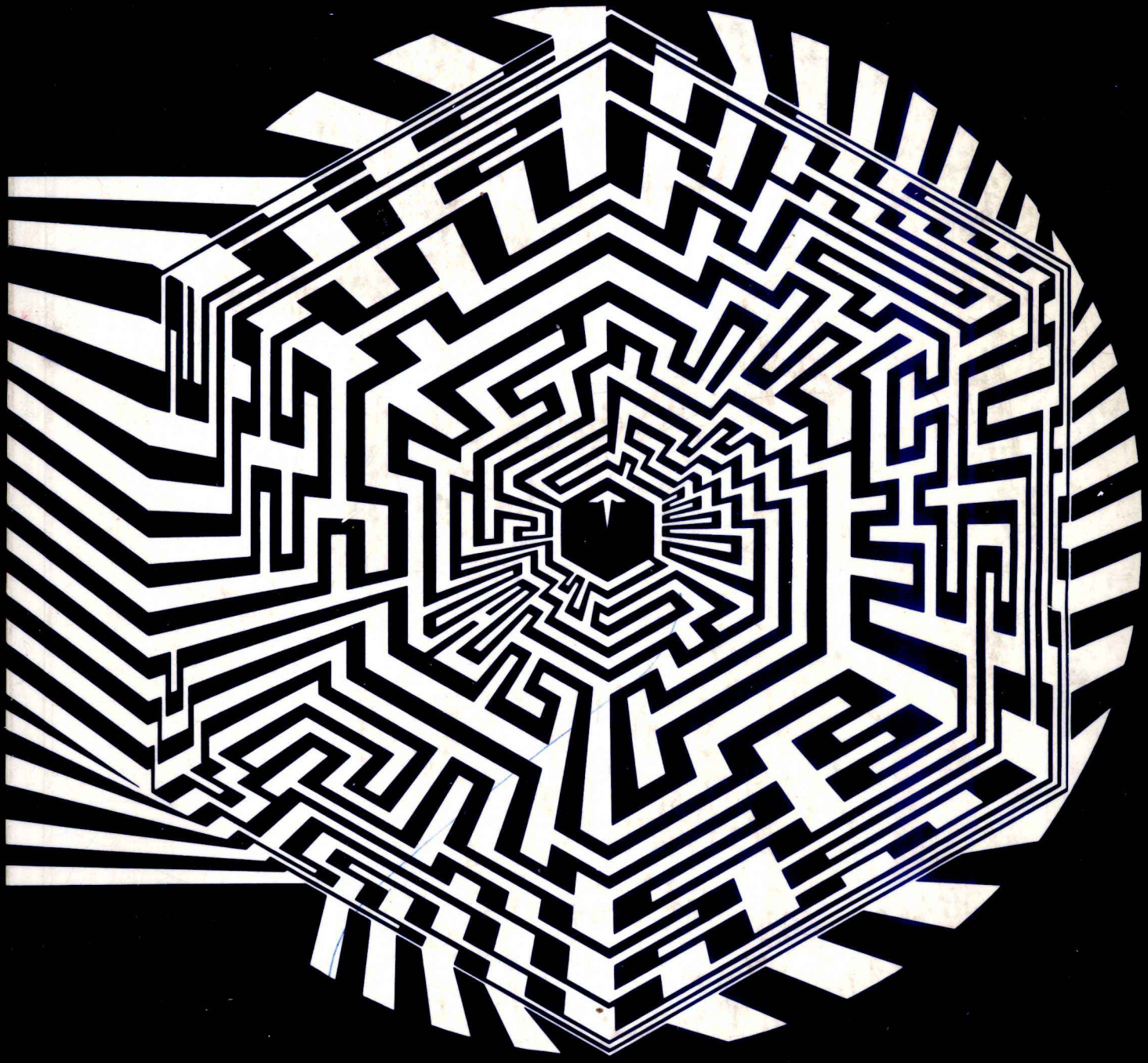
The Management of Foreign Exchange Risk

Second edition



Published by Euromoney Publications

Management of Foreign Exchange Risk

Second edition

Edited by
Boris Antl
and
Richard Ensor

Published by Euromoney Publications

Published by
Euromoney Publications Limited,
Nestor House, Playhouse Yard,
London EC4

