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**PART 1: UNDERTAKING A PURCHASE PRICE ALLOCATION**

Mergers are ubiquitous; nearly every business in history has been involved in one or more, either as an acquirer or a target. A lot has been published on making mergers happen and quite a lot on their successes and failures. Yet, according to KPMG, only 17% of the over 700 they studied, created real value and more than half destroyed it. However, there is much less written on the numerous endeavours that have to occur immediately afterwards.

One of the most complex of those is the Purchase Price Allocation (“PPA”) process which is required by SFAS 141 (US), Handbook Sec 1581 (Can) and IFRS 3, to be undertaken for every Business Combination. In this, the Fair Value of the consideration paid, be it cash, notes, shares or anything else, is allocated between the various recorded and un-recorded assets of all kinds – financial, physical and intangible – of the target, as well as the liabilities assumed. When everything involved both known, and known unknown (contingencies and the like), assets have been valued, as well as the liabilities, the unallocated balance representing, the unknowable assets, as well as by definition the assembled workforce, is recorded as Goodwill.

## **OUTLINE OF THE PROCESS**

The PPA process has five, interconnected, parts:

1. Determining the Acquirer
2. Establishing the Fair Value of the Purchase Price (consideration)
3. Identifying the various assets, liabilities, technologies and contingencies involved
4. Selecting appropriate valuation techniques for each
5. Estimating their Fair Values and reconciling the rates of return

A number (3, 4 & 5), of these complex activities must be undertaken for each of the several Reporting Units into which the assets and activities of the Target acquired, as well as the liabilities assumed, may be transferred, to establish the relative amounts of Goodwill. This process is a source of potential problems for Auditors. They believe, often rightly, that it can give management opportunities for shenanigans similar to those that sometimes occurred in the past with one-time-charges.

In some cases, after a bad quarter or poor year, management has taken a "big bath" to "clear the decks" and remove some "bad stuff" from the Balance Sheet. When this happens, not only do future profits appear greater, but the apparent Return-on-Equity jumps substantially as the numerator (profits) is higher and the denominator (equity) lower. Some commentators have reported that managements are occasionally tempted to follow that path when dealing with the Impairment Tests.

Assume a business has two Reporting Units, one of which is doing well and the other poorly; after an acquisition, management will no doubt lean towards assigning as much Goodwill as possible to the one that is doing well, as its Fair Value is likely to increase, thereby avoiding any potential impairment losses in the near-term.

On the other hand, a loss as a result of the initial Impairment Test can be reported as a change in accounting principles. Instead of risking significant write-downs in the future, management might be well advised to allocate as much Goodwill as supportable against the poorly performing Unit and incur the impairment loss in the first fiscal year as an accounting change rather than having an impact on reported earnings-per-share.

**Who should do the work?**

A company's Financial Statements, including the PPA, are management's responsibility. While the PPA can be performed in-house, even large organisations may not have the required expertise. The Auditors may be qualified to perform the PPA but are prohibited from doing so for reasons of independence. The best option is normally outside experts, either at another accounting firm or an independent group of valuation analysts. This alternative provides greater certainty with respect to the process and more importantly,

allows management to focus on more strategic post-acquisition challenges.

**Determining the Acquirer**

Working out exactly who is the Acquirer as well, as if it is actually a Business Combination or merely an Asset Purchase, may not be as easy as it looks. In a recent example, a brand new Cayman holding company (HoldCo), successfully acquired, and merged through share exchanges with, Taiwanese and Californian companies in the same line of business.

The accounting was unusual; in the Taiwanese case, as its shareholders were substantially the same as those of the HoldCo both before and after the transaction, it was accounted for as a pooling of interests, even though this was eliminated, except for rare cases by the various pronouncements on Business Combinations; HoldCo's cash was treated as a financing by the new subsidiary.

The second, California, merger had a lower Fair Value (\$130 million compared with \$180 million), occurred several months later (May as against January) and involved fewer shares (27.1 million at \$4.56 each for 95%, rather than 54.5 million at an effective \$3.30 [the price of the latest sale], although the share capital was actually allotted at Taiwan's book value of \$1.60 a share) than the first and therefore, one would have expected it to be the Target. However, it was 5% owned by Taiwan and 95% by an existing 25% Shareholder of HoldCo, which after the transaction, owned just over 50% of the total issued Shares.

