CHARTA LEARNING · LESSON NOTES

Expected returns for equities, property and currencies

Asset Allocation

1 Meet Larkfield and its forecast

- Larkfield: dollar-based endowment, Tessa Moreland, analyst
- Job: a ten year expected return for each asset class
- Method 1: historical average
- Method 2: build from parts (Grinold-Kroner)
- Method 3: equilibrium (Singer-Terhaar)

IN THE LESSON

- Meet the Larkfield Foundation, a dollar based endowment that funds scholarships.
- Its analyst, Tessa Moreland, has a job every autumn: give the investment committee a ten year expected return for each asset class, because the optimiser needs a number for each one.
- A forecast is not a guess pulled from the air.
- It is an estimate with a method behind it and reasons you can defend.
- For equity markets there are three families of method.
- First, look back at history.
- Second, build the return up from its parts, the way a builder adds bricks.
- Third, ask what return the market's risk ought to earn in equilibrium.
- Good analysts use more than one, and check them against each other.

2 History depends on the window

Return a year (%)

First decade	**10.5**
Second decade	**3.5**
Whole span	**7.0**
Built from parts	**7.5**

Made-up figures: average annual return of the home market

IN THE LESSON

- Start with the simplest method, the historical average.
- Here are made up figures for the home market.
- Over the first decade of its history, shares returned ten point five per cent a year.
- Over the second decade they returned three point five.
- Across the whole span the average is seven point zero.
- Same market, same data, three very different answers, depending on the window you pick.
- The reason is that the first decade enjoyed a rising price to earnings ratio, the price investors pay for each dollar of earnings, and the second suffered a falling one.
- Repricing is not something you can count on repeating.
- So history is a useful reference point, but it depends on the period chosen.
- The fourth bar is a number built from parts, which we meet next.

3 The Grinold-Kroner build

E(R) = yield + (earnings growth − Δshares) + ΔP/E

Dividend yield	Cash income each year
Earnings growth	Nominal growth of profits
Change in shares	Buybacks add, issuance cuts
Change in P/E	Repricing: the soft piece

IN THE LESSON

- Here is the builder's method, the Grinold Kroner model.
- Think of owning a share as owning a stream of cash plus a share of a growing business.
- The expected return is the dividend yield, plus nominal earnings growth, minus the percentage change in shares outstanding, plus the percentage change in the price to earnings ratio.
- Each piece has a story.
- The dividend yield is the income you collect.
- Earnings growth is how fast the profits of the whole business grow, inflation included.
- The share count term turns total earnings into earnings per share: if the company buys back shares, the count falls, you subtract a negative number, and your return goes up.
- The last term is repricing, whether investors will pay more or less for each dollar of earnings.

4 Example 1: the home market

Home market, ten year view

Dividend yield	income	**2.0%**
Earnings growth	nominal, a year	**5.0%**
Net buybacks	shares fall 1.0%	**+1.0%**
P/E change	a year	**−0.5%**
Expected return	2.0 + 5.0 + 1.0 − 0.5	**7.5%**

IN THE LESSON

- Example one.
- Tessa applies the model to the home market.
- The dividend yield is two per cent.
- Nominal earnings are expected to grow five per cent a year.
- Net buybacks shrink the share count by one per cent a year, and because we subtract the change in shares, minus one becomes plus one.
- Finally the price to earnings ratio is expected to drift down by half a per cent a year.
- Add it up: two, plus five, plus one, minus a half, gives seven point five per cent.
- Notice that most of that answer is cash flow you can see, and that the last line takes a little away.
- Seven point five is the number she carries forward to the cross check.

5 Example 2: the price to earnings trap

P/E today 20; the other inputs as in example 1

P/E falls to 19	(19 ÷ 20)^(1/10) − 1	**−0.51%**
P/E rises to 22	(22 ÷ 20)^(1/10) − 1	**+0.96%**
Return, P/E falls	2 + 5 + 1 − 0.51	**7.49%**
Return, P/E rises	2 + 5 + 1 + 0.96	**8.96%**
Repricing alone adds	8.96 − 7.49	**1.47%**

IN THE LESSON

- Example two: the price to earnings trap.
- Where did minus half a per cent come from?
- Today the home market trades on a price to earnings ratio of twenty.
- Tessa expects it to ease to nineteen over the ten year horizon.
- To turn that into a yearly figure, divide nineteen by twenty, take the tenth root, and subtract one.
- That gives minus zero point five one per cent a year, and a return of seven point four nine, which is the seven point five of example one, rounded.
- Now suppose an enthusiastic colleague assumes the ratio climbs to twenty two instead.
- The same working gives plus zero point nine six a year, and the forecast jumps to eight point nine six, one point four seven higher, purely because investors pay more.
- That cannot go on for ever, so be cautious with this term.

