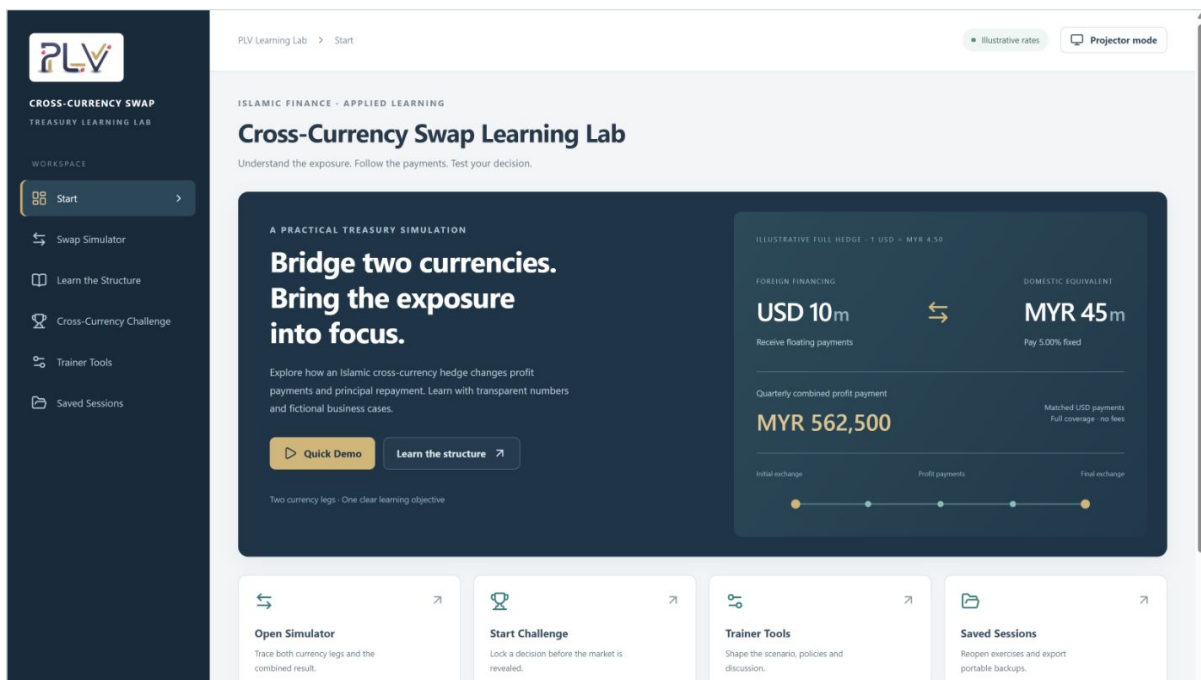


PLV LEARNING LAB

Cross-Currency Swap Manual Version 2.0

PLV Islamic Cross-Currency Swap Simulator

Follow the transaction. Trace both currencies.
Make a decision you can explain.



A practical guide for beginners and trainers

Start with USD 10 million of financing and its MYR 45 million full hedge. Trace profit and principal payments, compare coverage, explain the Islamic transaction concept, and complete a scored classroom challenge. Worked exercises and answers are included.

PLV Advance Business Consulting Sdn Bhd

Trainer: Primus Lim | Redesigned 3 October 2026

Manual edition 2.0. Educational examples use invented rates. The application models cash flows; it does not execute transactions or issue Shariah certification.

01 / CONTENTS & LEARNING OUTCOMES

Find your route

Start with pages 3-10 for the core mechanics. Trainers can then move to pages 14-19. Click a page number below, or use the PDF bookmarks to move between topics.

Topic	Page	Topic	Page
Launch / workspace	3-4	Islamic structure	14
Currency quote / inputs	5-6	Eight business cases	15
Three payment stages	7	Team challenge	16
Quarter / full-year example	8-9	Scoring and debrief	17
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Choose a practical learning route

- 1. First-time user.** Launch the app, open Quick Demo, and reproduce one quarter before changing assumptions. Keep the quote units visible.
- 2. Treasury learner.** Compare full, partial and profit-only hedges. Explain which cash flows remain exposed and how fees or a mismatch change the result.
- 3. Classroom trainer.** Prepare a scenario, disclose the brief and policy, then lock team decisions before revealing the market path. Use the published scoring rubric.

By the end, you should be able to

Identify the exposure; state each payment in its own currency; reconcile profit and principal; explain the effect of coverage, mismatches and fees; and defend a decision using information available before the market outcome.

For classroom practice, print page 21 for participants and retain page 22 as the answer guide. Keep the simulator open alongside the manual to test each result.

02 / GETTING STARTED

Launch the simulator

1. Open the project folder. In File Explorer, open the existing **PLV Islamic Cross-Currency Swap** folder. The full location on this computer is shown below.

Project location

C:\Users\Asus\OneDrive\Desktop\
PLV Software Projects\28-PLV Islamic Derivatives\
PLV Islamic Cross-Currency Swap

2. Double-click the START file. START-PLV-ISLAMIC-CROSS-CURRENCY-SWAP.bat

Run it from File Explorer. Opening a BAT file inside an editor may display its code instead of executing it.

3. Use the local browser address. <http://127.0.0.1:4193>

The launcher opens your default browser. If needed, enter the address in normal Microsoft Edge or Google Chrome.

4. Keep the server running. Leave the server window open during the lesson. Close it or press **Ctrl+C** in that window when you want to stop the simulator.