Therefore even though Taiwan's management continued to run both entities, the accounting rules determined that it was a reverse merger with California being the "deemed acquirer" and HoldCo becoming the Target, the exact opposite of the legal situation. To complicate matters further it was decided that California had to adopt "push down" accounting. Under this it was also required to restate its assets and liabilities at their Fair Values with the Equity amounting to \$130 million, its original purchase price by Taiwan and Shareholder.

### **Establishing the Fair Value of the Purchase Price**

The first step in a PPA is to determine the Fair Value of the purchase price, normally starting with the agreement of purchase and sale. The Fair Value of the purchase price under current IFRS is defined as "the amount of the consideration that would be agreed upon in an arm's length transaction between knowledgeable, willing parties who are under no compulsion to act", a cash equivalent concept.

In most deals there are several components is the consideration. For example in a typical US \$10 million deal payment might be in cash, notes and shares. While "cash is cash" the other elements will normally need adjustment. For example the note bearing interest at 5%, payable two years after closing, must be discounted at the appropriate market interest rate, say 8.5%, to determine its Fair Value of 93.8%. For the portion paid in shares the US \$66.25 quoted market price is not representative of Fair Value if there are any trading restrictions, such as a one year hold period. This discount will normally be calculated by

an Option Pricing Model. With typical parameters (volatility 40% and risk-free rate 5.0%) the figure would be 18%

	Nominal Consideration US\$ '000	Discount %	Fair Value US\$ '000
Cash	5,000	-	5,000
Note	3,000	6.20	2,814
Shares	<u>2,000</u>	18.00	<u>1,640</u>
	10,000	94.54	9,454

Judgement is most important when determining the Fair Value of any contingent consideration. The soon to be in effect revision to SFAS 141 and IFRS 3 requires contingent consideration to be recorded when its outcome can be determined beyond a reasonable doubt. If not, details of the contingency should be disclosed in the notes to the financial statements.

In this example, for instance, the note might include a clause stipulating that in each of the years following the-transaction EBITDA must exceed a specified threshold, say US \$2,000,000 (with US \$2,000,000 of assumed debt, this would represent a 6.0 times purchase multiple), failing which its principal is to be reduced dollar for dollar by the shortfall .Assuming the probabilities are 85% for the first year and 95% for the second the Fair Value of the Note is only US \$2,225,100. Conversely, sometimes an earn-out clause may provide for a higher price should certain EBITDA targets be achieved.

Finally, up to now, the various transaction costs of the acquirer have been included in the purchase price; in the revised SFAS 141 and IFRS 3 they are to be charged against Income. Examples are fees and commissions paid to lawyers, accountants, appraisers, consultants, finders and investment bankers effect the transaction. However, the acquirer's fees for any bank loan and the costs of registering and issuing the various securities involved have always been excluded from the purchase price.

For our reverse merger the first thing was to look at the legal consideration. HoldCo had issued 27.1 million shares to Shareholder at \$123.5 million (\$4.56 each) for 95% of California's Fair Value amounting to \$130 million. Therefore the 54.5 million existing HoldCo shares were worth \$248.3 million. However the Auditors reading of IFRS 3 was that the measurement of what was given-up by Shareholder (a reduction from 95% to 50% of California) was more reliable than what was received by the other investors as the \$4.56 a share involved a control premium. This put a figure of \$58.5 million on HoldCo's 54.5 million shares or \$1.07 each compared with a book value of \$1.66 thereby immediately creating negative Goodwill. Fortunately, they were overruled by a regulator. The final compromise purchase price was the Business Enterprise Value of \$165 million.

I did say that the process is complex, frustrating and expensive; at least six figures.

**Identifying the Items Involved**

Many companies making an acquisition do not know exactly what they are getting. The consideration is normally based on historic earnings, projected future cash flows and the expected benefits of syzygies (unions of two related things). In every case, a rigorous analysis of what the acquirer has actually received is essential. After all, cash flows do not arise on their own; they come from the prudent utilisation of assets, financial, physical and intangible.

