



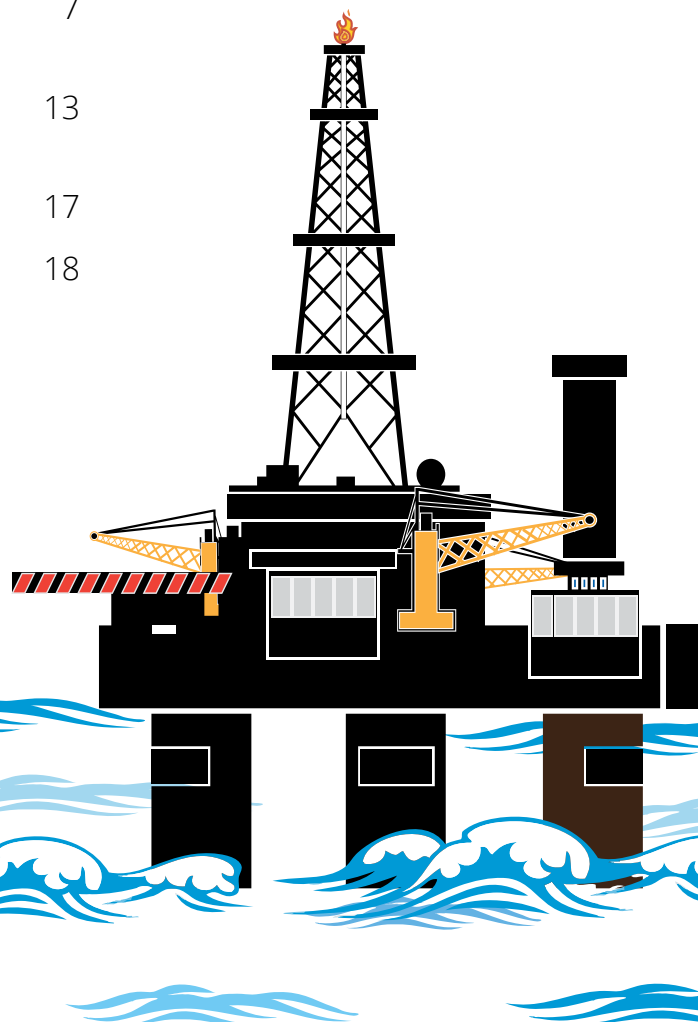
Optimizing the hedging strategy for oil refining companies

Hedge accounting under IND-AS 109 bridges the risk management strategy and the reported earnings

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1. Foreword

Oil refining companies have traditionally been at the forefront of financial risk management. With a wide range of financial risks impacting them including oil price risk, currency risk and interest rate risk, oil refining companies have put in place a fairly elaborate hedging programs. While most hedging programs are mature, it has always been difficult to assess whether the hedging programs have reduced volatility and assured cash flow stability to the enterprise. Hedging programs of oil refining companies have typically evolved with the dual objective of protection of cash flow margins and protection of reported earnings in financial statements.

Over the past few years, as the evolution in accounting standards didn't always keep pace with innovation in hedging strategies and instruments, the dual objectives of cash flow protection and reported earnings protection tended to be at cross purpose. This led to hedging strategies addressing either of the two objectives or at times wavering between the two. The net result was that the stakeholder confidence in hedging programs was challenged at each reporting date. It also led a number of organizations to scale back their hedging programs thereby exposing gross refining margins to the vagaries of financial markets.

Some of the aspects of the hedging strategy that will require a re-think are as follows:

The mix of Indian Rupee ('INR') and United States Dollar ('USD') denominated funding to balance the dollarized nature of net earnings at the refining margin level (i.e., dollarized gross refining margins).

Need to potentially dollarize more borrowings in light of effective dollarized earnings.

Funding of dollarized inventory through USD denominated buyers' credit without the need to hedge the buyers' credit.

Hedging of oil price risk in crude and product inventory without inducing P/L volatility due to mark to market of hedges.

Crack hedging strategy and reflection of the impact of the hedging strategy in gross margins.

Use of short-term foreign exchange forwards to manage timing mismatch between dollarized earnings and USD denominated payments and their reflection in the P/L.



The advent of IND-AS and the possibility of applying hedging accounting under IND-AS 109 in a comprehensive manner provides oil refining companies the opportunity to align their risk management strategy with reported earnings. It also provides the opportunities for reducing hedging cost which had to be incurred to manage reported earnings. This will require oil refining companies to re-align their hedging strategies with the underlying fundamental business value chain.

