



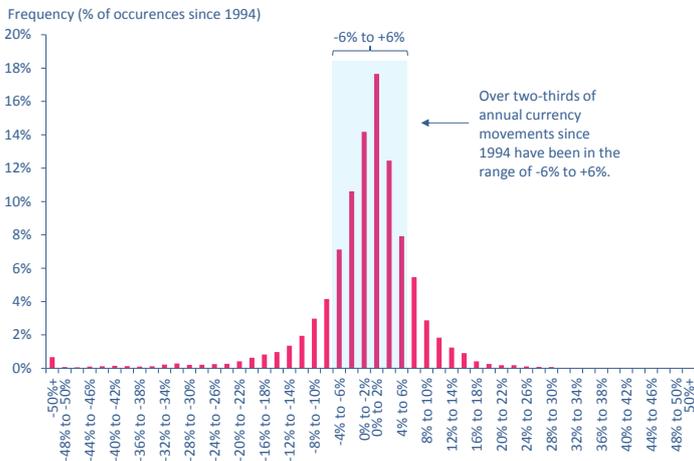
Exchange rates and aviation: examining the links

Introduction

The international nature of the aviation industry means that airlines are exposed to currency fluctuation risk. Most carriers incur both costs and revenues in a number of currencies, and the fact that some of these cash flows require conversion into a different currency forms the basis of an airline's foreign exchange (FX) risk.

In 'normal' times, annual changes in exchange rates are typically relatively small, and can be either mitigated or largely absorbed by carriers. (See Chart 1.)

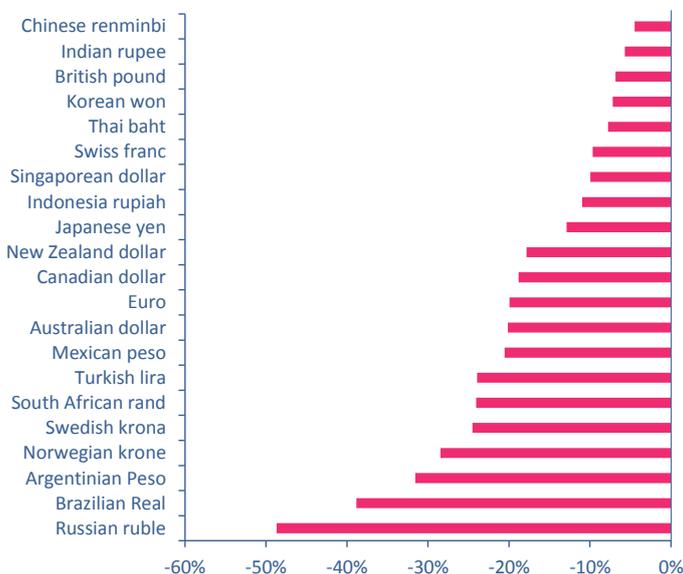
Chart 1 – Annual percent changes in nominal trade-weighted exchange rates (Broad indices, 1994 to present)



Source: Bank for International Settlements

However, the strong appreciation of the US dollar over the past year or so has been felt more widely; indeed, as a result, many airlines' USD-denominated costs have risen by 10-15% on average in local currency terms. (See Chart 2.)

Chart 2 – Percent change in bilateral exchange rates vs. the US dollar since the start of 2014



Source: Thomson Datastream

The first part of this paper outlines the ways in which FX changes can impact airlines – both directly and indirectly, with a focus on the US dollar. The second part discusses how fluctuations in exchange rates complicate the task of making international comparisons across the industry, and the subsequent need to understand and correct for this.

Part 1

Why do FX changes matter for airlines?

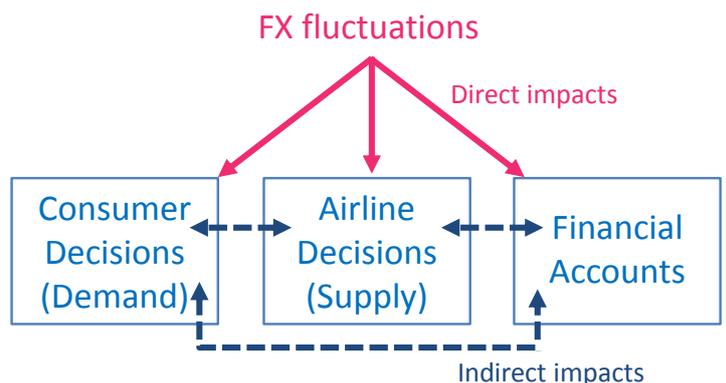
For an airline with international operations, the need to translate cash flows into different currencies, and the uncertainty surrounding the level of future exchange rates, gives rise to FX risk.¹