On this computer

The installed production build is ready. Normal startup needs no internet, account or subscription. The service is accessible only on this computer. Opening external reference links still requires internet.

First setup on another Windows computer

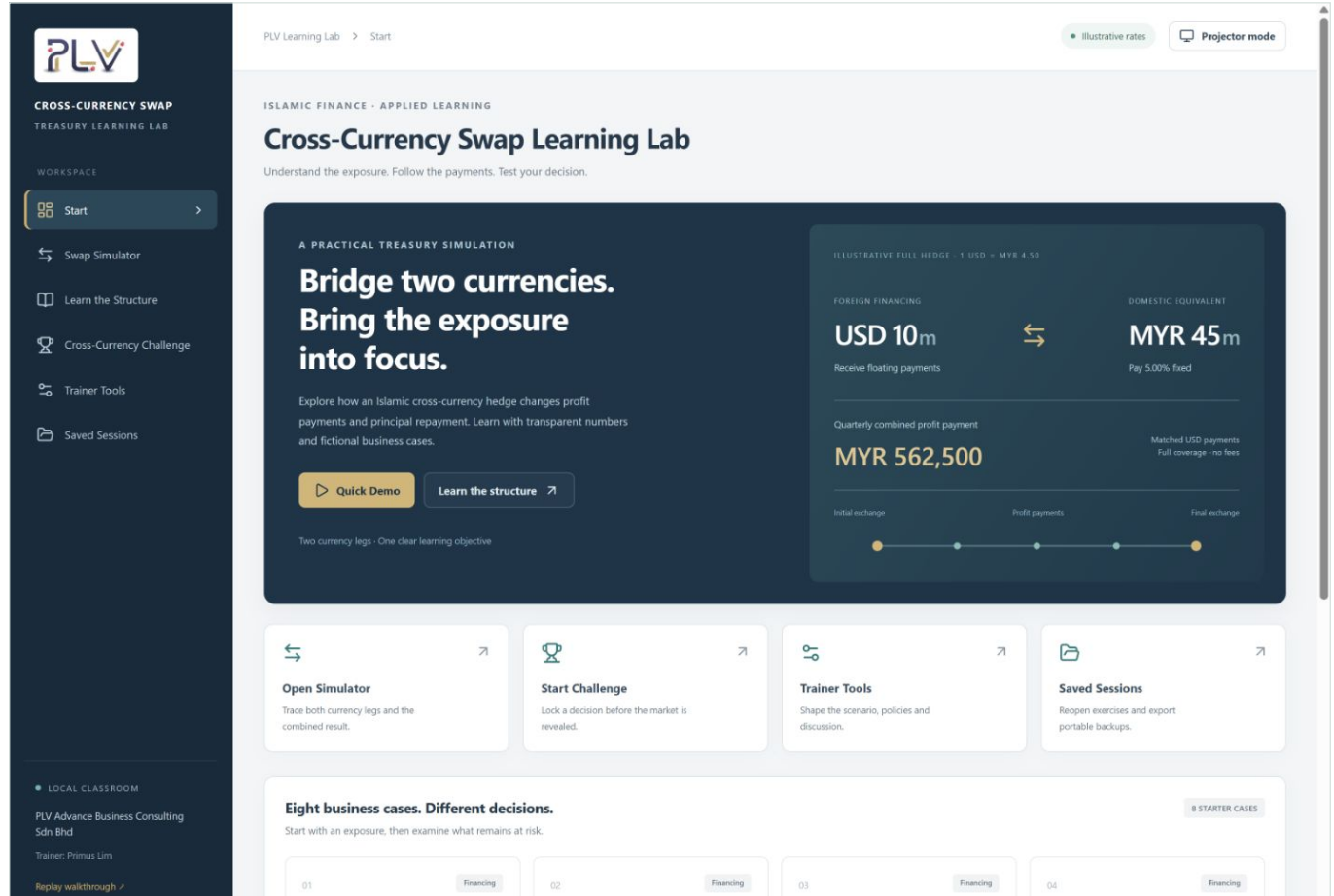
Install Node.js **22.12 or later** with npm and PATH enabled. Copy the complete project, including source, assets, scripts and the package lockfile. Double-click **SETUP-PLV-ISLAMIC-CROSS-CURRENCY-SWAP.bat**. Initial dependency installation requires internet; setup builds and checks the application. Then use the START file.

Keep the address consistent

Use 127.0.0.1:4193 each time. Browser saves made at localhost:4193, in another browser, or in another profile are separate. Export a JSON backup before switching.

03 / WORKSPACE TOUR

Find your way around



The screenshot displays the PLV Learning Lab interface. On the left is a dark sidebar with the PLV logo and navigation options: 'CROSS-CURRENCY SWAP TREASURY LEARNING LAB', 'WORKSPACE' (with 'Start' selected), 'Swap Simulator', 'Learn the Structure', 'Cross-Currency Challenge', 'Trainer Tools', and 'Saved Sessions'. Below this is the 'LOCAL CLASSROOM' section with details for 'PLV Advance Business Consulting Sdn Bhd' and 'Trainer: Primus Lim'. The main area is titled 'ISLAMIC FINANCE · APPLIED LEARNING' and 'Cross-Currency Swap Learning Lab'. It includes a sub-header 'Understand the exposure. Follow the payments. Test your decision.' and a large central panel titled 'A PRACTICAL TREASURY SIMULATION' with the headline 'Bridge two currencies. Bring the exposure into focus.' This panel shows a comparison between 'FOREIGN FINANCING' (USD 10m, floating payments) and 'DOMESTIC EQUIVALENT' (MYR 45m, 5.00% fixed). It also displays a 'Quarterly combined profit payment' of MYR 562,500 and a timeline from 'Initial exchange' to 'Final exchange'. Below the main panel are four action cards: 'Open Simulator', 'Start Challenge', 'Trainer Tools', and 'Saved Sessions'. At the bottom, there's a section for 'Eight business cases. Different decisions.' with a 'STARTER CASES' button and a row of four case cards labeled 01, 02, 03, and 04, each with a 'Financing' button.