6 The Singer-Terhaar premium

E(R) = Rf + w × (σ × ρ × SR) + (1 − w) × (σ × SR)

Risk-free rate	Start of every return
Volatility	Size of the market's swings
Correlation with world	Share moving with the world
Global Sharpe ratio	Reward per unit of risk
Degree of integration	1 open, 0 closed

IN THE LESSON

- Now the equilibrium route, named Singer Terhaar after its authors.
- The idea is that investors are paid for risk they cannot diversify away.
- For a market fully open to global capital, that risk is its volatility times its correlation with the global market, because only the part that moves with the world is priced.
- Multiply by the global Sharpe ratio, the reward per unit of risk, and you have the premium.
- For a market walled off from global investors, local people carry all its volatility, so the correlation is treated as one, and the premium is volatility times the Sharpe ratio, taking the local ratio equal to the global one.
- Real markets sit between the two, so blend the premiums by the degree of integration, then add the risk free rate.

7 Example 3: cross-checking the home market

Volatility 15%, correlation 0.9, global Sharpe ratio 0.3

Integrated premium	15 × 0.9 × 0.3	**4.05%**
Risk-free rate		**3.00%**
Equilibrium return	3.00 + 4.05	**7.05%**
Builder's method	example 1	**7.50%**
Gap to explain	7.50 − 7.05	**0.45%**

IN THE LESSON

- Example three.
- Tessa cross checks the home market.
- Its volatility is fifteen per cent, its correlation with the global market is point nine, and the global Sharpe ratio is point three.
- The market is fully integrated, so the premium is fifteen times point nine times point three, which is four point zero five per cent.
- Add the risk free rate of three per cent and the equilibrium return is seven point zero five.
- Compare that with the seven point five from the builder's method.
- The two are less than half a point apart, so the forecast has support.
- If they had been far apart, the gap would be a prompt to ask which assumption is wrong, and the price to earnings term would be the first suspect.

8 Build-up, and the habit of cross-checking

A risk premium build-up

Bond yield 3.0% → Add premium 4.05% → Forecast 7.05%

The cross-check

Cash-flow route 7.5% →
Equilibrium route 7.05% →
Gap 0.45 to explain

IN THE LESSON

- A risk premium build up is the simplest form of all.
- Take a bond yield, here three per cent, and add the premium investors need for holding shares, here four point zero five.
- That gives seven point zero five.
- The premium can come from the Singer Terhaar formula, or from history, or from a survey.
- The second row shows the habit that matters.
- Put the cash flow route and the equilibrium route side by side, seven point five and seven point zero five, and write down the gap, zero point four five.
- Small gaps give confidence.
- Large gaps tell you an assumption needs a second look.
- Then you carry one number forward, and you say why you chose it.

9 Dunmere: growth is not return

- Home market forecast: 7.5% a year
- Dunmere: real growth 3% + inflation 6% = 9%
- Trustee: faster growth must mean higher returns
- Tessa: growth in an economy is not a shareholder's return

IN THE LESSON

- Now to the part of the world that sounds most exciting.
- A trustee at Larkfield, impatient with the home market's seven point five, points at Dunmere, an emerging economy whose real output grows three per cent a year with inflation of six, so nominal growth of nine.
- Surely, he says, shares there must pay more.
- Tessa answers that growth in an economy is not the same as the return a minority shareholder earns.
- In between sit new share issues, controlling owners who may not share the gains, weak rules, capital controls, currency swings and markets that can freeze.
- Those are the extra risks of emerging market equities, on top of ordinary volatility.
- Let us take them one by one.