The size of the FX risk varies, depending on the nature and scope of an airline's operations, as well as its corporate strategy.² For airlines, the main foreign currency exposure is often to the US dollar because key cost items, notably fuel, maintenance, and overhaul costs (~40% of total operating costs), along with aircraft purchase and lease payments, are typically priced in US dollar terms.

How do FX changes affect airlines?

Chart 3 depicts the three main channels through which changes in exchange rates typically affect airlines.³ The following sections discuss each of these in turn.

Chart 3 – Stylized impacts of FX fluctuations on airlines



Source: IATA

1) Consumer Decisions (Demand)

Changes in exchange rates can impact the composition of passenger demand.⁴ The degree to which this occurs will

¹ Domestic airlines can also be indirectly affected by exchange rate fluctuations to the extent that their domestic operations act as a 'feeder' service for or from international services.

² Airlines can respond to, or mitigate, risks associated with FX fluctuations in various ways, including via financial hedging instruments. However, such a discussion is beyond the scope of this introductory paper.

³ Annex A contains a detailed depiction of the transmission mechanisms.

⁴ Changes in exchange rates impact the relative price of travel to and from countries, which then feeds into consumer decisions. Consider the

differ on a route-by-route basis, and will depend on a range of demand characteristics, including:

- **The balance of travel on specific routes.** Consider, for example, the US-Spain route, where ~2/3 of passenger traffic originates in the US. As a result, the recent fall in value of the euro versus the dollar is likely to be a net boost to (bi-directional) traffic, as the positive impact of making trips to Spain relatively cheaper for Americans outweighs the negative impact of making trips to the US relatively more expensive for Spaniards.

Moreover, to the extent that the weaker euro makes it relatively more expensive for Eurozone residents to travel outside the single-currency area, this would also support demand for intra-Eurozone travel. The converse holds for the US, where overseas travel has become relatively cheaper compared to domestic trips.

- **Degree of substitutability.** The sensitivity of demand to changes in price (including changes driven by FX shifts) differs from market to market. Highly leisure-driven markets tend to be more sensitive to price shifts than the more business-oriented routes.

ii) Airline (capacity) Decisions (Supply)

Changes in exchange rates (relative prices) can also influence airline supply decisions.

In the airline industry, capacity in the short-run is essentially fixed. Airlines may be able to respond to relative price shifts (and the associated consumer demand response) at the margin by changing the gauge of aircraft on a particular route or via strategic cancellations, for example, but these actions will not fundamentally change supply. Instead, an airline is more likely to adjust its pricing schedules, rather than capacity, to rebalance supply and demand.

In the longer-term, a permanent (and significant) shift in exchange rates may be a relevant consideration to network planning or aircraft investment decisions. However, this effect is likely to be easily outweighed by more fundamental considerations including the expected level of future demand and corporate strategy decisions. Exchange rates would typically be considered in the context of a sensitivity analysis rather than being a primary driver.

iii) Financial Accounts

Exchange rate fluctuations can also impact airline finances, both day-to-day operating activities (profitability) and balance sheet valuations.

example of a country whose currency experiences a sharp fall in value. This has the immediate effect of making outbound trips for its residents more expensive (because a given amount of the country's currency would now buy less goods and services overseas), but also making inbound trips to that country cheaper for foreign visitors. There may be lags involved before these influences show up in actual visitor and passenger numbers, but the movement in the currency will affect purchasing power immediately and, in time, will alter the composition of passenger demand.