The Start page provides the Quick Demo and links to the main learning tools.

Section	Use it to...
Start	Open Quick Demo, choose a route, or replay the walkthrough.
Swap Simulator	Change assumptions; inspect payments, charts and schedules.
Learn the Structure	Explore the conceptual timeline, glossary and knowledge checks.
Cross-Currency Challenge	Lock team decisions, reveal events and assess reasoning.
Trainer Tools	Create custom scenarios; use the timer and projector mode.
Saved Sessions	Reopen work, resume challenges, and back up or import data.

04 / CORE CONCEPTS

Read the currency quote

The quote always has units

X = domestic currency per ONE unit of foreign currency

In the default case: 1 USD = MYR 4.50. To report USD in MYR, multiply the USD amount by the quote.

Symbol / term	Meaning in the default example
F / foreign	USD: the currency of the underlying financing or investment.
D / domestic	MYR: the domestic and reporting currency.
N_F / exposure	USD 10,000,000 of underlying principal.
X_0 / initial FX	4.50 MYR per USD, used to establish hedge notionals.
h / coverage	The fraction hedged: 50% = 0.50; 100% = 1.00.
H_F / foreign hedge	$h \times N_F$. At full coverage: USD 10,000,000.
H_D / domestic hedge	$H_F \times X_0$. At full coverage: MYR 45,000,000.

What a change in FX means

A move from **4.50 to 4.80** means one USD costs more MYR: USD strengthens and MYR weakens. Unhedged USD financing becomes more expensive in MYR. A move to **4.20** makes it cheaper in MYR.

Read the signs and labels

In the signed customer ledger, receipts are positive and payments are negative. Headline financing costs are displayed as positive payment magnitudes. For an investment, the headline measure is income or receipts. The bank's swap flows are the opposite of the customer's before external fees.

Two currencies remain two obligations

Never add USD and MYR amounts directly. The reporting equivalent helps compare results; it is not another cash payment and does not establish legal permission to settle the two currencies as one net amount.

05 / TEN-MINUTE WALKTHROUGH

Set up your first exploration

The screenshot displays the PLV Swap Simulator interface. On the left is a dark sidebar with the PLV logo and navigation options: 'CROSS-CURRENCY SWAP TREASURY LEARNING LAB', 'WORKSPACE' (Start, Swap Simulator, Learn the Structure, Cross-Currency Challenge, Trainer Tools, Saved Sessions), and 'LOCAL CLASSROOM' (PLV Advance Business Consulting Sdn Bhd, Trainer: Premus Lim, Replay walkthrough). The main area is titled 'ISLAMIC FINANCE · APPLIED LEARNING Swap Simulator' with the subtitle 'See what changes when currencies and profit rates move.' Below this, the 'Business case' is set to 'Amanah - Stable markets'. A top bar includes 'Reset case', 'Export CSV', 'Participant report', and 'Save session' buttons. The interface is divided into several sections: 'Explore the assumptions' (Exposure: Foreign financier, Principal: 10000000, Initial FX: 4.5, Currency pair: MYR / USD - Review & change, Hedge coverage: 100%, Principal treatment: Initial and final), 'Rates, schedule & costs' (FX and synthetic reference paths: Future FX: MYR per USD: 4.8, 4.8, 4.8, 4.8), 'Follow the currency flows' (Economic cash ledger: customer receipts + / payments -), and summary cards for 'Combined profit cost' (MYR 2.25m), 'Maturity principal' (MYR 45.00m), 'Benefit versus unhedged' (MYR 3.15m), and 'Budget variance' (MYR 0.00). A table shows 'FOREIGN EXPOSURE' (USD 10,000,000.00) and 'DOMESTIC HEDGE' (MYR 45,000,000.00). A 'CUSTOMER DIRECTION' section indicates 'Receive USD floating / Pay MYR fixed'. At the bottom, a flow diagram shows 'Amanah' receiving USD 125,000.00 from a 'Foreign swap leg'. A notification at the bottom right states 'Exploration saved as a new snapshot.'

Worked Case A: the Amanah case after setting all four future FX quotes to 4.80. The screenshot shows a saved exploration.

- 1. Open Quick Demo.** Keep foreign financing, USD 10,000,000, initial FX 4.50, 100% coverage, and initial/final principal exchanges.
- 2. Enter the market path.** Expand **FX and synthetic reference paths**. Set future FX to **4.8, 4.8, 4.8, 4.8**. Keep the matching foreign all-in rates at 5% and the domestic fixed rate at 5%.
- 3. Inspect and compare.** Use the three flow tabs, the period selector, charts, coverage table and **Show calculation for a period**. Try 50% coverage, then return to 100%.
- 4. Keep your work.** Choose **Save session**. Use **Participant report** or **Export CSV** for a record. **Reset case** restores the selected case's assumptions.