Hedge accounting under IND-AS 109 brings with it certain benefits that remove the conflict between the dual objectives of protection of cash flow and reported earnings. Some of these critical changes are as follows:

- The ability to treat USD denominated borrowings as a synthetic hedge against future

earnings and aligning the recognition of mark to market gain/loss on USD denominated borrowings with recognition of dollarized earnings.

- Potential for fair valuation of crude and product inventory to offset the mark to market gain/loss from inventory hedges thereby reducing P/L volatility.
- The ability to allocate components of underlying risk (i.e., the benchmark portion) to hedges thereby improving hedge effectiveness and reducing P/L volatility.
- Allocation of USD denominated buyers' credit as a hedge against the USD-INR valuation risk in inventory, thereby reflecting appropriately the underlying strategy of funding dollarized inventory with USD denominated working capital borrowings.
- Potential for including the impact of hedging gain/loss in underlying margins, thereby enabling accurate computation of offset and effectiveness of the hedging strategy.

This document discusses the potential for optimization in existing hedging strategies of oil refining companies. It also covers how hedge accounting under IND-AS 109 removes inherent conflicts in choosing one hedging strategy over another. Oil refining and marketing companies should take the opportunity of implementing hedge accounting under IND-AS 109 to refine the hedging strategy, depict reported earnings in line with the risk management objectives, and effectively demonstrate P/L offset to stakeholders.

Muzammil Patel

Partner

Deloitte Touche Tohmatsu India LLP

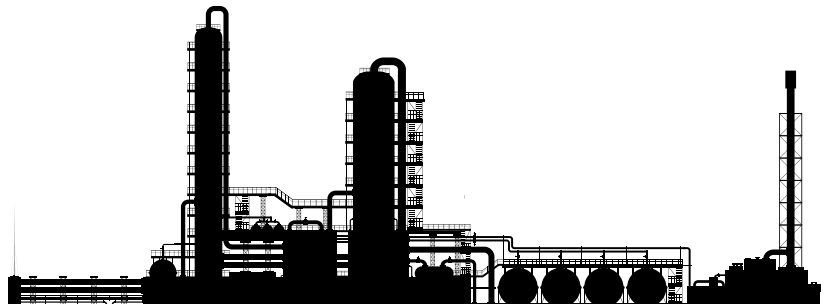
2. Managing the disconnect in the currency risk management strategy and financial reporting



2.1. Understanding the incidence of currency risk in oil refining operations

Currency risk in oil refining operations results from the inherent dollarized nature of the business. Most oil refiners in India have their functional currency as Indian Rupees ('INR'). Most crude oil is imported and even domestically purchased crude oil is priced on United States Dollar ('USD') denominated international benchmarks. Crude oil purchases and the holding of crude and product inventory is largely funded through USD denominated credit from suppliers and financial institutions. Sales of refined products, even where sold domestically, are priced based on USD

denominated benchmarks. Working capital credit for holding inventory is largely re-paid out of dollar denominated earnings. Earnings retained in excess



