

## ACCOUNTING FOR CHANGING PRICES (INFLATION ACCOUNTING)

Conventional accounting results in a mix of attributes being reflected in the asset section of the Statement of Financial Position. Accounts receivable are reported at the net amount expected to be received in the future; short-term investments are reported at either cost or current market value; inventory is carried at the lower of cost or market value; and property, plant, and equipment is reported at cost less accumulated depreciation. Prices of most assets fluctuate, often increasing. Reporting assets on the Statement of Financial Position at their historical cost during a period of price changes can make the Statement of Financial Position information irrelevant. For example, reporting land that was purchased in 1925 at its historical cost of ₦1,000 is unlikely to provide financial statement readers with useful information in the 21st century.

When the prices of goods and services in an economy increase in general, we say that inflation has occurred. Economists often measure inflation by determining the current price for a “basket” of goods and services and then compare the current price with the price for the same basket of goods and services at an earlier time. For example, if a basket of goods and services costs ₦120 at the end of Year 1 and the same basket costs ₦132 at the end of Year 2, then inflation in Year 2 was 10 percent  $(\frac{₦132 - ₦120}{₦120})$ .

In this case we have measured the increase in the general price level, or the rate of inflation. The general inflation rate also reflects the decrease in the **purchasing power** of the currency. In our example, it takes ₦132 at the end of Year 2 to purchase as much as ₦120 could purchase at the end of Year 1. The naira has lost 10 percent of its purchasing power during Year 2.

Not all goods and services increase in price by 10 percent when the average rate of inflation is 10 percent. The price of a new machine might increase by 15 percent, the price of component parts might increase by 12 percent, the price of janitorial services might increase by 5 percent, and the price of raw materials might actually decrease by 4 percent. These are measures of changes in specific prices. However, in our example, the changes in specific prices throughout the economy average out to an increase of 10 percent.

### Impact of Inflation on Financial Statements

During a period of inflation, assets reported on the Statement of Financial Position at historical cost are understated in terms of their current value. Having understated assets results in understated expenses (especially depreciation and cost of goods sold), which in turn results in overstated net income and overstated retained earnings. Ignoring changes in the prices of assets can lead to a number of problems such as:

- i. Understated asset values could have a negative impact on a company's ability to borrow, because the collateral is understated. Understated asset values also can invite a hostile takeover to the extent that the current market price of a company's stock does not reflect the current value of assets.
- ii. Overstated income results in more taxes being paid to the government than would otherwise be paid and could lead stockholders to demand a higher level of dividend than would otherwise be expected. Through the payment of taxes on inflated income and the payment of dividends out of inflated net income, both of which result in cash outflows, a company may find itself experiencing liquidity problems.

- iii. To the extent that companies are exposed to different rates of inflation, the understatement of assets and overstatement of income will differ across companies; this can distort comparisons across companies. For example, a company with older fixed assets will report a higher return on assets than a company with newer assets, because income is more overstated and assets are more understated than for the comparison company. Because inflation rates tend to vary across countries, comparisons made by a parent company across its subsidiaries located in different countries can be distorted.

### **Purchasing Power Gains and Losses**

In addition to ignoring changes in the values of nonmonetary assets, historical cost accounting also ignores the purchasing power gains and losses that arise from holding monetary assets (cash and receivables) and monetary liabilities (payables) during a period of inflation. Holding cash and receivables during inflation results in a purchasing power loss, whereas holding payables during inflation results in a purchasing power gain.

For example, when the general price level index is 120, ₦120 in cash can purchase one whole basket of goods and services. One year later, when the general price level index stands at 132 (10 percent inflation), the same ₦120 in cash can now purchase only 90.9 percent of a basket of goods and services. It now takes ₦132 to purchase the same amount of goods and services as at the beginning of the year. The difference between the ₦132 needed to maintain purchasing power and the ₦120 in cash actually held results in a ₦12 purchasing power loss. This can be computed by multiplying the amount of cash at the beginning of the year by the inflation rate of 10 percent ( $₦120 * 10\% = ₦12$ ).

Borrowing money during a period of inflation results in a purchasing power gain. Assume a company expects to receive ₦120 in cash at the end of the current year. If it waits until the cash is received, it will be able to acquire 90.9 percent of the market basket of goods at that time when the general price level index is 132. Instead, if the company borrows ₦120 at the beginning of the year and repays that amount with the cash received at the end of the year, it will be able to acquire 100 percent of the basket of goods and services at the beginning of the year when the general price level index is 120. Holding a ₦120 liability during a period of 10 percent inflation results in a purchasing power gain of ₦12 ( $₦120 * 10\%$ ). A net purchasing power gain will result when an entity maintains monetary liabilities in excess of monetary assets during inflation, and a net purchasing power loss will result when the opposite situation exists.