06 / ECONOMIC PAYMENT DIAGRAMS

Follow the three payment stages

Full-coverage financing example, from the customer's perspective. Each arrow names its native currency. The economic arrows below do not reproduce an asset-sale or legal settlement ledger.

1. Initial funding

CUSTOMER

SWAP BANK



Underlying financing separately provides USD 10m. The swap converts the covered initial amount into MYR.

2. Each quarter

CUSTOMER

SWAP BANK



The received USD offsets the separate USD 125,000 underlying financing payment when terms match.

3. Maturity principal

CUSTOMER

SWAP BANK



The received USD repays the underlying principal. The final quarter's profit payment remains a separate amount.

Partial coverage and profit-only mode

At 50% coverage, halve both swap notionals and both swap legs; the remaining foreign exposure stays outside the swap. In **Profit payments only**, both initial and final swap principal exchanges are disabled. Periodic swap profit payments remain active.

07 / ACCEPTANCE CASE A

Worked example: one quarter

Assume USD 10m financing, initial FX 4.50, 100% coverage, quarterly accrual 0.25, both foreign all-in rates 5%, domestic fixed 5%, and no fees. Set every future FX quote to 4.80.

Calculation	Result
Foreign hedge $H_F = 100\% \times \text{USD } 10\text{m}$	USD 10,000,000
Domestic hedge $H_D = \text{USD } 10\text{m} \times 4.50$	MYR 45,000,000
Underlying profit $U = \text{USD } 10\text{m} \times 5\% \times 0.25$	USD 125,000
Foreign swap receipt $QF = \text{USD } 10\text{m} \times 5\% \times 0.25$	USD 125,000
Domestic swap payment $QD = \text{MYR } 45\text{m} \times 5\% \times 0.25$	MYR 562,500

Step 1: calculate the unhedged cost

Convert the underlying USD payment

$$\text{USD } 125,000 \times 4.80 = \text{MYR } 600,000$$

Step 2: calculate the economic swap contribution

Foreign receipt equivalent less domestic payment:

$\text{MYR } 600,000 - \text{MYR } 562,500 = \text{MYR } 37,500$ **net economic receipt**. Keep the two actual swap obligations visible: receive USD 125,000 and pay MYR 562,500.

Step 3: combine the exposure and swap

Combined quarterly financing cost

$$\text{MYR } 600,000 - \text{MYR } 37,500 = \text{MYR } 562,500$$

The matched USD payments offset, leaving the fixed MYR payment.

In the application, open **Show calculation for a period** and select period 1. Explain each native-currency amount before discussing the converted difference. The same result applies to all four equal quarters in this worked example.

08 / PROFIT, PRINCIPAL AND TOTAL

Reconcile the full year

Case A uses 1 January 2027 to 1 January 2028, quarterly payments and 30E/360 Eurobond. Each accrual fraction is 0.25. All amounts in the table are MYR reporting amounts.

Payment date	Unhedged profit	Combined profit	Profit benefit
1 Apr 2027	600,000	562,500	37,500
1 Jul 2027	600,000	562,500	37,500
1 Oct 2027	600,000	562,500	37,500
1 Jan 2028	600,000	562,500	37,500
Four quarters	2,400,000	2,250,000	150,000

Add principal once, at maturity

Reconciliation	Unhedged	Full hedge
Profit payments	2,400,000	2,250,000
Maturity principal	48,000,000	45,000,000
Fees	0	0
Total scheduled repayments	50,400,000	47,250,000

Total benefit: MYR 3,150,000

Profit benefit MYR 150,000 + principal benefit MYR 3,000,000. This comparison uses the same realized market path for both alternatives.

Keep three distinctions clear

Initial funding: MYR 45m before fees is received at inception and is excluded from the repayment total.

Final payment date: MYR 562,500 profit and MYR 45m principal are separate components.

Domestic notional: it stays MYR 45m; it does not reset to MYR 48m when FX changes.

The simple annualized profit cash-flow rate here is $2.25\text{m} / (45\text{m} \times 1 \text{ year}) = 5\%$. It is not APR, IRR, a yield or a discounted valuation.

09 / CASES B, C AND D

Compare hedge coverage

Keep Case A assumptions and future FX 4.80. Use the quick coverage buttons or coverage input. Each larger hedge fixes more of the MYR payment and leaves less foreign exposure.

Coverage	Annual profit	Principal	Total	Benefit
0%	2,400,000	48,000,000	50,400,000	0
25%	2,362,500	47,250,000	49,612,500	787,500
50%	2,325,000	46,500,000	48,825,000	1,575,000
75%	2,287,500	45,750,000	48,037,500	2,362,500
100%	2,250,000	45,000,000	47,250,000	3,150,000

All values are MYR. Benefits are measured against the 0% alternative. No hedge fees apply when coverage is zero.

Case B: inspect the 50% hedge

The swap receives USD 62,500 and pays MYR 281,250 each quarter. The uncovered USD 62,500 costs MYR 300,000 at FX 4.80. Combined quarterly cost is therefore **MYR 581,250**. At maturity, the covered principal costs MYR 22.5m and the uncovered half costs MYR 24m: **MYR 46.5m** in total.

Case C: now change all future FX quotes to 4.20

Measure	Unhedged	Full hedge
Quarterly profit cost	525,000	562,500
Maturity principal	42,000,000	45,000,000
Total repayments	44,100,000	47,250,000

Certainty can have an opportunity cost

At 4.20, the full hedge still produces the planned MYR payments, but costs MYR 3.15m more than the unhedged outcome. Judge the original objective and disclosed risks, not only hindsight savings.

