-25 revenue from operations (Dr. Reddy's Laboratories Limited, 2025), which incorporates the explicit wording in the Ind AS 115.

4.2 Implications for Comparability and Users

The academic literature indicates that IFRS 15-style standards can enhance the level of comparability, but the evidence is not necessarily straightforward. Lee and Choi (2024) reported enhanced financial statement comparability for public companies following the introduction of IFRS 15 in Korea, which they explained as a result of a decrease in the discretion companies have and as an effect of the harmonisation of standards. For the majority of Australian listed companies, Onie et al. (2023) found that transition effects had no meaningful impact, but that for some companies the impact on earnings and/or retained earning was significant. Based on Piosik's evidence, the impact of implementing revenue recognition on analysts' forecasts may be relevant to market users as it is a starting point for predicting operating income and earnings.

The real-life lesson is that pharmaceutical revenues simply reported cannot be interpreted as cash sales. The company may report revenue when the transaction occurs and then have to rely on estimates for the remainder of the revenue that may be settled as rebates, claims from payers, chargebacks or returns in the future. Auditors and audit committees are thus important in challenging assumptions, reviewing the accuracy of past financial statements and auditing disclosure. The Financial Reporting Council's (FRC) review of early IFRS 15 reporting confirmed that there was still a way to go until IFRS 15 led to better quality reporting by companies on revenue and leases, echoing the fact that adopting a standard is not an automatic quality improvement (FRC, 2020).

The paper suggests three priorities for disclosure for preparers. First, the transfer of control for product sales policies needs to be explained in terms of when the control is transferred and the methodology used to estimate return rights. Second, variable consideration disclosures should provide information about the major categories of deductions along with the extent of uncertainty in estimating the deductions. Third, the licensing revenues and the collaboration revenues should be presented separately as the performance criteria and recognition period may be different from normal sales. They are particularly significant in a company that is growing very fast, introducing new products, being hit by generic competitors or is involved in complex alliance relationships. The paper does put a clear caveat forward, however: common currency enhances the readability of the statistics, but it does not remove differences in the accounting systems, differences in mix of payers or differences in the fiscal year-end, differences in accounting terms, and differences in depth of disclosure.

4.3 Limitations and Future Research

There are four shortcomings in this paper. Firstly, it is a study of selected companies and not the total population of pharmaceutical reporters in each jurisdiction. Secondly, the statistical indicators are based on the public reports using various currencies, definitions and reporting periods. Thirdly, the paper does not have any contract level data, internal rebate models and auditor testing files. Fourth, the common-currency comparison is based on annual average exchange rates for descriptive purposes, and does not show exchange rates at the time of the transactions or the companies' hedging programs or audited translation methodology. The limitations imply these results should be considered as a comparative documentary analysis

and not a test of recognition accuracy. The study might be extended in the future by developing a larger sample of pharmaceutical firms and coding the revenue disclosures for multiple years. Another extension would be to look at gross-to-net disclosure quality before and after large price changes and/or patent cliffs. A third way would involve analyzing the text to determine if ASC 606, IFRS 15 and Ind AS 115 disclosures are converging in substance or only in language.

4.4 Policy Recommendations for Standard-Setters and Practitioners

The primary policy recommendation for standard-setters and securities regulators is to shift to a more sector-specific set of illustrative disclosure expectations for life sciences. The members of the FASB, the IASB, the UK FRC, and regulators should require pharmaceutical issuers to disclose material gross-to-net deductions as rebates, chargebacks, returns, discounts, and other concessions, when they are material. They should also include information on rolling forward or sensitivity information for large rebate and return liability items for which the impact of a change in assumptions is significant on a material basis for revenue. The most important recommendation for practitioners is to improve governance of transaction-price estimates by using a documented gross-to-net model, regularly back-testing actual claims against accruals, making sure that there is clear responsibility for the data in the rebate-contracts and having audit-ready evidence of the validity of the constraints on variable consideration. The preparer should also allocate product revenue from alliance, collaboration, milestone and licensing revenue to ensure that users can identify repeatable product revenue from contract specific revenue. Last but not least, the common currency conversion basis must be disclosed for all analysts and preparers to be able to make cross-jurisdictional comparisons of statistics using the revenues scale, in order to make the comparisons transparent and reproducible.

5. Conclusion

The comparative evidence reveals that the United States, the United Kingdom, and India are on the same path toward implementation of a five-step revenue-recognition model, albeit with some differences in the extent to which revenues are expected to be estimated, the degree to which they are disclosed, and whether they are disclosed in an industry context. The conclusions are strengthened further by the increase in the number of firms in the sample from six to nine, as gross-to-net estimation seems to be in use in large U.S. originator companies, as well as in IFRS reporters listed in the UK with exposure to U.S. markets and in generics companies listed in the UK and in Indian companies that are applying Ind AS 115. The common U.S.-dollar comparison also makes it easier to understand how big companies and markets are, through a common descriptive basis. The bottom line is that a financial report that is suitable for publication, and does not just meet the legal requirements of ASC 606 or IFRS 15/Ind AS 115, needs more. It demands an openness regarding the estimation of transaction prices and disclosure of the variable consideration elements of such contracts, as well as the separation of product revenue from collaboration revenue; it also demands the provision of information on the contract balance, and an explicit explanation of any basis for comparing the performance of contracts with currency conversion.

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Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Macrothink Institute.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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Appendix A. Data Notes for Figures

Figure 1 uses EFPIA reported values for North America and Europe. Rest of world is calculated as 100 minus 54.8 minus 22.7.

Figure 3 calculations: Merck = 13.3 / 64.168 × 100 = 20.7%; GSK = 5.2 / 31.376 × 100 = 16.6%; Sun Pharma = 6.0536 / 226.2588 × 100 = 2.7%. These calculations are materiality indicators only. Figure 4 uses the Table 2 common-currency figures. GBP values are divided by 0.78271 and INR values are divided by 83.7, after converting crore figures to rupees where necessary.