10 The extra risks, one by one

Extra risks for a minority shareholder

Risk	What happens to you
Controlling owners	Value leaks out
Loose disclosure	Risk is hidden
Controls and stress	Cash and exit trapped
Political change	Rules rewritten

IN THE LESSON

- First, who controls the company.
- Ownership is often concentrated in a family or the state, protection for minority shareholders may be weak, and controlling holders can pull value out through related party dealings, such as selling to their own other businesses on friendly terms.
- Second, looser accounting and disclosure mean you can see less of what is going on.
- Third, capital controls can limit your ability to bring money home, and liquidity can vanish in stress, just when you want to sell.
- Fourth, political intervention can rewrite the rules for a whole sector.
- Currency risk comes on top of all four, and we count it in a moment.

11 Example 4: from growth to a dollar return

Dunmere shares, seen by a dollar investor

Nominal growth	real 3% + inflation 6%	**9.0%**
New-share dilution	new owners take a slice	**−4.0%**
Dividend yield	cash paid out	**+2.0%**
Currency	local money loses value	**−3.8%**
Dollar return	9.0 − 4.0 + 2.0 − 3.8	**3.2%**

IN THE LESSON

- Example four: from growth to return.
- Tessa builds Dunmere's return as a chain.
- Start from nominal growth of nine per cent.
- That is the headline.
- But much of an emerging economy's growth comes from new companies and new share issues, and today's shareholder owns none of it.
- Here dilution takes four points off.
- The dividend yield adds two points of cash actually paid.
- Then the currency: Larkfield counts in dollars, and the Dunmere currency is expected to lose three point eight per cent against the dollar a year, the drift that purchasing power parity gives later in this lesson, so three point eight points come off.
- What is left is three point two per cent in dollars, well short of the headline.

12 Less integrated, higher premium

Chart: Premium vs Integration: 0 closed, 1 open

- Closed: 7.2%
- 60%: 5.47%
- Open: 4.32%

IN THE LESSON

- Now look at how integration changes the required return.
- Along the bottom is the degree of integration, from nought on the left, a market closed to foreigners, to one on the right, a market fully open.
- Up the side is the required risk premium.
- The line slopes downward.
- On the far left the premium is highest, seven point two per cent, because local investors carry all the volatility.
- On the far right it is lowest, four point three two.
- A market sixty per cent integrated sits in between, at five point four seven.
- The less integrated a market, the more reward investors should demand, because its risk cannot be spread across the world.

13 Example 5: what the risk should earn

Volatility 24%, correlation 0.6, Sharpe 0.3, 60% integrated, Rf 3%

Integrated premium	24 × 0.6 × 0.3	**4.32%**
Segmented premium	24 × 0.3	**7.20%**
Blended, 60% integrated	0.6×4.32 + 0.4×7.2	**5.47%**
Required return	3.0 + 5.47	**8.47%**
Offered in dollars	2 + 9 − 4 − 3.8	**3.2%**

IN THE LESSON

- Example five: what the risk should earn.
- Dunmere's volatility is twenty four per cent, its correlation with global equities is point six, and the global Sharpe ratio is point three.
- The integrated premium is twenty four times point six times point three, which is four point three two.
- The segmented premium sets the correlation to one, so it is twenty four times point three, seven point two.
- Tessa judges the market sixty per cent integrated, so the blended premium is point six times four point three two plus point four times seven point two, which is five point four seven.
- Add the risk free rate of three and the required return is eight point four seven, about eight and a half.
- Against that, the shares offer only seven after dilution, two plus nine minus four, and only three point two in dollars after the currency drag of three point eight.

14 Propose and defend: Dunmere

- Growth story: 2% yield + 9% growth = 11%
- After dilution 7%, in dollars 3.2%; should earn 8.5%
- Gap about 5 points, before any governance haircut
- Overweight needs cheap prices or credible reform
- Size small, favour clean ownership, accept exit risk

IN THE LESSON

- So what should Tessa recommend?
- Her answer should be a decision with reasons.
- Do not overweight Dunmere on the growth story alone.
- Growth promises eleven per cent, but dilution leaves seven, the currency drag leaves about three, and a partly segmented market should earn about eight and a half.
- That is a gap of about five points, before any allowance for governance.
- A case for an overweight would need more: prices low enough to make up the gap, or credible reform that cuts the leakage to controlling owners.
- If Larkfield does invest, she would size the position modestly, favour companies with clean ownership, and accept that the exit could close in a crisis.
- What could go wrong?
- The reform fails, or the currency falls further.