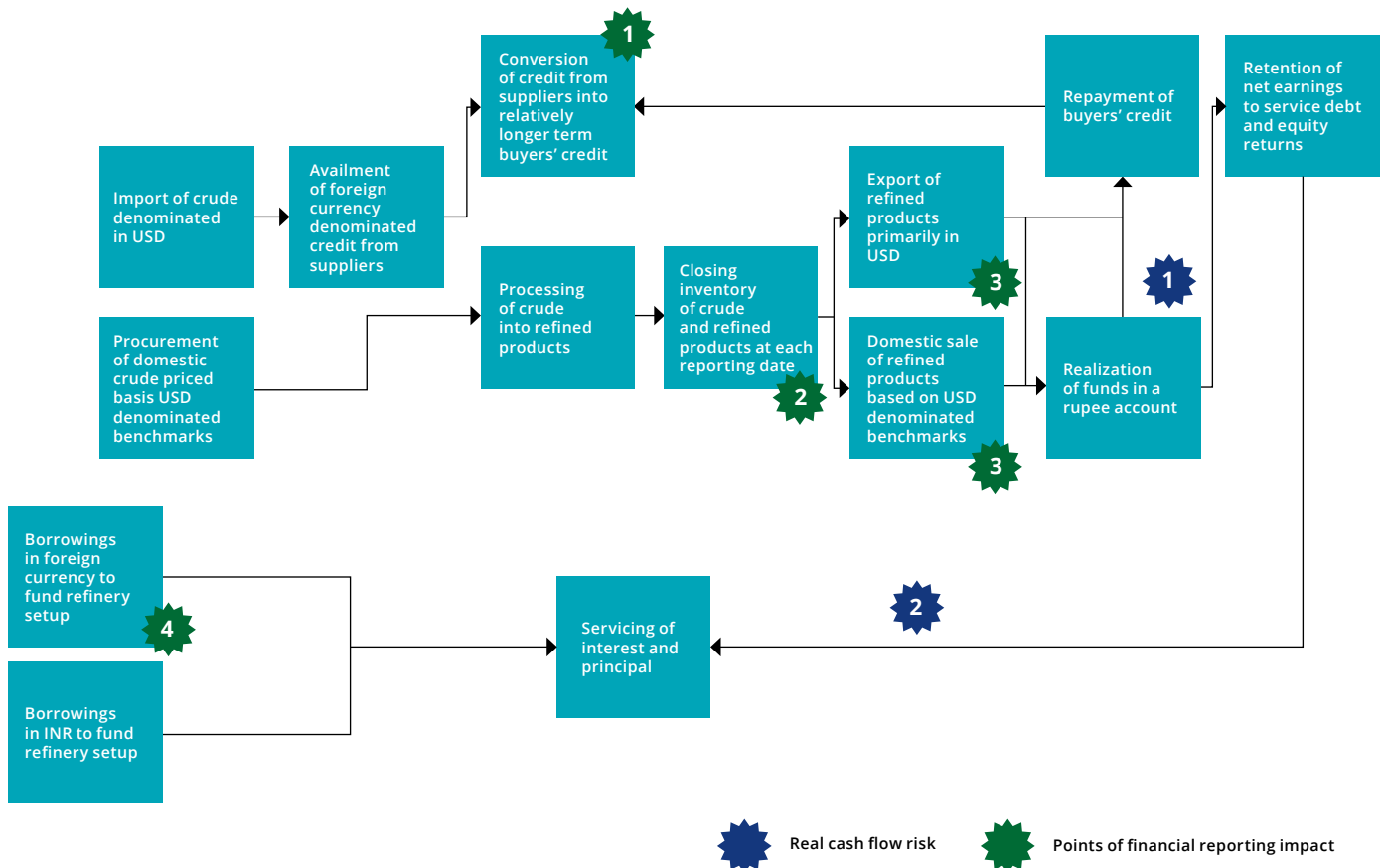
Optimizing the hedging strategy for oil refining companies

of repayment of working capital credit is used for the servicing of interest and principal payments on long-term debt taken to fund setting up of refining operations.

Since the functional currency of oil refiners is INR and surpluses are held in INR accounts, the intermittent payment and receipt of USD or USD

denominated (dollarized) amounts leads to currency risk. While in reality the currency risk for oil refiners arises only on account of timing mismatch and consequently rate mismatch in conversion of these USD denominated receivables and payables, the accounting story can be very different. This reflects in the large swings in reported forex gains/losses from one reporting period to another.

The currency risks and associated cash flow and financial reporting impacts are depicted below:



2.2. How financial reporting impact and risk management strategies are currently dealt with

SN	Financial reporting impact	Real cash flow impact	Strategies used to manage reporting impact	Implications of the strategy
1	Re-statement of buyers' credit and foreign currency denominated creditors at each reporting date.	There is no real cash flow impact as long as USD denominated liabilities do not exceed the combined value of USD denominated inventory holding and USD receivables.	<ul style="list-style-type: none"> To manage financial reporting impact, USD is bought forward from the date buyers' credit is taken or to the extent USD liabilities exceed a certain pre-defined threshold. Financial reporting impact may also be taken to reported earnings thereby inducing volatility in the statement of earnings. 	<ul style="list-style-type: none"> Incurrence of hedging cost on buying USD forward has a direct impact on earnings. Post hedging, in case USD depreciates, the actual INR value of oil inventory and subsequent value of sales realization falls. This is not offset by reduction in INR value of USD liabilities. Not hedging to avoid hedging cost can lead to swings in reported forex gain/loss values.
2	Re-valuation of USD denominated crude and refined product inventory at each reporting date.	There is no real cash flow impact as long as the combined value of USD denominated inventory holding and USD receivables do not exceed the value of USD denominated liabilities.	<ul style="list-style-type: none"> Since inventory is valued at cost or net realizable value ('NRV') whichever is lower and NRV is mainly impacted by oil price movements, the impact of currency risk is relatively small and generally ignored. 	<ul style="list-style-type: none"> Since sales realization, while USD denominated, continues to have an INR component, ignoring the ongoing mismatch between USD component of future sales realization and USD liabilities can impact future margins.