ISBN 0 903121 30 1

Text set in 10/12 Linotron 202 Bembo, printed and bound
in Great Britain at The Pitman Press, Bath

List of exhibits

Contents

Introduction

Listen in to the discussion at almost any gathering of company treasurers today, whether it be a small private meeting or a larger conference or convention, and it is a reasonable bet that you will hear the members debating and arguing about one prevailing subject: foreign exchange risk, and its management. Add bankers to the group, and the subject will remain the same, but this time the odds are that the two sides will be trying to learn as much as possible from each other and in particular their respective views on exchange rate movements in the future. The reason for this current pre-occupation with this particular problem is not difficult to track down. It is not, as many commentators have imagined and asserted, that both company treasurers and bankers are obsessed with finding new ways of making quick and easy profits, and that they find the currency markets of today ideal for that purpose. It is not that they are all inherently speculators, and find themselves in a world where, because of the instability of currency markets and the massive amount of short-term liquidity available for that purpose, speculation is possible on a vast scale. The reason is quite the reverse, and in fact, much more mundane.

Ask, then, the treasurer of almost any international or multinational company why he finds foreign exchange risk so important today, and he will point, first, to the growing importance of multinationals and their activities in the world economy; then to the great instability in currency markets in recent years, and especially since 1973; and finally to the increasing problems for companies which have to operate on a worldwide basis in an era of flexible or floating exchange rates. The instability of currency markets in recent times is legion, and it would be impossible for me to retell it all here. It is, however, just worth recording that as I write, a little over a decade after the famous crisis move of August 1971, when President Nixon severed the link between the U.S. dollar and gold, the dollar is still the object of doubt as to its value against other currencies. In between, against the Deutschemark and sterling for example, we have seen swings of 15% or more, first one way and then the other, in periods of only a few months at a time. All of this, to say the least, has made the business of conducting international trading more than a little difficult.

The significance of the problem to an international company can be highlighted by first considering one or two figures relating to my own company, Imperial Chemical Industries PLC. We convert foreign currency assets, and long-term liabilities, and foreign currency current assets, into sterling at year-end rates. The movement on the fixed assets and long-term liabilities is taken to reserves, but any difference between year-end and start of year values for current assets of our overseas subsidiaries resulting from currency movements is taken to profit and loss account. In 1976 this resulted in a credit of £58 million; in 1977 in a "loss" of £29 million; a swing of £87 million between one year and the next, simply due to currency movements — and not reflected in cash flows at all. Similarly, if you look at our long-term loan capital — currently just over £1,300 million in total — you will find that currency fluctuations caused an increase in the figure of loans of £110 million in 1976. But in the four subsequent years, 1977 to 1980, they brought about a reduction totalling some £220 million — movements affecting our gearing, but nothing to do with actual borrowing operations, or repayments. And

these very significant repercussions of currency fluctuations on our accounts were over and above the impact of currency movements on our export realizations, our import payments, and the profits made by our overseas subsidiaries in their own markets, and in their own currencies. Little wonder that this is a problem which is of constant concern to us. It is, unfortunately, compounded by the fact that companies find that currency fluctuations affect them in at least three different ways, i.e. there are three different types of risk they have to consider. First, there is the accounting risk, to which I have already referred. Some companies continue to measure their currency exposures by reference to up-to-date accounts, though they do not necessarily include every currency asset and liability in their sums. Secondly, there is the economic risk, which most of us would equate with transactions in the near future, or with cash movements. For many of us this is the real risk the company must face and contend with, and it is the one which ICI's systems are designed to measure and evaluate. And thirdly, there is the market valuation risk, or the impact of currency movements on the value of the company in the equity market. One can summarize that risk by saying that, generally speaking, equity investors prefer to see steady growth in a company's earnings. But a company hedging quite successfully against its economic risks could, nevertheless, show substantial fluctuations in its earnings as reported under accounting conventions. The question which then has to be answered is: "Which risk prevails — the economic one, or the market valuation one? Should one aim, in one's currency operations, at stabilizing earnings, even if it means not necessarily maximizing them?"