10 / CASES E, F AND G

Explain fees and residual risk

Case E: full coverage with a spread mismatch

At FX 4.80, set underlying all-in profit to 5.50% and the separate foreign swap rate to 5.00%. Keep 100% coverage and domestic fixed 5%. Under **Rates, schedule & costs**, choose separate foreign swap terms so the received stream no longer automatically matches the financing.

A fully covered notional can leave a payment mismatch

Underlying USD 137,500 - received USD 125,000 = USD 12,500 residual per quarter.

USD 12,500 x 4.80 + MYR 562,500 = **MYR 622,500** quarterly.

Annual profit MYR 2.49m + principal MYR 45m = **MYR 47.49m**.

Case F: add one upfront fee

Return to matched 5% foreign rates and add an upfront fee of MYR 25,000. Quarterly profit stays MYR 562,500. Annual profit plus fees becomes **MYR 2,275,000**; total scheduled repayments and fees become **MYR 47,275,000**. The upfront fee is included once, even though paid at inception. It does not change either principal notional.

Case G: hedge profit payments only

Remove the fee and select **Profit payments only**. Quarterly profit stays MYR 562,500. The USD 10m principal remains exposed at maturity and costs MYR 48m at FX 4.80. Total becomes **MYR 50,250,000**. This option disables both initial and final swap principal exchanges.

Before calling a hedge complete, check...	Why it matters
Notional and coverage	Partial coverage leaves an uncovered currency amount.
Reference, spread and rate type	Foreign payment amounts may differ even at 100%.
Principal treatment	Profit protection does not necessarily protect principal.
Dates, day count and fees	These affect amounts and the comparison scope.

11 / INVESTMENT ASSETS & RATE COMBINATIONS

Reverse the exposure; vary rates

Change **Exposure** to **Foreign investment asset**, or load the Hikmah case. A foreign asset produces receipts instead of financing obligations, so the economic swap direction reverses.

Stage	Financing customer	Investment customer
Periodic foreign leg	Receive foreign	Pay foreign
Periodic domestic leg	Pay domestic	Receive domestic
Initial swap principal	Pay foreign; receive domestic	Receive foreign; pay domestic
Final swap principal	Receive foreign; pay domestic	Pay foreign; receive domestic

Case H: reverse Case A into an asset

At 100% coverage, matched 5% foreign rates, domestic fixed 5% and FX 4.80, combined quarterly income is **MYR 562,500**. Maturity principal receipt is **MYR 45m**. Total receipts are MYR 47.25m versus MYR 50.4m unhedged: benefit **minus MYR 3.15m**.

For an asset, the unhedged stronger foreign currency increases domestic receipts. A fixed domestic hedge gives up that upside. Fees reduce asset income. Total receipts include returned principal; they are not a profit or yield measure.

Choose fixed or floating streams independently

Foreign swap leg	Domestic swap leg	Teaching focus
Fixed	Fixed	Two fixed native-currency profit amounts.
Floating	Fixed	Default: matching foreign payments; fixed domestic amount.
Fixed	Floating	Domestic payments respond to the domestic reference.
Floating	Floating	Inspect both references, spreads and any mismatch.

A fixed stream uses its entered fixed rate. A floating stream uses its period reference plus spread. The foreign leg matches the underlying by default; separate terms allow an explicit mismatch. A reference-rate stress does not affect a fixed stream.

12 / MODEL INPUTS & CONVENTIONS

Use schedules and paths correctly

Control	How to use it
Dates and frequency	One to ten years; monthly, quarterly, semiannual or annual; at most 120 periods. Review the generated dates.
30E/360 Eurobond	Equal standard quarters normally have an accrual fraction of 0.25. Day 31 is treated as day 30 in the formula.
ACT/365 Fixed	Actual calendar days divided by 365, including leap years. Quarterly fractions can differ.
Future FX path	One domestic-per-foreign quote for each period. The final quote is also used for maturity principal.
Reference paths (%)	One annual percentage per period; enter 4, 4.5, 5, 5.5 for 4%, 4.5%, 5%, 5.5%.
Budget scope	Choose profit plus fees, or profit plus principal plus fees. Positive variance means favorable against that scope.

Review automatic path resizing

Changing dates or frequency resizes paths by repeating the last value and displays a notice. Inspect every new value before interpreting the result. Schedules are generated from the original date anchor, preserve end-of-month and allow a short final stub. Start dates are included and end dates excluded for accrual.

Review changes of currency pair

Use **Currency pair - Review & change**. The MYR/USD, MYR/SGD and MYR/EUR presets use invented quotes. Changing a pair resets its FX and stress quotes. Also review rates, fees, budget and company wording; those assumptions do not become market data simply because the currency label changes.

Input discipline

Use positive finite principal and FX; coverage from 0% to 100%; and resulting all-in rates from 0% to 200%. Signed spreads are allowed within those limits. Invalid inputs pause results and must be corrected before saving or exporting.

All streams share a common unadjusted schedule and day count. No holiday rolling, settlement lags, compounded overnight rates or negative-rate mechanics are modeled. Monetary displays round to two decimals; rounded rows can differ by a cent from a separately rounded total.

13 / CONCEPTS, SEQUENCE AND BOUNDARIES

Learn the Islamic structure

Open **Learn the Structure**. The lesson presents a bounded historical Wa'ad / Murabahah illustration. Keep the contractual explanation separate from the economic cash-flow model.