Optimizing the hedging strategy for oil refining companies

SN	Financial reporting impact	Real cash flow impact	Strategies used to manage reporting impact	Implications of the strategy
3	Re-statement of foreign currency denominated receivables at each reporting date.	There is no real cash flow impact as long as USD denominated liabilities do not exceed the combined value of USD denominated inventory holding and USD receivables.	<ul style="list-style-type: none"> In most cases, foreign currency liabilities far exceed foreign currency receivables and these are not hedged. 	<ul style="list-style-type: none"> No significant impact to reported earnings except in case of minor mismatches between realization rate into rupee accounts and conversion rate to repay foreign currency denominated liabilities.
4	Re-statement of borrowings denominated in foreign currency	In reality, a significant portion of an oil refining company's earnings and therefore gross margins are denominated in USD. While foreign currency denominated borrowings are re-stated and impact current year financial statements, the earnings that will be used to re-pay them in future years will largely be denominated in USD. While mismatch in timing of conversion of USD denominated earnings in rupees accounts and actual servicing of foreign currency debt may continue, foreign currency borrowings by themselves do not post currency risk to an oil refiner.	<ul style="list-style-type: none"> Most refiners have kept USD denominated borrowing unhedged and capitalized the forex gain/losses under para 46 and 46A of AS-11. Some refiners have swapped their INR borrowings into USD to off-set future earnings. Some refiners have hedged their USD borrowings by swapping them into INR. 	<ul style="list-style-type: none"> Capitalizing forex gain/losses may defer accounting impact but still lends volatility to earnings as depreciation hits earnings unevenly year after year. Unhedged USD borrowings and INR-USD swaps lead to re-statement and mark to market impact to earnings respectively. Swapping from USD to INR increases hedging cost and exposes future earnings to potential appreciation in INR vis-à-vis USD.

2.3. Bridging the disconnect between cash flow and financial reporting impact by adopting hedge accounting

Bridging the disconnect in regular business operations

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Adopting the optimal hedging strategy

- Real cash flow risk in regular operations arises when the buyers' credit is repaid out of non-USD earnings.
- It may also arise when the timing of realization of USD earnings differs from the timing of payment of buyers' credit obligations. Since oil refiners hold their sales realization in INR accounts, the difference in conversion rate to and from the INR accounts can impact cash flows.
- Buyers' credit is mainly used to fund inventory and both are generally held at approximately the same level through the business cycle.
- Although buyers' credit is repaid much later than sales realization/pricing of domestic sales, the rolling nature of business and the fact that buyers' credit funds inventory holding almost perpetually means that hedging each buyers' credit transaction adds to the hedging cost without necessarily reducing risk.
- Matching sales realization with buyers' credit repayments through short-term hedges is the most effective way to manage cash flow risk and reduce hedging cost in regular operations.
- It is also important to ensure that the outstanding value of the dollarized component of inventory holdings and USD receivables combined largely, match with outstanding value of short-term foreign currency liabilities.

Bridging the disconnect through hedge accounting

- Designate USD denominated short-term liabilities as a hedge against the USD-INR valuation risk in inventory thereby reflecting appropriately the underlying strategy of funding dollarized inventory with USD denominated working capital borrowings.
- This allows simultaneous and off-setting re-statement of foreign currency liabilities and USD-INR component of inventory valuation thereby reducing volatility in earnings.
- This allows short-term foreign currency liabilities to remain unhedged thereby reducing hedging costs.

- Designate USD denominated short-term liabilities as a hedge against the dollarized component of forecasted sales.
- This allows for gain/loss on account of fair valuation of buyers' credit to be carried in reserves until such time as sales are realized. Once inventory is sold and the USD-INR rate is applied to sales realization, the gain/loss on buyers' credit fair valuation is recycled and offsets the increased/reduced realization on sales.
- This reduces earnings volatility and hedging costs.