If that is the broad nature of the problem, is it perhaps one which will not be with us for much longer? Is it likely to disappear, or at any rate to become easier to cope with, as stability returns to the world's money and currency markets? I must say I for one doubt it; it seems to me that the current liquidity in the system, plus the general malaise of uncertainty, must spell instability for some time to come. Up to the end of 1973 there was a reasonable balance in the whole system, but since then we have seen a massive distortion in the distribution of resources, a build-up of non-productive liquidity, a huge accumulation of debt on the part of the lesser-developed countries, and the most serious recession since World War II. The world's leaders are finding it virtually impossible to see a way through this labyrinth, seeming to have no weapon with which to control the resultant expansion of credit than ever higher interest rates. We, I think, having noted that sterling has left the arena as an international currency, that the dollar is highly volatile, and that the Deutschemark is most reluctant to step forward to play a part, must reckon on the future being pretty much like the recent past. In these circumstances we must do something; we must calculate our currency exposures, one way or another, consider them, and then decide whether to hedge or not.

Thus, for several reasons, I believe the re-issue of this book to be particularly timely. By collecting together a number of papers, written by experts with different backgrounds, considering specific aspects of the problem, we hope it will help company treasurers, and in turn the bankers and others who try to serve them, to arrive at their own answers to the major questions which anyone involved in foreign exchange exposure management must surely ask of himself and his colleagues. They are:

(1) How should we measure our foreign currency exposures? What is the relevance of the accounting (or translation) approach, in contrast to the economic (or transaction) method? (Chapter 1).

(2) Is it possible to develop a reasonably efficient system for forecasting rates, or must we admit that the vagaries in the system, at any rate in the short run, are always likely to defeat us? (Chapters 2 and 3).

(3) Having measured our exposures, what technique or techniques do we use in coping with them? (Chapter 4).

(4) What management considerations arise in dealing with the problem in these ways? For example, should the activity be centralized, or decentralized? How do we control it within the total scheme of organization? (Chapter 5).

As I have said already, I am sure that this is a problem which is going to remain with us for a number of years. The debate will go on, new approaches will be suggested, and new techniques for matching, covering, and so on, will be devised, but if this book at the very least poses the right questions, and suggests just a few of the possible answers, it will have made a major contribution.

A. W. Clements
London, April 1982

CHAPTER ONE
Measuring foreign exchange risk

1. Definition and measurement

Boris Antl

Foreign exchange exposure arises when a corporation has transactions denominated in currencies other than its own or when it has net assets or liabilities outside the home country. As foreign exchange rates change, the value of the transactions or the value of the net assets or liabilities abroad changes when translated into the parent currency. Accordingly, foreign exchange gains and losses arise.

The magnitude of the recorded gains and losses will depend to a large extent on how exposure is defined; accounting standards used in major industrial countries vary and, accordingly, definitions of exposure do as well. Furthermore, companies themselves, even if using the same accounting standards, define exposures in various ways using different concepts. Thus, some may be concerned about transaction exposure while others will be primarily interested in translation exposure; some define exposure before-tax, others after-tax; some use today's exposure while others, pro-forma exposure.

The purpose of this section is to outline some of the basic concepts in exposure management as they will be used in this book. We proceed by first outlining the main accounting conventions used in major countries and defining some of the most important concepts used by corporations. The following parts of this section discuss and analyse exposures generated by various items of the balance sheet. Once exposures have been analysed from a static viewpoint, the income statement is brought into the equation and a more dynamic approach is introduced by the concept of pro-forma exposure. Finally, the various definitions and concepts are related to hedging strategies which are discussed in greater detail in other parts of the book.

To avoid unnecessary repetition, the exchange rate assumptions are identical in all of the examples used in this section. For convenience, they are summarized in Exhibit 1.

I. Accounting standards and exposure management concepts

There are five main accounting conventions used to translate financial statements denominated in foreign currencies: (1) closing, or current, rate method; (2) current/non-current method; (3) monetary/non-monetary method; (4) temporal method; and (5) functional currency method. Each of these methods looks to an item's specific attribute to categorize it as either exposed, employing the current exchange rate, or non-exposed, employing the historical rates of exchange.