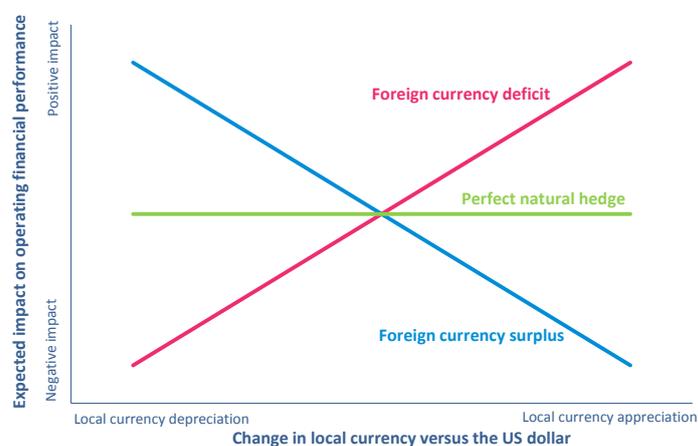
Operating activities (profitability)

Where airlines incur costs and revenues in a number of currencies, this gives rise to the possibility of mismatches in operating finances. There are three possible scenarios:

- 1) A **natural hedge** where the level of foreign currency revenues exactly matches the foreign currency costs. It is unlikely that an airline will have perfectly matching FX costs and revenues— either in terms of magnitude or timing;
- 2) A **foreign currency deficit** where foreign currency revenues are lower than foreign currency costs; and
- 3) A **foreign currency surplus** where foreign currency revenues exceed foreign currency costs.

The stylized impacts of a change in the exchange rate on relative operating financial performance under each of the three scenarios outlined above are shown in Chart 4.

Chart 4 – FX mismatch and operating financial performance



Source: IATA

For example, an airline with a US dollar deficit (which is the case for most non-US carriers) must convert additional local currency into US dollars each year to cover their dollar obligations. As such, a fall (rise) in value of the local currency would have a negative (positive) impact on operating financial performance in local currency terms. This is because more (fewer) units of local currency would need to be converted into US dollars to cover the mismatch.⁵ In other words, the local currency cost of servicing the US dollar obligations is higher (lower). The converse holds for an airline with foreign currency surplus.

Since a currency may move in very different ways against various individual currencies, some FX risks may work to offset or compound one another. The challenge associated with managing this complexity means that airlines will tend to focus on their major FX exposures, such as with the US dollar, rather than on each individual currency pair.

Impacts on balance sheets

FX fluctuations may also impact an airline's balance sheet. Financial reporting standards typically require foreign-currency assets and liabilities to be converted into local

⁵ Annex B contains examples of the impacts under various scenarios.

currency terms – often at market exchange rates – and this gives rise to FX risk.⁶

Such valuation effects may affect the perceived financial performance, and airlines will monitor, and may choose to actively manage, this risk. However, such impacts usually only give rise to ‘paper’ gains and losses, which are not realized unless an airline chooses (or is forced) to liquidate its position at the prevailing exchange rate. Consequently, such effects are unlikely to have direct impacts on operating performance.

iv) A final consideration – Indirect impacts

While the impacts of FX changes on airlines have been discussed separately, it is worth noting that in practice the three main transmission are both intertwined and endogenous, and the impacts of FX movements – and the appropriate responses – will vary from airline to airline.

Part 2

Complicating international comparisons

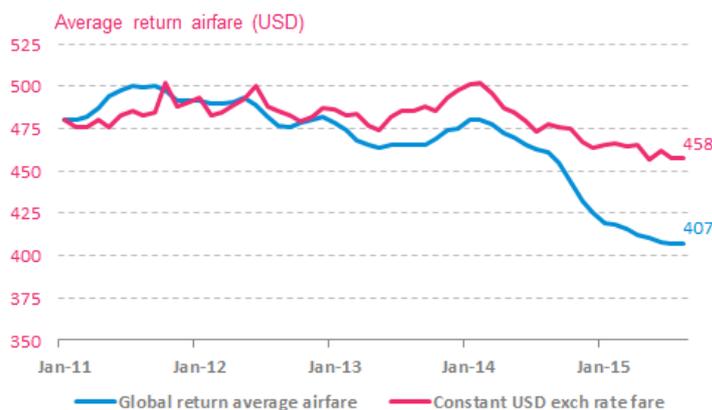
To compare and to aggregate the financial performance of the global airline industry, individual airlines’ local currency financial results must be converted into a common, comparable currency.

As in many other industries, typically the US dollar is used for this purpose. As a result, changes in the value of the US dollar can distort comparisons for a variety of variables, including yields, fares and revenues. Specifically, a stronger US dollar places downward pressure on non-US financial results when converting into US dollar-terms, as each unit in local currency terms is now worth less when expressed in US dollar terms.