Bridging the disconnect in structural currency risk

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Adopting the optimal hedging strategy

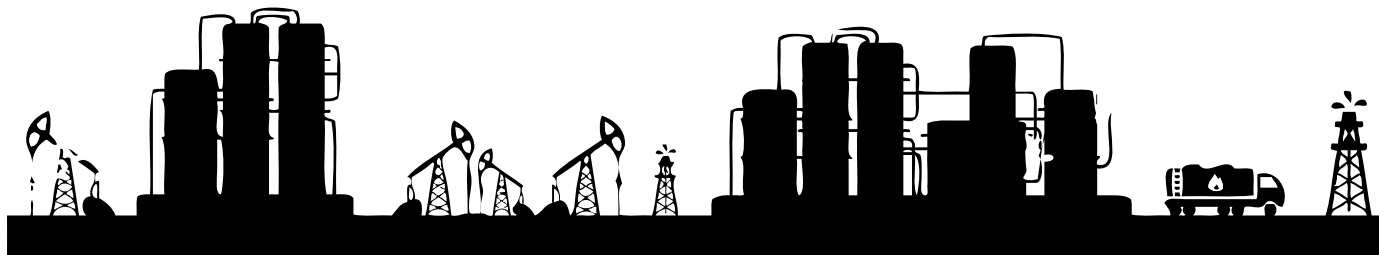
- Net refining margins before servicing interest on long-term debt may be denominated partially in USD and INR. This depends on the product slate and the extent of dollarization in the pricing of each product.
- Structural currency risk may arise when there is a mismatch between the dollarized component of net refining margins and USD component of debt servicing.
- Risk may also arise due to timing differences in debt servicing and realization of dollarized earnings.
- Structural currency risk can be managed by matching both the quantum and timing of servicing USD borrowings with the quantum and timing of dollarized earnings.
- Floating rate liabilities may also be swapped to fixed, to ascertain the USD value of interest servicing.

Bridging the disconnect through hedge accounting

- Designate USD denominated borrowings as part of a hedging relationship with future gross refining margins.
- This allows for gain/loss on account of fair valuation of USD denominated borrowings to be carried in reserves until such time as refining margins are realized. Once margins are realized and as debt is serviced, the gain/loss on fair valuation of borrowings is recycled and offsets the increased/reduced realization.
- This enables lower cost of USD borrowing and reduces debt servicing volatility on account of currency risk.



Extant regulatory guidelines may require mandatory hedging of external commercial borrowings. Oil refiners need to balance between the cash flow, accounting, and regulatory objectives.



3. Managing the disconnect in the oil price risk management strategy and financial reporting

3.1. Understanding the incidence of oil price risk in oil refining operations

Oil price risk in oil refining operations arises mainly due to two reasons : (i) fall in crack margins, i.e., the difference between the price of refined products while pricing out and the price of crude while pricing in (ii) depreciation in the value of priced-in crude inventory and not yet priced-out refined product inventory carried by the oil refiner. There is also a basis risk that arises because different grades of crude and refined products are priced based on different international benchmarks (markers). Since markers for the same product but different grades don't always move in the same proportion, the refiners are also exposed to basis risk.

Oil refiners manage the risk of fall in crack margins by simultaneously selling refined products forward and buying crude oil forward, i.e., undertaking a crack spread. The period of selling the refined product forward coincides with the future pricing out of the refined product and the period of buying the crude oil forward coincides with the future pricing in of the crude oil. Oil refiners manage the risk on fall in inventory valuation by selling inventory forward. Oil refiners may also undertake hedges to mitigate basis risk.