1. The *closing rate method* translates all the assets and liabilities in the financial statements at the current rate. The rationale underlying this method is that the subsidiary's activities are being conducted in a foreign environment and its cash flows are denominated in a

Exhibit 1.1.1: Exchange rate assumptions and abbreviations used

At the beginning (time t^0) and at the end of the exposure period (time t^1), the exchange rates are as follows:

t^0 .... TC1 = LC1 = PC1
t^1 .... TC1 = LC0·8889 = PC0·8
LC1 = PC0·9

In other words, on the last day of the exposure period, LC depreciates by 10% against PC, and TC depreciates by 20% against PC.

For consistency we use the following abbreviations:

PC	—	currency of the parent company
LC	—	local currency of the subsidiary
TC	—	third currency (other than LC or PC)
FX	—	foreign exchange
ER	—	exchange rate
BT	—	before-tax
AT	—	after-tax
A/R	—	account receivable
A/P	—	account payable
T/P	—	tax payable
R/E	—	retained earnings

foreign currency. It is not a conglomeration of individual parts at risk, but the sum of the parts. The entire operation, the firm's net investment, is considered exposed.[1]

2. The *current/non-current* method classifies items based on the maturity, or holding period, within the subsidiary's books. All current items are translated at the current exchange rate, while non-current items are translated at historical rates. Accordingly, all current assets and liabilities are considered to be exposed to exchange risk while non-current items are not. Potentially unrealistic exchange gains and losses are thus avoided as long-term debt and fixed assets are not re-translated at each balance sheet date.

3. Under the *monetary/non-monetary* translation convention, the distinction between exposed and non-exposed is made on the basis of the financial nature of the item. All monetary items, where monetary is defined as fixed in the number of foreign currency units, are translated at the current exchange rate. All non-monetary items, essentially inventory and fixed assets, are translated at the historical rates of exchange. The rationale of this method is that as monetary items are fixed in terms of foreign currency units, any change in the exchange rate will result in a change in the base currency value. Non-monetary items are forms of wealth whose money value can change; price inflation or deflation is assumed to compensate for any changes in currency values.

4. The *temporal method* is very similar to the monetary/non-monetary. It is based on the concept that the subsidiary is an extension of the activities of the parent. The translation process reflects transactions of the group as though it were a single enterprise, using the base currency as a unit of measure. Under this method, all accounts which are measured on a historical basis are translated at the exchange rate in effect when these accounts were initially recorded. In a similar fashion, those accounts measured on a current (or market) basis are valued at the exchange rate in effect at the date of the balance sheet.

5. The *functional currency* approach accepts multiple currency measurement bases in consolidated financial statements. Accordingly, under this standard each entity measures and reports its results in its functional currency, and FX gains and losses determined in relation to the various functional currencies are included in current income. Following the remeasurement of an entity's results in the functional currency, all functional currency assets and liabilities are translated into the parent currency at the *current exchange rate*. The

[1] In a literal sense, equity is not translated at the current rate, although obviously it is in a net investment sense or the balance sheet would not balance.

resulting translation adjustments are not included in net income but charged to a separate component of stockholders' equity. The accounting results achieved are thus compatible with the expected economic results (a strengthening of a functional currency results in gains and vice-versa) while operating margin distortions (due to applying historical exchange rates to non-monetary accounts) are eliminated.

As there is no commonly accepted definition of foreign exchange exposure, a firm's attitude towards risk, and the steps it takes to manage its exposure, will depend upon how it defines exposure. Management must decide what is exposed and must select appropriate exchange rates for translating each item on the balance sheet and income statement. From an exposure management viewpoint, these exposures are frequently defined as (1) transaction, (2) translation, or (3) consolidated after-tax.

1. *Transaction exposure* relates to actual transactions in foreign currencies, while translation exposure deals with the valuation of overseas operations. Transaction exposure frequently occurs at both the parent and the subsidiary level. For the parent it occurs whenever a transaction is denominated in a currency other than the parent currency; at the subsidiary level it arises when a transaction is denominated in a currency other than the local (functional) currency. These gains or losses, whether at the parent or subsidiary level, are taxable or tax-deductible by the local tax authorities. The point is that transaction exposure has a tax impact and affects directly the cash flows of the trading entity.