15 Mistakes so far

- History depends on the window chosen
- P/E cannot expand for ever
- Buybacks add to return; new issuance subtracts
- Partly closed market: blend, do not use integrated only
- Growth is not return: dilution, governance, currency

IN THE LESSON

- Pause for the traps so far.
- First, treating a historical average as the forecast.
- It depends on the window, and a stretch that gained from a rising price to earnings ratio will flatter the future.
- Second, assuming that ratio keeps rising for ever.
- It cannot, so make the repricing term small or negative unless you can justify more.
- Third, getting the sign wrong on shares: net buybacks shrink the count and add to the return, while net issuance subtracts.
- Fourth, quoting only the integrated premium for a market that is partly closed, which understates what the risk should earn.
- Fifth, equating faster economic growth with a higher equity return, and ignoring dilution, governance and currency.

16 Property: demand fast, supply slow

- Demand for space follows the business cycle
- Supply responds slowly: construction lags
- Booms often end in overbuilding
- Cap rate = net operating income ÷ value

IN THE LESSON

- Next, property.
- Larkfield owns a sleeve of commercial buildings, and Tessa must forecast what it will earn.
- Picture a restaurant street.
- When the economy booms, more diners arrive and rents rise, so developers rush to open new restaurants.
- But a new building takes years to plan and construct, so the new supply arrives after the boom has already peaked.
- That mismatch is the heart of real estate: demand follows the business cycle quickly, supply answers slowly, and booms often end in overbuilding.
- Two more ideas help.
- Vacancy is the share of space standing empty, and when it rises, rents fall.
- The capitalisation rate, or cap rate, is income divided by value, the yield a buyer earns on the building's income.

17 The lag, drawn

Chart: Space vs Time

- Demand peaks
- Supply keeps rising
- Overbuilt

IN THE LESSON

- Here is the lag, drawn.
- Time runs along the bottom, and the up axis is the amount of space.
- The green line is demand for space.
- It climbs as the economy booms, peaks, and then turns down in the slowdown.
- The red line is supply, the space actually built.
- It barely moves at first, then keeps rising long after demand has peaked, because the projects were already under way.
- Where the red line ends above the green line, there is more space than tenants.
- That gap is overbuilding, and it shows up as empty offices and warehouses, falling rents and weaker income.

18 Vacancy, rents and cap rates

Space market

Vacancy rises → Rents fall → Income weakens

Capital market

Credit tightens → Cap rates rise → Values fall

IN THE LESSON

- Overbuilding then travels through two markets.
- Follow the top row, the space market.
- More vacant space means landlords compete for tenants, so rents fall and income weakens.
- Now the bottom row, the capital market.
- When credit tightens and interest rates rise, buyers want a higher yield from property, so cap rates rise.
- Since value equals net operating income divided by the cap rate, a higher cap rate means a lower value for the same income.
- So a downturn hits twice: lower income, and a lower price paid for that income.
- Banks pulling back often make both happen together, which is why property cycles can be sharp.

19 The property return estimate

E(R) ≈ cap rate + NOI growth − (Δcap rate ÷ cap rate)

Cap rate	Income return, like a yield
NOI growth	Growth of rent less costs
Change in cap rate	5.0 to 5.5 is 10%, not 0.5%
Expected return	Cap + growth − the drag

IN THE LESSON

- Now the standard estimate of expected return for a property market.
- It is the cap rate, plus growth in net operating income, minus the proportional change in the cap rate.
- The cap rate plays the part of the dividend yield: it is the income return.
- Growth in net operating income is the growth of rent less costs.
- The last term is the valuation effect, and the sign is a minus, because a rising cap rate cuts values.
- The word proportional matters.
- You divide the change in the cap rate by the cap rate itself, so a rise from five per cent to five and a half is a ten per cent proportional rise, not half a per cent.