### **Methods of Accounting for Changing Prices**

Two solutions have been developed to deal with the distortions caused by historical cost (HC) accounting in a period of changing prices. The first solution is to **account for changes in the general price level**. This approach makes adjustments to the historical costs of assets to update for changes in the purchasing power of the currency and therefore is referred to as **general price-level-adjusted historical cost (GPLAHC)** accounting or, more simply, **general purchasing power (GPP)** accounting. The alternative solution is to **account for specific price changes** by updating the values of assets from historical cost to the current cost to replace those assets. This is known as **current replacement cost (CRC)** or, simply, **current cost (CC)** accounting. In addition to adjusting asset values for changes in the general price level and determining expenses from GPLAHC amounts, GPP accounting also requires that purchasing power gains and losses be included in the determination of net income.

### **Net Income and Capital Maintenance**

Application of each of the three methods of asset valuation—HC, GPP, and CC— results in a different amount of net income. Each measure of net income relates to a specific concept of capital maintenance. Much of the debate surrounding the appropriate method for asset valuation relates to determining which concept of capital maintenance is most important. The following example demonstrates the difference in net income that results from the three different accounting models.

### Example

Assume that HIE Company is formed on January 1, 2011, by investors contributing ₦200,000 in cash. The general price index (GPI) on that date is 100. HIE Company's opening Statement of Financial Position on January 1, 2011, appears as follows:

Cash	<u>200,000</u>	Share Capital	<u>200,000</u>
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With the initial equity investment, one unit of inventory is purchased on January 2 at a cost of ₦100,000 and ₦100,000 remains in cash, resulting in the following financial position:

Cash	100,000	Share Capital	200,000
Inventory	<u>100,000</u>		
	<u>200,000</u>		<u>200,000</u>

On January 2, 2011, the managers of HIE Company go on vacation, returning on December 31, 2011, at which time the inventory is sold for ₦150,000 in cash. At December 31, 2011, the general price index is 120 (20 percent annual inflation during 2011) and the inventory has a current replacement cost of ₦150,000. The **Historical Cost** income statement for 2011 appears as follows (ignoring income taxes):

Sales	150,000
Cost of Sales	<u>(100,000)</u>
Income	<u>50,000</u>

The Statement of Financial Position at December 31, 2011, prior to any distribution of dividends is:

Cash	250,000	Share Capital	200,000
		Retained Earnings	<u>50,000</u>
	<u>250,000</u>		<u>250,000</u>

The economic definition of income is that it is the amount that can be distributed to owners after making sure that the company is as well off at the end of the year as it was at the beginning of the year. If HIE Company were to distribute a dividend of ₦50,000 equal to 2011 net income, the resulting Statement of Financial Position would be exactly the same as it was at the beginning of the year:

Cash	<u>200,000</u>	Share Capital	<u>200,000</u>
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Thus, **Historical Cost (HC)** income is the amount that can be distributed to owners while maintaining the “nominal” amount of contributed capital at the beginning of the year. Note, however, that in terms of purchasing power, the company is not as well off at the end of the year as it was at the beginning of the year—₦200,000 in cash at January 1, 2011, when the GPI was 100, could purchase two baskets of goods and services. At December 31, 2011, when the GPI has risen to 120, ₦200,000 in cash can purchase only  $1\frac{2}{3}$  baskets of goods. The conventional **HC** model of accounting ignores the loss in purchasing power

of the beginning of year amount of capital. **GPP** accounting explicitly takes the change in purchasing power of the currency into account.

### General Purchasing Power (GPP) Accounting

Under GPP accounting, nonmonetary assets and liabilities, stockholders' equity, and all income statement items are restated from the GPI at the transaction date to the GPI at the end of the current period. Because inventory was acquired on January 1, 2011, when the GPI was 100, and the GPI at December 31, 2011, is 120, the cost of sales (inventory) is restated using the ratio 120/100. Non-current assets and intangible assets and the related depreciation and amortization would also be restated for changes in general purchasing power.