2. *Translation exposure* is a major issue only from the consolidated viewpoint. Translation gains and losses are recognized for accounting purposes by the consolidated entity upon translating the foreign subsidiary's financial statements (as reported in local currency terms) to the parent currency. Translation gains or losses do not normally represent immediate cash gains or losses. Translation exposure can also frequently be assumed to have no tax effect upon consolidation; the parent currency translation gain or loss has no tax effect for the subsidiary, and the parent often does not provide for tax effects of foreign earnings considered to be reinvested. Each company's tax position must be evaluated to avoid making unwarranted assumptions, but for illustration purposes it is assumed below that translation gain or loss has no tax effect.

3. *Consolidated after-tax exposure*, as the term indicates, combines the translation component and the tax effect of the transaction component of the exposure from a consolidated after-tax viewpoint. Accordingly, this definition of exposure, though not an accounting concept, accounts properly for the gain, loss and the tax effects of movements of the individual currencies *vis-à-vis* the parent currency. The concept of after-tax exposure is used by corporations with a centralized exposure management function.

In addition to the above concepts some firms may measure exposure using a *country* approach; others may use a *currency* approach. Those firms which approach the measurement of transaction and translation exposure by the country concept are managing foreign exchange risk from a decentralized perspective. Those firms which use the currency concept are managing foreign exchange risk on a global basis. Country and currency exposure measures yield two very different values but the total exchange gain/loss is equivalent. The obvious difference of the two exposure measures is that the exchange gain/loss computed from country exposure is based on cross-rates, while the exchange gain/loss computed from currency exposure is based on straight exchange rates.

Finally, the corporate treasurer should be aware that whereas accounting results are historically oriented, exposure is computed on a *pro-forma* basis. There must be an anticipatory element to properly quantify the risks inherent in operations conducted in a foreign currency. In this sense, transaction exposure for the firm should not only identify the existing book exposure, but also the exposure arising from future transactions. This subject is treated in more detail in Parts VI and VII of this section.

II. Current monetary assests and liabilities

Current monetary exposure arises when a corporation holds current monetary assets and/or liabilities denominated in a foreign currency on its own books and/or when it operates abroad and generates current monetary assets and/or liabilities on the subsidiary's books.

The following paragraphs discuss current monetary exposure from the parent's, the subsidiary's and the consolidated viewpoints.

Parent's exposures in foreign currencies

In this example, presented in Exhibit 1.1.2, let us assume that the only exposure on the parent's books is an account receivable of TC 1,000. This account receivable is worth PC 1,000 on 31/12/XO. As the TC devalues by 20% vs. the PC on 31/3/X1, the receivable is then worth PC 800 and a before-tax transaction loss of PC 200 is recorded by the parent company (line 4). This loss is assumed to be taxable at the rate of 40% and results in a net after-tax loss of PC 120 (line 6) and an after-tax negative cash impact of PC 120 (line 7).

Exhibit 1.1.2: Parent's exposure: transaction

	31/12/X0	31/3/X1
(1) Exposure (TC)	1,000	1,000
(2) ER (PC/TC)	1·0	0·8
(3) PC equivalent	1,000	800
(4) FX gain/(loss) BT		(200)
(5) Tax (40%)		80
(6) FX gain/(loss) AT		(120)
(7) Cash impact AT		(120)

Subsidiary's exposures

Whereas exposures on the parent's books impact only the parent, exposure on the subsidiary's books may affect either the subsidiary, the consolidated results or both. To understand fully the impact of a subsidiary's exposures it is useful to differentiate between at least two categories of exposure; those denominated in (i) local currency, and (ii) foreign currencies.

1. Local currency exposure

In this example, we assume that the only exposure on the subsidiary's books on December 31, 19X0, is an account receivable of LC 1,000. From the consolidated viewpoint, this receivable is originally worth PC 1,000, as illustrated in Exhibit 1.1.3. On March 31, the PC value of the receivable decreases to PC 900 and a translation loss of PC 100 is recognized in consolidation (line 4). This loss is a valuation loss and has no immediate cash impact. The subsidiary is not affected, as the receivable is denominated in the local currency.