20 Example 6: Brightwater offices

Stable case first, then offices: cap rate 5.0% rising to 5.5% in 5 years

Stable case	5.0 + 2.0 − 0	**7.0%**
Office cap rate change	(5.5 ÷ 5.0)^(1/5) − 1	**1.92%**
Office income return	cap rate	**5.0%**
Office NOI growth	weak: new supply	**1.0%**
Office expected return	5.0 + 1.0 − 1.92	**4.08%**

IN THE LESSON

- Example six.
- Start with the stable case: a cap rate of five per cent, growth in net operating income of two per cent, and no change in the cap rate.
- Expected return is five plus two minus zero, or seven per cent.
- Now Larkfield's office holding in Brightwater.
- The cap rate is five per cent, but with new supply arriving, growth is only one per cent, and Tessa expects the cap rate to rise to five and a half over five years.
- As a yearly figure, divide five point five by five, take the fifth root, and subtract one: one point nine two per cent.
- Expected return is five plus one minus one point nine two, which is four point zero eight per cent.

21 Sectors reprice at different speeds

How each sector's income reacts to the cycle

Sector	How income reacts
Hotels	Daily: most cyclical
Offices	Delayed by long leases
Industrial	Delayed; supply limits help
Any sector	Local supply barriers matter

IN THE LESSON

- Property is not one market.
- Sectors respond differently to the cycle, and the reason is how fast income can reprice.
- Hotels rent rooms night by night, so their income moves almost at once with the economy.
- That makes them the most cyclical sector.
- Offices and industrial buildings are usually let on long leases, so their income responds with a delay, because rents only reset when leases roll over or reach a review.
- Beyond the cycle, three local things shape each sector's risk: how much competition there is in that city, how hard it is to add new supply, because planning limits or scarce land protect rents, and how the leases are written, such as fixed rents against rents linked to inflation.

22 Example 7: the smoothing trap

Reported = 0.5 × true + 0.5 × last reported; start at 0

Quarter one	true +6.0	**3.0%**
Quarter two	true −6.0	**−1.5%**
Quarter three	true +6.0	**2.25%**
Quarter four	true −6.0	**−1.875%**
Typical swing	true 12 vs reported about 4	**understated**

IN THE LESSON

- Example seven: the trap in the data.
- Most property indices come from appraisals, and appraisers lean on last quarter's value.
- A simple model of that is: reported return equals a half of the true return plus a half of last quarter's reported return.
- Suppose the true quarterly returns swing between plus six and minus six.
- Starting from zero, the reported figures are three, minus one point five, two point two five and minus one point eight seven five.
- The true return swings by twelve points from one quarter to the next, while the reported swings are only about four.
- So volatility looks far lower than it is, and so does the correlation with equities, which makes property look like a better diversifier than it really is.

23 Example 8: office or industrial?

Industrial: cap rate 4.5%, stable, long leases, tight supply

Industrial cap rate	income return	**4.5%**
Industrial NOI growth	rent reviews, tight supply	**3.5%**
Industrial expected return	4.5 + 3.5 − 0	**8.0%**
Office expected return	example 6	**4.08%**
Advantage to industrial	8.0 − 4.08	**3.92%**

IN THE LESSON

- Example eight: office or industrial.
- Larkfield can add to one.
- Industrial space in the Midlands has a cap rate of four point five, growth of three point five from long leases with rent reviews, and tight planning limits on new supply, so Tessa expects stable cap rates.
- Expected return is four point five plus three point five minus zero, eight per cent.
- The office market, with its higher cap rate, offers only four point zero eight.
- So the higher cap rate was not a higher return: it came with weak growth and a rising cap rate.
- Recommend industrial, and defend it.
- What could go wrong?
- Tenants fail, rent reviews disappoint, or rates rise further.
- And because both histories are smoothed, ask for unsmoothed data before sizing either position.

24 Currencies: the rubber band

- Spot: 5.00 Dunmere units per dollar
- Deposit rates: Dunmere 9%, dollar 4%
- Inflation: Dunmere 6%, United States 2%
- Approaches: PPP, relative strength, interest parity
- Also: flows, portfolio balance, intervention

IN THE LESSON

- Last, currencies.
- Larkfield is a dollar based endowment, so every foreign holding carries a second bet on an exchange rate.
- A currency forecast is hard, and no one model works at every horizon.
- Think of a rubber band tied to a post.
- Over years it pulls back toward the post.
- Over weeks, other forces push it around.
- The post is fair value set by prices.
- The other forces are growth, interest rates, money flows, debt and government action.
- We use one case throughout.
- Dunmere's currency is five units per dollar.
- Dunmere's deposit rate is nine per cent and the dollar rate is four, while Dunmere inflation is six and United States inflation is two.