- 1. Identify exposure.** Start with the business purpose, payment dates and the uncertainty to be reduced.
- 2. Separate undertakings.** Each currency leg has its own undertaking in the historical illustration. A promise and an executed sale are distinct stages.
- 3. Determine terms & exercise.** Exercise may lead to entering a sale. Synthetic rates being known at period start is this simulator's assumption.
- 4. Execute the asset sale.** The historical illustration involves Murabahah asset sales. Ownership, possession and agency procedures require separately verified terms.
- 5. Deferred price payment.** A Murabahah price includes cost and profit. In the historical illustration, specified sale-profit components can also represent initial or final exchange amounts.
- 6. Reconcile the hedge.** Compare the economic currency payments with the original exposure. Reporting conversion does not authorize net settlement.

Two important distinctions

An economic principal arrow is not automatically commodity cost. Changing a future scenario rate does not rewrite a historical executed sale price.

Use the learning activities

Select each timeline step, open the glossary, then arrange the six steps in order and choose **Check sequence**. Complete the four knowledge questions and select **Check answers** to see explanations. Ask learners to describe the mechanism in their own words.

The app does not reproduce restricted agreements or certify a structure. Public source scope and links are on page 23. Actual documentation, jurisdiction and relevant Shariah review remain separate from this simulation.

14 / EIGHT FICTIONAL STARTER CASES

Choose a business case

The cases are designed to isolate different learning points. All companies, rates and market paths are fictional. Each path below contains the four quarterly future FX quotes, in MYR per USD.

Case	Future FX path	Discuss
Amanah Stable markets	4.50, 4.50, 4.50, 4.50	Baseline directions and matched payment mechanics.
Bayu MYR weakens	4.55, 4.65, 4.75, 4.80	The uncovered portion becomes more expensive in MYR.
Cahaya MYR strengthens	4.45, 4.35, 4.25, 4.20	Predictability versus hindsight savings.
Daya Foreign rates rise	4.50, 4.50, 4.50, 4.50	Foreign reference rises from 4% to 5.5%; matched streams offset.
Emas Foreign rates fall	4.50, 4.50, 4.50, 4.50	Foreign reference falls from 4% to 2.5%; consider forgone benefit.
Fajar Two pressures	4.55, 4.65, 4.75, 4.80	Foreign reference rises from 4% to 7%, alongside weaker MYR.
Gemilang Spread mismatch	4.80, 4.80, 4.80, 4.80	Underlying spread 1.5%; separate foreign swap spread 1%.
Hikmah Investment income	4.55, 4.65, 4.75, 4.80	Reverse the flows for a foreign asset and assess domestic income.

Compare like with like

Hold principal, schedule and currency units constant when exploring one factor. Save a snapshot before changing the next assumption. The coverage comparison uses the same market path for every hedge percentage.

Worked Case A is a deliberate edit

The default Amanah path is 4.50 in every quarter. To reproduce the MYR 3.15m benefit in this manual, change all four future quotes to 4.80. Selecting Bayu instead produces a gradually changing path and different annual profit totals.

15 / COMMIT FIRST; REVEAL LATER

Run a team challenge

- 1. Create the challenge.** Open **Cross-Currency Challenge**. Enter 1-12 unique team names and choose 1-12 independent rounds. Challenge rounds use liability cases. Select a scenario for each round and create/save the challenge.
- 2. Read the disclosed brief.** Review the initial terms, objective, budget, fees, policy coverage range and stress cases before making decisions. The future realized path is revealed only after commitments are locked.
- 3. Complete each team decision.** Enter hedge coverage, the required payment direction, a rationale, four quiz answers and two first-period amounts in their native currencies. Then choose **Lock this decision**. Repeat for every team.

Default case at 50% coverage

Expected first-period foreign swap amount: **USD 62,500**.

Expected first-period domestic swap amount: **MYR 281,250**.

Calculate these from the disclosed initial terms; future FX is not needed.

- 4. Reveal events one at a time.** After all teams lock, the trainer reveals the first event, then the next. Each team faces the same predetermined path. Discuss what changed and which exposure remained uncovered.
- 5. Debrief and complete the round.** Review automatic marks, record the trainer rationale marks and comments, inspect outcome comparisons and open a team report. Complete the round, move to the next independent round or complete the challenge.
- 6. Resume when needed.** Go to **Saved Sessions** to resume or review. Challenge actions save locally. Scenario snapshots and commitments preserve the terms used for that challenge.

Direction is assessed as an answer. If a team chooses the wrong direction, it is marked incorrect. The financial comparison still uses the required liability direction at its selected coverage and explicitly says so; it does not simulate an executed reversed trade.

16 / ASSESSMENT RUBRIC

Mark and debrief fairly

Assess understanding separately from realized financial outcomes. A hedge can meet a certainty objective while looking more expensive after markets move favorably.

Automatic component	Marks	How it is assessed
Four knowledge questions	40	10 marks each.
Payment direction	10	Required liability hedge direction.
Policy compliance	10	Coverage within the disclosed policy range.
First-period foreign amount	10	Correct native-currency amount; tolerance 0.01.
First-period domestic amount	10	Correct native-currency amount; tolerance 0.01.
Automatic subtotal	80	Financial outcome does not determine these marks.

Trainer rationale criterion	0-5 marks: evidence to look for
Exposure	Identifies currency, size, timing and payment direction.
Objective	Connects coverage to the business objective and budget.
Stress awareness	Uses the disclosed stresses and identifies residual risks.
Tradeoff	Explains certainty, opportunity cost, fees or partial coverage.