Exhibit 1.1.3: Subsidiary's exposure: translation

	31/12/X0	31/3/X1
(1) Exposure (LC)	1,000	1,000
(2) ER (PC/LC)	1·0	0·9
(3) PC equivalent	1,000	900
(4) FX gain/(loss)		(100)

2. Translation of third currency exposure

Translation of third currency exposure and the related gains and losses can be analysed by two different approaches.

Under one approach — referred to as indirect — the third currency amount is first translated into the local currency and then retranslated from the local currency into the parent currency. Under an alternative approach — referred to as direct — the third currency exposure on the subsidiary's books is translated directly into the parent currency, using the cross-rate between the TC and the PC. The two approaches are shown and reconciled below with the following data:

A receivable of TC 100 is booked by the subsidiary at time t^0. At time t^1, when the books of the subsidiary are consolidated with the parent's books, the translation loss can be computed as follows:

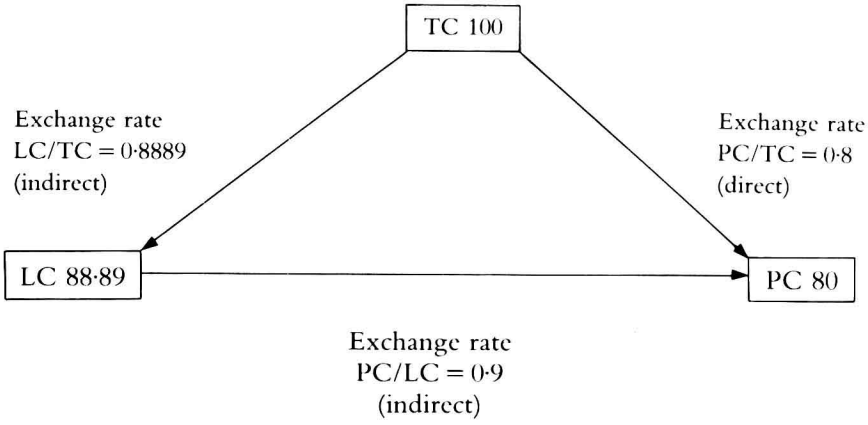
Indirect approach

t^0.... TC1 = LC 1 = PC 1	TC 100 =	LC 100	= PC 100
t^1.... TC1 = LC 0·8889 = PC 0·8	TC 100 =	LC 88·89	= PC 80
Foreign exchange loss		(LC 11·11)	(PC 20)

Direct approach

t^0.... TC = PC 1	TC 100 =	PC 100
t^1.... TC 1 = PC 0·8	TC 100 =	PC 80
Foreign exchange loss		(PC 20)

Reconciliation of the two approaches at time t^1



The subsidiary's exposure of TC 100 in the above example yields a translation loss of PC 20 for the parent, regardless of which of the two approaches is used. Whereas the direct approach identifies only the translation loss in terms of PC, the indirect approach identifies also the transaction loss of the subsidiary in terms of LC. The transaction loss for the subsidiary is LC 11·11 and the translation loss for the parent, PC 20.

The distinction between the above identified transaction and translation gains/losses is important for understanding the functional currency approach to translation of foreign currency financial statements. Using the data from the above example, although the net impact under the functional currency approach is identical, the breakdown between transaction and translation impact is not. This is because the functional currency approach accepts multiple currency measurement bases in consolidated statements. Under the functional currency approach, the consolidated statements reflect (1) the PC equivalent of the transaction loss as measured on the subsidiary's books in LC terms, and (2) the translation adjustment in PC terms to balance the translated consolidated statements. This is illustrated in the table below.

	(1) Transaction component	**(2) Translation component**	**(3) = (1) + (2) Net impact**
t^0	FC 100 = LC 100	LC 100 = PC 100	
t^1	FC 100 = LC 88·89	LC 100 = PC 90	
FX impact in LC	(LC 11·11)		
ER (PC/LC) at t^1	PC 0·9		
FX impact in PC	(PC 10)	(PC 10)	(PC 20)