25 Purchasing power parity

Expected spot = Spot × (1 + local inflation) ÷ (1 + US inflation)

Spot today	Units per dollar today
Local inflation	Prices rising at home
US inflation	Prices rising in the US
Expected spot	Units per dollar later

IN THE LESSON

- Start with purchasing power parity, the long run anchor.
- Its logic is that a basket of goods should cost about the same everywhere once measured in one currency, so if prices rise faster in one country, its currency should weaken to compensate.
- In the form we use, with the exchange rate quoted as units of local currency per dollar, the expected spot rate equals today's spot rate times one plus local inflation, divided by one plus United States inflation.
- Higher local inflation raises the number of local units per dollar, meaning a weaker local currency.
- It works poorly over a few months, because exchange rates swing on flows and moods, but over many years it pulls rates back toward fair value.

26 Example 9: two parity views of Dunmere

Spot 5.00; inflation 6% vs 2%; deposit rates 9% vs 4%

PPP expected spot	5.00 × 1.06 ÷ 1.02	**5.196**
PPP: local money weaker by	1 − 5.00 ÷ 5.196	**3.8%**
UIP expected spot	5.00 × 1.09 ÷ 1.04	**5.240**
UIP: local money weaker by	1 − 5.00 ÷ 5.240	**4.6%**
UIP verdict	yield gap given back	**no extra**

IN THE LESSON

- Example nine.
- Apply two parity ideas to Dunmere.
- Purchasing power parity first.
- Spot is five units per dollar, local inflation six, American inflation two.
- Expected spot is five times one point zero six divided by one point zero two, which is five point one nine six.
- Measured as the fall in the local currency's value, that is one minus five divided by five point one nine six, about three point eight per cent weaker.
- Now uncovered interest parity, which says a higher yielding currency should fall by just enough to cancel its yield advantage.
- Five times one point zero nine divided by one point zero four gives five point two four zero, and one minus five divided by that is about four point six per cent weaker.
- If that held, the fund would earn no more in Dunmere than in dollars.
- In practice it often does not hold, as the next slides show.

27 Four more approaches

Each approach in one line

Approach	The idea
Relative strength	Growth and yields draw capital
Flows and balances	Deficits weaken, in time
Portfolio balance	More debt, weaker currency
Intervention	Policy can override

IN THE LESSON

- Four more approaches complete the toolkit.
- Relative economic strength looks at growth and interest rate gaps: strong growth and attractive yields draw in capital and support the currency.
- The flows and balances view links the savings and investment balance to the current account.
- A country that persistently invests more than it saves must borrow from abroad, runs a current account deficit, and needs steady inflows of capital to fund it.
- If those inflows slow, the currency tends to fall.
- The portfolio balance approach says investors demand a higher return to hold a growing stock of a country's assets, so rising government debt can weaken its currency.
- Finally, government intervention: a central bank can lean against moves, or choose to let them run.

28 Carry: a staircase and a trapdoor

Chart: Cumulative gain vs Time

- Steady carry
- Reversal

IN THE LESSON

- Back to Dunmere's high yield.
- Uncovered interest parity says the currency should fall, yet traders who borrow in a low yield currency and deposit in a high yield one, called a carry trade, often profit for long stretches.
- Here is a made up picture.
- Time runs along the bottom and cumulative gain up the side.
- The line climbs steadily, quarter after quarter, as the interest gap is collected and the currency holds.
- Then comes the mark labelled reversal.
- Risk appetite collapses, everyone sells the high yield currency at once, and a long run of gains is lost in a short time.
- The climb is a staircase and the fall is a trapdoor.
- That shape is why averages mislead.