It follows that to make *meaningful* comparisons of underlying performance within the industry, one has to correct for the potentially distortionary impact of currency movements over time. To illustrate this point, Chart 5 shows two measures of global average airfares over time: one in US dollar terms, the other in ‘constant currency’ terms – this is, adjusted to abstract from changes in exchange rates.

Global airfares are currently 11.6% lower year-on-year in US dollar terms, but this has been distorted by the rise in value of the dollar. Adjusting for the currency impact shows that airfares have still fallen over the past year – helped by lower oil prices – but the decline (4.2%) is smaller than that implied by the US dollar-based series.

Chart 5 – Global average airfares & the USD appreciation



Source: IATA PaxIS

Conclusion

Large movements in exchange rates impact airlines through three main channels; consumer decisions (demand), airline decisions (supply) and financial impacts.

Of these, the consumer (demand) response to a significant move in relative prices can be swift and may prompt a response from airlines, including adjustments to capacity (supply).

The financial impact can be especially acute for airlines when it relates to sizeable changes in the value of the US dollar (as has been the case over the past 18 months or so). This is because a large proportion of airline costs (including fuel) are denominated in US dollars, and many carriers need to convert domestic currency into dollars each year to meet their obligations. This gives rise to FX risk.

Large currency movements can also complicate the task of comparing and aggregating financial variables across the industry. Correcting for such movements is imperative to ensure that distortions are removed and underlying financial performance is analyzed.