Because the sale occurred on December 31, 2011, when the GPI was 120, there is no need to restate sales (or the restatement ratio can be expressed as 120/120). In addition to restating sales and cost of sales, **GPP** accounting also requires that a net purchasing power gain or loss be included in income. At January 2, 2011, HIE Company has monetary assets of ₦100,000 (cash) and no monetary liabilities, yielding a net monetary asset position of ₦100,000. Because HIE Company holds this cash for the entire year, a net purchasing power loss (PPL) of ₦20,000 arises. In addition, HIE Company receives ₦150,000 in cash on December 31, 2011, from the sale of inventory. Because this cash is received on December 31, there is no loss in purchasing power by the end of the year. The PPL is calculated as follows:

2/1/2011	Cash	100,000 * (120/100)	120,000	(cash needed at 31/12/2011 to maintain the purchasing power of 100,000 at 1/1/2011)
	Increase in cash in 2011	150,000 * (120/120)	150,000	(cash needed at 31/12/2011 to maintain the purchasing power of 150,000 received on 31/12/2011)
			<u>270,000</u>	
31/12/2011	Cash		(250,000)	(Cash in hand before paying dividend)
	Purchasing Power Loss		<u>20,000</u>	

Combining the restatement of the income statement items with the PPL, GPP income is calculated as follows:

	Historical Cost	Restatement Ratio	GPP
Sales	150,000	*120/120	150,000
Cost of Sales	<u>(100,000)</u>	*120/100	<u>(120,000)</u>
	<u>50,000</u>		30,000
Purchasing Power Loss			<u>(20,000)</u>
Income			<u>10,000</u>

Share capital must also be restated for 2011 inflation, as follows:

Share Capital	200,000	*120/100	240,000
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The journal entry needed to account for GPP adjustments is as follows:

	Dr	Cr
Inventory (Cost of Sales)	20,000	
Purchasing Power Loss	20,000	
Share Capital		40,000

GPP income represents the amount that can be distributed to owners while maintaining the purchasing power of capital at the beginning of the year. After paying a dividend of ₦10,000, HIE Company's Statement of Financial Position at December 31, 2011, appears as follows:

Cash	<u>240,000</u>	Share Capital	<u>240,000</u>
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Note that ₦240 in cash at December 31, 2011, when the GPI is 120, can purchase two baskets of goods and services, just as ₦200 in cash could have at January 1, 2011, when the GPI was 100. The owners are just as well off in terms of the purchasing power of their contributed capital at the end of the year as they were at the beginning of the year.

### Current Cost (CC) Accounting

Maintaining the purchasing power of equity does not necessarily ensure that the company is able to continue to operate at its existing level of capacity, because the prices of specific goods and services purchased by an individual company do not necessarily increase at the rate of average inflation. To determine the amount of income that can be distributed to owners while maintaining the company's productive capacity or physical capital, current cost (CC) accounting must be applied.

Under **CC** accounting, historical costs of nonmonetary assets are replaced with current replacement costs and expenses are based on these current costs. Assume that, on December 31, 2011, the cost to replace the unit of inventory acquired at the beginning of the year is ₦150,000. In other words, this particular item has experienced a specific rate of inflation of 50 percent ( $[(\text{₦}150,000 - \text{₦}100,000)/\text{₦}100]$ ). The following journal entry would be made:

	Dr	Cr
Inventory (Cost of Sales)	50,000	
Holding Gain (Equity)		50,000

The **CC** accounting income statement would be as follows:

Sales	150,000
Current cost of Sales	<u>(150,000)</u>
Income	<u>-</u>

There is no income to distribute as a dividend. After adding the holding gain to the beginning balance in capital, the ending balance sheet at December 31, 2011, is as follows:

Cash	250,000	Share Capital	200,000
		Holding gain	<u>50,000</u>

250,000

250,000

With ~~₦~~250,000 in cash at December 31, 2011, HIE Company can replace the inventory that was sold at its current cost of ~~₦~~150,000 and still will have ~~₦~~100,000 in cash. The company can end the year with the same physical assets as it had at the beginning of the year—~~₦~~100,000 cash plus one unit of inventory.

Comparing the amounts of income that would be reported under **GPP** and **CC** accounting with **HC** income shows the potential problems that can arise if changing prices are ignored.

	<b>HC</b>	<b>GPP</b>	<b>CC</b>
Income	50,000	10000	-

If **HC** accounting is used as the basis for taxation and dividend distribution, there is a good chance that the company will not be as well off at the end of the year in terms of either purchasing power or productive capacity as it was at the beginning of the year.