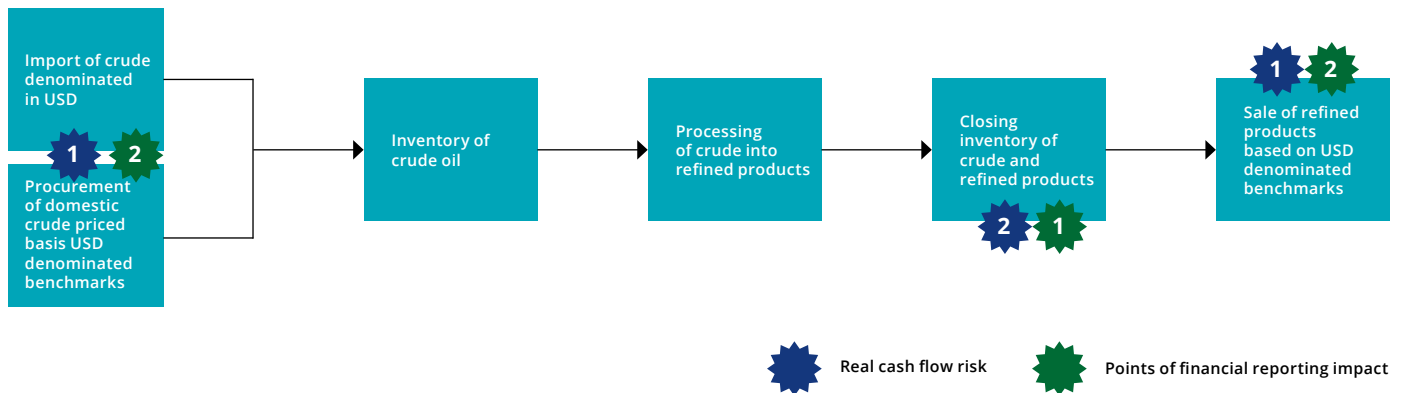


Hedges taken to protect margins should ideally be offset against future earnings. Similarly, hedges against inventory should offset the increase or decrease in value of inventory. This has not always been true and can lead to a disconnect between actual cash flows and reported earnings. Hedges taken to manage oil price risk have caused significant swings in reported derivative gains/ losses and this has led many refiners to scale back their oil price risk management programs.





The oil price risks and associated cash flow and financial reporting impacts are depicted below:



3.2. How financial reporting impact and risk management strategies are currently dealt with

SN	Financial reporting impact	Real cash flow impact	Strategies used to manage reporting impact	Implications of the strategy
1	Impact on earnings in case of fall, in the value of inventory.	Inventory is valued at cost or net realizable value whichever is lower. Accordingly, where net realizable value falls below cost, there is a real impact to cash flows i.e., sales will realize a lower value.	<ul style="list-style-type: none"> • Some refiners sell inventory forward to protect against potential fall in the prices. • A number of refiners continue to keep inventory unhedged until inventory holding reaches a certain limit. 	<ul style="list-style-type: none"> • Where hedges are taken against inventory and inventory valuation increases, inventory continues to be carried at cost unless it is part of a hedging relationship under hedge accounting. Loss on hedges on the other hand are required to be booked in the current period earnings. • Where refiners keep inventory unhedged, fall in the inventory valuation has a one-sided impact to current period earnings.
2	Impact on earnings due to lower core refining margins.	Lower core refining margins have a direct impact on real cash flows of a refiner.	<ul style="list-style-type: none"> • Some refiners hedge individual product cracks. • Certain refiners do not have a crack hedging program or have scaled back their program due to financial reporting implications. 	<ul style="list-style-type: none"> • Where hedge accounting is not applied, mark to market gains/losses from crack hedges, impact current period earnings instead of the period to which they pertain. • No hedging cracks at all introduces volatility to real cash flows and reported earnings of a refiner.

3.3. Bridging the disconnect between cash flow and financial reporting impact by adopting hedge accounting

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Adopting the optimal hedging strategy

- Oil refiners are exposed to risk both on account of fall in the refining margins and fall in the value of inventory.
- In case of fall in the value of inventory, oil refiners can sell crude or products forward, to protect against fall in the value.
- Oil refiners can also sell cracks on specific products to lock-in refining margins at acceptable levels and reduce volatility in the overall refining margins.
- In case where there is a basis risk caused due to difference in benchmark used in hedge contracts and actual benchmark on which physical commodity is priced, oil refiners may also enter into basis swaps to mitigate basis risk.

Bridging the disconnect through hedge accounting

- For crack hedges, designate the crude leg of cracks against future crude purchases and product leg against future product sales.
- This allows for the gain/-loss on mark to market of crack hedges to be carried in reserves until crude and product are respectively accounted for, in the financial statements.
- Since IND-AS 109 allows for designating only a portion of a hedging instrument. This allows for recycling the crude and product leg separately into the crude value and product sale price respectively.
- This enables the locked in crack to be realized in the reporting period for which refining margins were intended to be locked in.