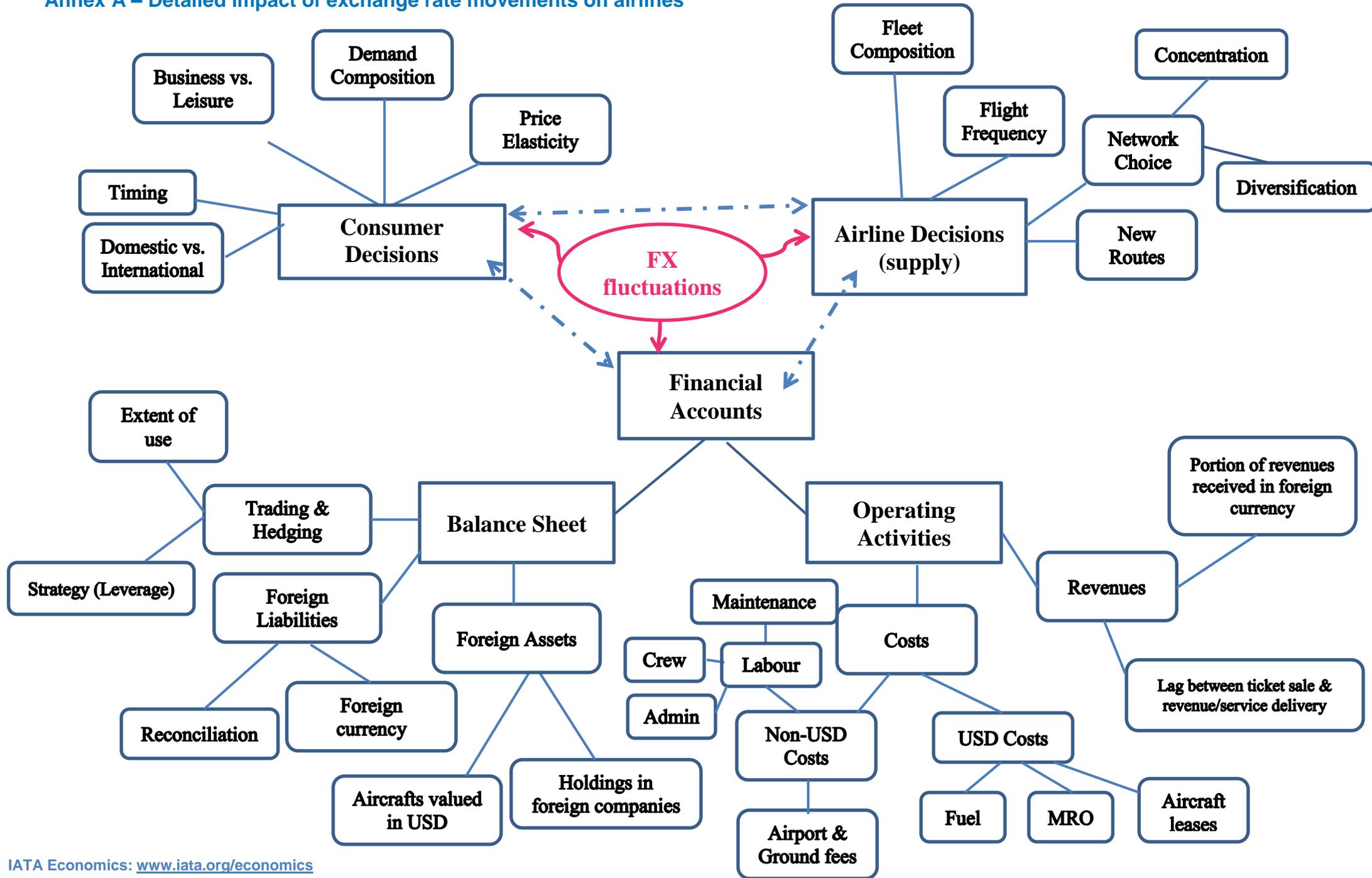
David Oxley and Nicholas Buecking

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⁶ Such assets and liabilities may include FX-denominated financial derivatives, shares of foreign-owned companies (eg, subsidiary operations, equity stakes in partner airlines), and FX-denominated debt.

Annex A – Detailed impact of exchange rate movements on airlines



Annex B – Stylized example of impact of exchange rate on operating profits

The following table demonstrates through a simple numerical example, the principles depicted in Chart 3. The three different types of airlines are shown in the columns (FX deficit, FX surplus and natural hedge). A baseline case is shown in the first row, where the USD/EUR exchange rate is set to 1:1. The example is re-calculated for a euro depreciation (EUR/USD=0.5) and a euro appreciation (EUR/USD = 2) in turn. The numerical examples show the impact of the different exchange rate movements (all other things assumed equal) on the profitability of the different types of airline.

<i>FX rate</i>	A) FX Deficit (proportion foreign costs > revenues)	B) Natural Hedge (proportion foreign costs = revenues)	C) FX Surplus (proportion foreign costs < revenues)																																				
<p>Baseline Case</p> <p>1\$=1€</p>	<table border="1"> <thead> <tr> <th>Operating revenue (€)</th> <th>Operating costs (€)</th> </tr> </thead> <tbody> <tr> <td>100€</td> <td>100€</td> </tr> <tr> <th>Portion of \$ revenues</th> <th>Portion of \$ costs</th> </tr> <tr> <td>10%=10\$=10€</td> <td>20%=20\$=20€</td> </tr> </tbody> </table> <p>Net income = (Rev-Costs) = (100€-100€)= 0€</p>	Operating revenue (€)	Operating costs (€)	100€	100€	Portion of \$ revenues	Portion of \$ costs	10%=10\$=10€	20%=20\$=20€	<table border="1"> <thead> <tr> <th>Operating revenue (€)</th> <th>Operating costs (€)</th> </tr> </thead> <tbody> <tr> <td>100€</td> <td>100€</td> </tr> <tr> <th>Portion of \$ revenues</th> <th>Portion of \$ costs</th> </tr> <tr> <td>10%=10\$=10€</td> <td>10%=10\$=10€</td> </tr> </tbody> </table> <p>Net income = (Rev-Costs) = (100€-100€)= 0€</p>	Operating revenue (€)	Operating costs (€)	100€	100€	Portion of \$ revenues	Portion of \$ costs	10%=10\$=10€	10%=10\$=10€	<table border="1"> <thead> <tr> <th>Operating revenue (€)</th> <th>Operating costs (€)</th> </tr> </thead> <tbody> <tr> <td>100€</td> <td>100€</td> </tr> <tr> <th>Portion of \$ revenues</th> <th>Portion of \$ costs</th> </tr> <tr> <td>20%=20\$=20€</td> <td>10%=10\$=10€</td> </tr> </tbody> </table> <p>Net income = (Rev-Costs) = (100€-100€)= 0€</p>	Operating revenue (€)	Operating costs (€)	100€	100€	Portion of \$ revenues	Portion of \$ costs	20%=20\$=20€	10%=10\$=10€												
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