29 Example 10: sizing for a reversal

Dunmere deposit 9% vs dollar deposit 4%, one year

Spot unchanged	9% − 4%	**+5.0 pts**
Spot drifts as PPP	1.09 × 5 ÷ 5.196 − 1	**+4.9%**
Currency falls 15%	1.09 × 0.85 − 1	**−7.35%**
Gap to dollar deposit	−7.35 − 4.00	**−11.35 pts**
Years of carry lost	11.35 ÷ 5.0	**2.27**

IN THE LESSON

- Example ten puts numbers on that shape.
- Larkfield is offered a one year Dunmere deposit at nine per cent, against four in dollars.
- If the spot rate does not move, the deposit earns nine, five points more than the dollar deposit.
- If the currency drifts as purchasing power parity says, dollars grow by one point zero nine times five, divided by five point one nine six, minus one, which is four point nine per cent, still ahead of the dollar deposit.
- But if the currency suddenly drops fifteen per cent, the dollar return is one point zero nine times point eight five, minus one, which is minus seven point three five per cent.
- That is eleven point three five points worse than the dollar deposit, more than two years of carry gone in one move.

30 Which force, over which horizon

Short run: about one year

Growth and yields → Carry → Intervention

Long run: ten years

PPP anchor → Current account → Debt stock

IN THE LESSON

- So which model should Tessa use?
- The answer depends on the horizon.
- The top row is the short run, from weeks to a year or so.
- Here the forces are growth and yield gaps pulling in capital, carry paying until it reverses, and intervention, where policy decides.
- The bottom row is the long run.
- Purchasing power parity gives the fair value anchor, persistent current account deficits weigh on a currency, and a rising stock of government debt makes investors want more return for holding it.
- Her recommendation for Dunmere is therefore in two parts.
- Over one year, expect the carry to probably pay, but size it for a reversal.
- Over ten years, plan for the currency to drift weaker, about as purchasing power parity suggests.

31 Mistakes with property and currencies

- A high cap rate is not a high return
- Cap rate 5.0 to 5.5 is a 10% rise
- Appraisals smooth returns and hide risk
- PPP is a long-run anchor, not a short-run forecast
- Carry pays, then reverses: state horizon

IN THE LESSON

- Last traps.
- In property, do not read a higher cap rate as a higher return.
- Always add growth and subtract the proportional change in the cap rate.
- Do not call a half point rise half a per cent; it is a ten per cent proportional rise.
- Do not trust appraisal based indices for risk: they smooth returns and understate volatility and correlation with equities.
- In currencies, do not apply one model mechanically.
- Purchasing power parity is a long run anchor, not a short run forecast.
- Do not assume interest parity always holds, because carry trades often earn for years before a sharp reversal.
- And always state the horizon before choosing the force that should dominate.

32 Recap: the lesson in four lines

- Home market: 7.5% built, 7.05% equilibrium
- Dunmere: offers 3.2% in dollars, should earn 8.5%
- Property: cap rate + NOI growth − cap rate rise
- Currency: PPP long run, carry short run, state the horizon

IN THE LESSON

- Let us pull the lesson together.
- For equity markets there are three methods: history, which depends on the window; the Grinold Kroner build, dividend yield plus earnings growth minus change in shares plus change in the price to earnings ratio; and Singer Terhaar, volatility times correlation times Sharpe ratio, blended by integration.
- The home market came to seven point five and seven point zero five.
- For emerging markets, add governance, controls, currency and liquidity, and remember that growth is not return.
- For property, use cap rate plus growth minus the proportional change in the cap rate, and adjust for cycle, sector and smoothing.
- For currencies, match the approach to the horizon.

33 Try three quick questions

1. Half integrated; premiums 3% and 5%; Rf 3%. Required return?
   Answer: 0.5×3 + 0.5×5 = 4; plus 3 = 7.0%.
2. Cap rate 6.0%, NOI growth 2.5%, cap rate stable. Return?
   Answer: 6.0 + 2.5 − 0 = 8.5%.
3. Spot 4.00; inflation 5% local, 2% US. PPP spot?
   Answer: 4.00 × 1.05 ÷ 1.02 = 4.118: local weaker.

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- A market is half integrated.
- Its integrated premium is three per cent, its segmented premium is five per cent, and the risk free rate is three.
- What is the required return?
- Half of three plus half of five is four, so the answer is seven per cent.
- Question two.
- A property market has a cap rate of six per cent, growth in net operating income of two and a half per cent, and a stable cap rate.
- What is the expected return?
- Six plus two and a half is eight and a half per cent.
- Question three.
- Spot is four units per dollar, local inflation is five per cent and dollar inflation is two.
- What is the parity spot rate?
- Four times one point zero five divided by one point zero two is four point one one eight, a weaker local currency.