Example: 98 / 100

Automatic 80 + exposure 5 + objective 4 + stress awareness 4 + tradeoff 5 = **98**. Unmarked rationale criteria remain pending; a total /100 appears only when all four are marked.

Debrief prompts

What was knowable when you committed? Which currency payments were fixed? Did principal remain exposed? What changed under the disclosed stress? Would you defend the same decision if the realized FX path moved the other way?

A challenge is a local classroom activity, not a secure examination platform. A timer or locked decision is a teaching control, not identity verification or access security.

17 / TRAINER PLAYBOOK

Plan and control a class

Minutes	Activity	Observable outcome
0-5	Define exposure and quote units.	Learners name the customer payment direction.
5-12	Run the full, half and profit-only examples.	Learners separate profit and principal risk.
12-18	Use the structure timeline and sequence task.	Learners distinguish undertaking, sale and payment.
18-25	Run one team challenge round.	Teams lock a reasoned decision before events.
25-30	Mark and debrief.	Teams explain certainty, residual risk and tradeoffs.

Prepare a custom scenario

- 1. Load and edit.** In **Trainer Tools**, load a starter case. Edit company name, brief, objective, financial terms, schedule, market paths, event descriptions, policy, budget and disclosed stress inputs.
- 2. Keep the story consistent.** Use one event line per period. Review the resized paths after date or frequency changes. Explain what the business wants to stabilize. Ensure fees and the budget scope match the brief.
- 3. Preview before teaching.** Choose **Preview in simulator**, inspect directions and calculations, then **Save as new custom scenario**. The saved copy has its own identity and version. Existing challenges retain their original snapshots.

Use the presentation controls

Projector mode enlarges content and hides the sidebar. Exit it to restore navigation. The pauseable timer starts at five minutes, supports a duration up to 180 minutes, and plays no sound. Leaving Trainer Tools resets the timer; keep that view open if you need it to continue.

Before participants arrive

Launch in the browser you will use; test the room display; preview the chosen scenario; check the team policy and calculation answers; and export a backup of any existing classroom work.

18 / KEEP YOUR LEARNING RECORDS

Save, transfer and print

Save and reopen

In the simulator, choose **Save session** to save an exploration snapshot. In **Saved Sessions**, open, duplicate or delete an exploration, explore a custom case, or resume/review a challenge. Challenge actions save as you work. Deletions and resets require confirmation.

Export a portable backup

- 1. Export JSON.** Choose **Export full JSON backup** in Saved Sessions. Store the downloaded file somewhere you can find again, such as your training materials folder. Use **View backup text** if you need to copy the JSON manually into a UTF-8 .json file.
- 2. Import and inspect.** Choose the JSON import file, review the validated preview and counts, then add entries as new copies or confirm replacement. The app validates its version, schema and financial assumptions, with a 4 MB file limit.

Browser saves are not OneDrive files

Local data belongs to the browser profile and exact address. Saving inside the app does not automatically write to the project folder or synchronize with OneDrive. Export JSON before clearing browser data or moving computers.

Export a schedule or report

CSV: choose **Export CSV** in the simulator. Columns include units, amounts are rounded to two decimals, and the file uses UTF-8 with a BOM. Wide schedules scroll horizontally in the app.

PDF report: open **Participant report** or **Team report**, then choose **Print / Save as PDF**. In the browser print dialog, use landscape, preferably A3 for the full 17-column schedule, and turn browser headers and footers off. Review the preview before saving.

Try the supplied example

The **examples** folder includes **worked-example-backup.json**, with a worked exploration and a completed 98-point exercise, plus **amanah-full-hedge.csv**. Import the backup as new copies to study the example without replacing your saved entries.

Use normal Edge or Chrome when an embedded browser limits file downloads or printing. Transfer saved data with JSON when switching browsers.

19 / PRACTICAL SUPPORT

Troubleshoot and know the limits

Symptom	What to do
The BAT file shows text.	Run it by double-clicking in File Explorer, not an editor preview.
The browser cannot connect.	Keep the server window open. Check the exact address 127.0.0.1:4193. Read any launcher error before retrying.
The port is occupied.	A repeat launch reuses this app. If an unrelated service occupies 4193, stop that service yourself before starting this one.
Saved sessions seem missing.	Check browser, profile and exact address. Import a previously exported JSON backup when moving environments.
Results disappear after editing.	Correct the displayed input error. Check positive FX, rate limits, dates and path length.
Storage or import fails.	Read the reported error. For unreadable local data, export raw recovery text before restoring or resetting. Do not assume a failed save succeeded.
Print or download is blocked.	Use normal Edge or Chrome and inspect its download/print controls. A new browser has separate local storage.

What this model does not calculate

The app is an educational cash-flow simulator with synthetic references, constant bullet principal and one common unadjusted schedule. It does not price a trade or calculate fair value, APR, IRR, discounted value, collateral or early termination. It does not model amortization, resetting notionals, negative-rate mechanics, holiday calendars or hedge accounting.

Interpret the outputs within their scope

A full matched hedge can offset modeled cash flows. It does not eliminate counterparty, liquidity or operational risks. Economic equivalence does not establish Shariah compliance or legal enforceability.

Application verification records are in docs/TEST-RESULTS.md. Normal external-browser print/download dialogs were not fully verified in the embedded test environment. Always inspect the final report preview on the browser and printer you use.