- For inventory hedges, designate inventory hedges against inventory.
- Once designated, it allows for simultaneous fair valuation of the portion of inventory against which it is designated, along with the hedges.
- Gains/losses from inventory fair valuation, offsets the gains/losses from hedges in the same reporting period thereby mitigating volatility in reported earnings.

4. Implementing hedge accounting under IND-AS 109

While ongoing maintenance of the hedge accounting framework is far less complex under IND-AS 109 compared to AS-30, clarity in hedging strategies and risk management objectives at the point of adoption is critical. It is also important to ensure that hedge documentation appropriately explains the economic relationship between the hedge item and hedging instruments, as well as the offset between the two. Given the move towards a more principle based approach, ensuring that hedge documentation truly reflects the risk management objective, is important both from an accounting and internal control stand-point.

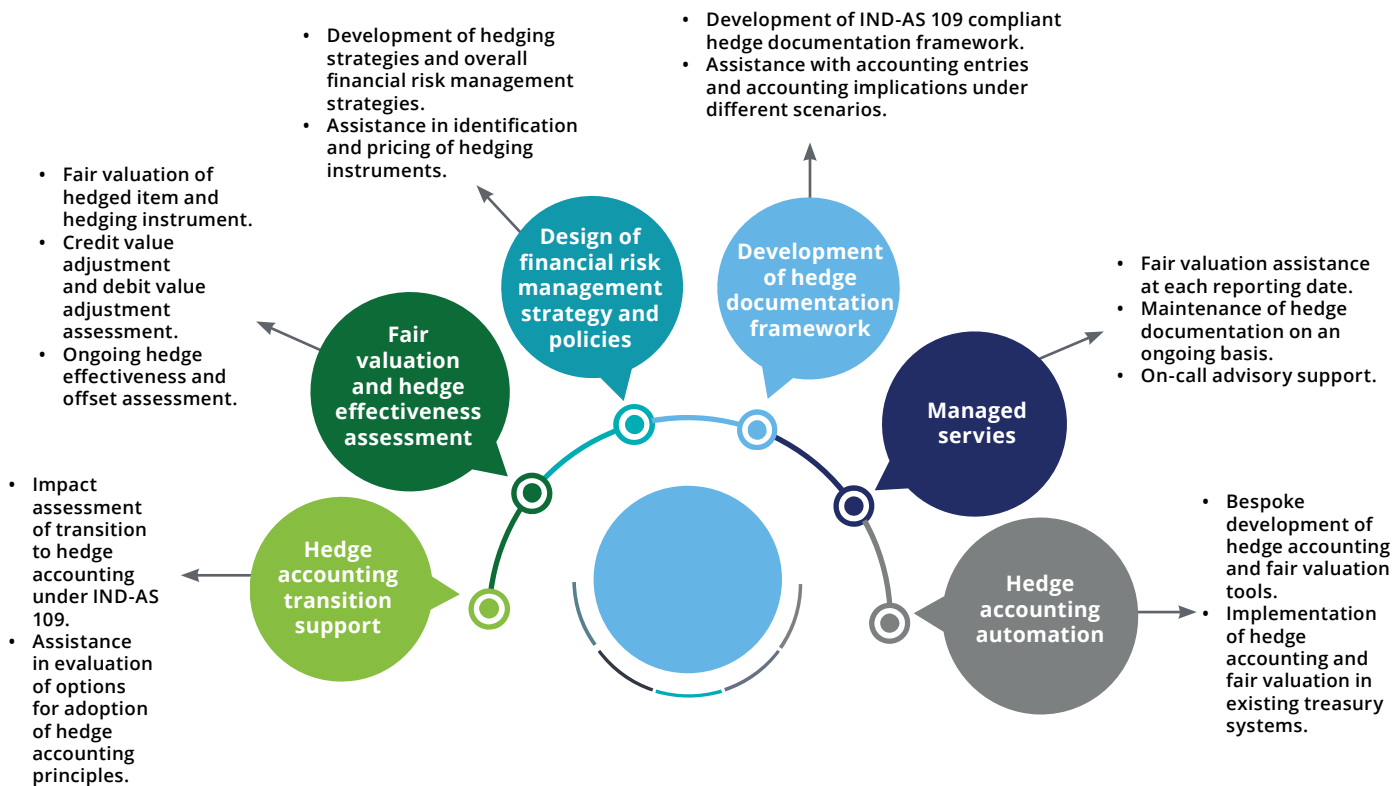
Organizations may adopt the following framework for adopting IND-AS 109:

	Appropriate application of transition provisions and options	Identification of financial risks and alternative hedging strategies	Evaluate economic relationship between each hedging instrument and underlying exposures
Outputs to seek	<ul style="list-style-type: none"> Decision on whether to continue hedge accounting under AS-30. Fair valuation of all derivatives including CVA/DVA adjustments. Determination of classification of financial assets and liabilities identified as hedged items. 	<ul style="list-style-type: none"> Study of underlying exposure profile and potential sources of financial risk. Financial risk management strategy. Identification of permissible hedging instruments. 	<ul style="list-style-type: none"> Determination of genuine off-set between hedges and underlying exposures. Documentation of hedging relationship.
	Enhance financial risk management policies to explain the economic relationship	Development hedge documentation to explain the risk management objective and accounting treatment	Design hedge designation and effectiveness assessment framework
Outputs to seek	<ul style="list-style-type: none"> Financial risk management policies. Hedge accounting policies and procedures. 	<ul style="list-style-type: none"> IND-AS 109 compliant hedge documentation. Accounting entries under various scenarios. 	<ul style="list-style-type: none"> Ongoing hedge-exposure designation. Hedge effectiveness assessment framework. Ongoing CVA/DVA adjusted fair valuation for hedged item and hedging instrument.

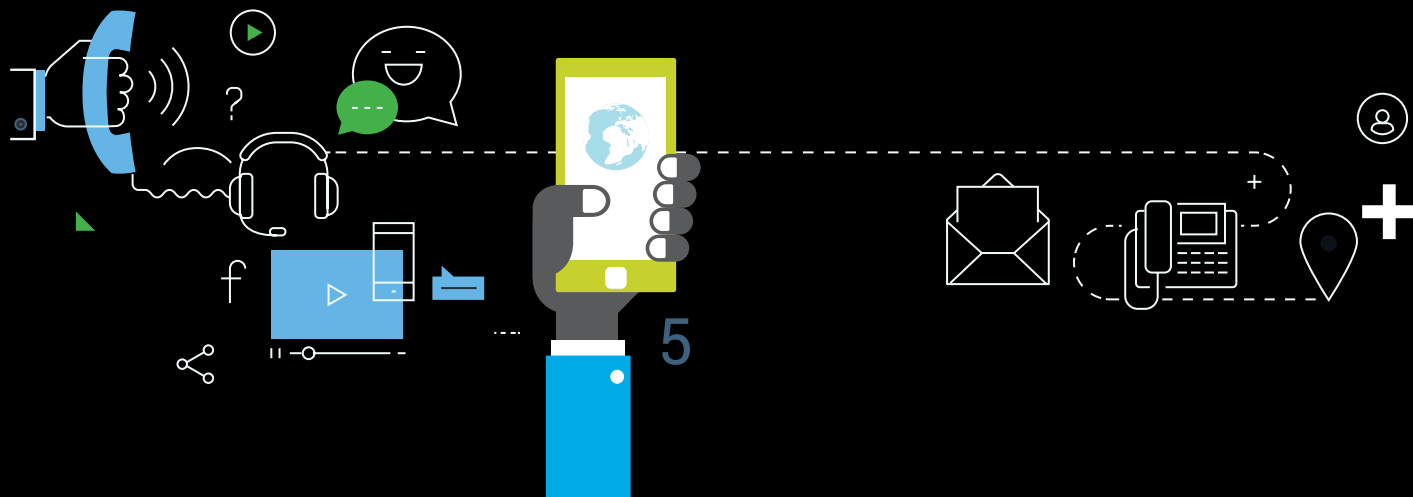
5. Deloitte service offerings

Our Global Treasury Advisory Services specializes in assisting organizations with their hedge accounting needs. We offer end to end services, covering transition to hedge accounting, design of hedging

strategies, development of financial risk management policies, fair valuation, accounting support and automation of the hedge accounting framework. Our service offerings are highlighted below:



Contact



Muzammil Patel
Partner
muzammilpatel@deloitte.com



Abhinava Bajpai
Partner
abbajpai@deloitte.com



Prateek Chaturvedi
Senior Manager
prateekc@deloitte.com



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