20 / INDIVIDUAL OR TEAM ACTIVITY

Practice worksheet

Use USD 10m, initial FX 4.50, a one-year quarterly 30E/360 schedule, matched foreign rates of 5%, domestic fixed 5%, principal exchanges enabled and no fees unless a question changes them. Write the currency beside every amount.

01 Quote interpretation

If FX moves from 4.50 to 4.80 MYR per USD, which currency strengthens? How much MYR is USD 125,000 worth at the new quote?

02 Quarterly mechanics

At 100% coverage, calculate the foreign swap receipt, domestic swap payment and combined quarterly financing cost at FX 4.80.

03 Half coverage

At 50% coverage and FX 4.80, calculate quarterly combined cost, maturity principal and total scheduled repayments.

04 Principal treatment

At 100% coverage, switch to profit payments only. Which risk remains? Calculate total repayments at FX 4.80.

05 Mismatch and fees

Use underlying 5.50%, foreign swap 5.00%, full coverage and FX 4.80. Calculate quarterly cost. Then add a MYR 25,000 upfront fee and calculate the annual total including principal.

06 Decision and structure

At FX 4.20, explain why a full hedge can have a MYR 3.15m opportunity cost while meeting its objective. Name the six steps in the conceptual structure timeline.

Extension: repeat question 2 as a foreign investment asset. Explain why the same market movement has a different benefit sign. Answers are on the next page.

21 / WORKSHEET DEBRIEF

Worked answers

1. Quote interpretation. USD strengthens; MYR weakens. $\text{USD } 125,000 \times 4.80 = \text{MYR } 600,000$. The quote is domestic currency per one foreign unit.

2. Quarterly mechanics. Foreign receipt: $\text{USD } 10\text{m} \times 5\% \times 0.25 = \text{USD } 125,000$.

Domestic payment: $\text{MYR } 45\text{m} \times 5\% \times 0.25 = \text{MYR } 562,500$.

The matching underlying USD 125,000 payment is offset. Combined cost is **MYR 562,500**.

3. Half coverage. Quarterly cost: $\text{MYR } 281,250 \text{ covered payment} + \text{USD } 62,500 \times 4.80 = \text{MYR } 581,250$.

Principal: $\text{MYR } 22.5\text{m} + \text{USD } 5\text{m} \times 4.80 = \text{MYR } 46.5\text{m}$.

Total: $4 \times \text{MYR } 581,250 + \text{MYR } 46.5\text{m} = \text{MYR } 48,825,000$.

4. Principal treatment. The entire foreign principal remains exposed. Profit is MYR 2.25m; principal is MYR 48m. Total is **MYR 50.25m**. There are no initial/final swap principal exchanges in this variant.

5. Mismatch and fees. Residual foreign payment: $\text{USD } 10\text{m} \times (5.50\% - 5.00\%) \times 0.25 = \text{USD } 12,500$.

Quarterly cost: $\text{MYR } 562,500 + \text{USD } 12,500 \times 4.80 = \text{MYR } 622,500$.

Annual total with principal and the one upfront fee:

$4 \times \text{MYR } 622,500 + \text{MYR } 45\text{m} + \text{MYR } 25,000 = \text{MYR } 47,515,000$.

6. Decision and structure. At FX 4.20, the unhedged total is MYR 44.1m while the fixed full-hedge total remains MYR 47.25m. The difference is **MYR 3.15m**; payment certainty was still achieved.

Sequence: identify exposure; separate undertakings; determine terms and exercise; execute asset sale; deferred price payment; reconcile the hedge.

Extension answer: investment

The asset hedge pays USD 125,000 and receives MYR 562,500 quarterly. Combined income is MYR 562,500; principal receipt is MYR 45m. At FX 4.80, unhedged receipts would be greater, so the hedge benefit is minus MYR 3.15m. Total receipts include principal.

22 / FURTHER READING

References and quick glossary

Term	Meaning in this manual
Wa'ad	An undertaking or promise, separate from the later transaction.
Murabahah	A sale with disclosed cost and profit.
Notional	Reference amount used to calculate economic payments.
Coverage	Fraction of the identified exposure assigned to the hedge.
Bullet principal	Constant principal repaid or redeemed at maturity.
Spread mismatch	Different underlying and swap margins leave a residual payment.
Opportunity cost	A worse realized outcome than an alternative, even when the original certainty objective is achieved.
Reporting equivalent	A common-currency comparison amount; not automatic legal net settlement.

Source scope

1. IIFM: 2024 Version ISDA/IIFM Islamic Cross-Currency Swap.

[Open the official IIFM document listing](#). The public listing confirms the title and restricts agreement access to members. It does not verify the operative terms for this application.

2. Clifford Chance: New product documentation for Islamic Cross Currency Swaps, 30 November 2015, pages 2-3.

[Open the historical explanatory paper](#). Supports the limited conceptual explanation of separate undertakings, exercise, asset sales and deferred price payments. It is not a substitute for current agreements.

Sources were consulted for the master prompt on 3 October 2026. Full 2024 operative terms have not been verified. The simulator and this manual do not reproduce restricted agreement text. External links require internet.

Files for further detail

README.md - launch, setup and support.

docs/FINANCIAL-METHODOLOGY.md - formulas and conventions.

docs/CONTENT-REFERENCES.md - evidence and content boundaries.

docs/TEST-RESULTS.md - application checks and environment limits.

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Manual edition 2.0 - redesigned 3 October 2026. Content and examples remain specific to the cross-currency simulator.