Fortunately the first step again is fairly simple – identify the tangible assets which normally are recorded on the Balance Sheet, and classify everything else as an intangible. Next, one must determine the Fair Value of the financial (at market prices when available) and physical assets. Adjustment may be needed for receivables and will be typically required for inventories, while all capital assets will need restatement, especially land and buildings.

***Receivables***

Their Fair Value is usually lower than cost as it is the present values, at current borrowing rates, of the amounts which are expected to be received, less a full provision for uncollectible items.

***Inventories***

With respect to inventories, obtaining Fair Value is somewhat counterintuitive to those of us used to historic cost accounting. Normally inventory is carried at the lower of cost or net realizable value. For finished goods for example, the excess of selling price over incurred cost is not recognized until the inventory is sold. In an acquisition, the inventory has in essence been sold – not to a customer but to the acquirer – and accordingly, the some of the value-added can be recognised.

The Fair Value of finished goods is therefore its estimated selling prices less the sum of the costs of disposal and a reasonable profit allowance for the yet to be undertaken selling effort of the acquirer. Recording acquired inventory at Fair Value will have a negative short-term impact on the target's post-acquisition reported gross margin. This is due to the fact that the inventory will be sold at its normal prices but its Fair Value will be significantly higher than its previous historic cost. In the same way the Fair Values of raw materials are their current replacement costs.

For Capital Assets, independent real estate and technical appraisers are recommended to determine the Fair Values of the property, plant and equipment applying the “highest and best use” concept. For the land and building this may not necessarily be that actually adopted, while for the plant and equipment it will normally be their present function. It is important to include fully written off items such as moulds, tools, jigs and dies.

While a PPA typically focuses on the assets acquired, all assumed liabilities such as loans on pension obligations must also be restated to Fair Values. This is normally done so that a Fair Value tangible Balance Sheet can be created. Some of these, which may also have a related asset, are:

*Net assets or obligations for benefit plans* – The actuarial present value of promised benefits, net of the Fair Values of related assets. An asset can be recognized only to the extent that it would be available to the enterprise as a refund or by reductions in future contributions.

*Tax assets and liabilities* – The benefit arising from available tax losses or the amount payable in respect of timing differences, affecting future net profits or losses. The amounts are net of the tax effect of restating other identifiable assets and liabilities to Fair Values.

*Notes, payables, term debt, warranties, claims, etc.* – The present value, at current interest rates, of the amounts to be paid; discounting is not required for short-term liabilities where the effect is immaterial.

*Contractual obligations and other identifiable liabilities* –The present value of the amounts expected to be disbursed.

*Contingent liabilities* – the amount that a third party would charge to assume them. This must reflect expectations about cash flows rather than the single most likely outcome.

### **Intangible Assets**

After dealing with the financial and physical (tangible) items (both assets and liabilities), the focus shifts to the most difficult arena – the Intangible Assets. FASB, in the original pronouncement on the subject, SFAS 141 divided them into five categories:

- Marketing related – trademarks, Internet domain names, non-compete agreements, etc.
- Customer-related – customer lists, contract and relationships, order backlogs, etc.
- Contract-based – licenses, royalties, service/supply contracts, leases, franchises, etc.
- Technology-based – technology, software, databases, trade secrets, etc.
- Artistic-related – literary works, musical works, pictures, videos, etc.

The other jurisdictions have a similar categorization. All of them deem an “assembled workforce” to be part of Goodwill, although its Fair Value has to be calculated for several of the accepted methodologies.

The goal is to establish all of the identifiable intangible assets involved and then to determine their Fair Values. The residual intangible value is allocated to Goodwill. To determine a Fair Value of the identifiable Intangible Assets, an appropriate method is selected, often backed up by a second. In every case the three traditional approaches (Cost, Market and Income) are considered as well as the developing fourth (Formula Approach – option pricing models, real options, etc.). Of those, the market approach is preferable; however, reliable market-based information is rarely available.

### **Selecting Appropriate Methodologies**

Many companies have similar identifiable intangible assets, such as:

*Customer relationships* – All acquirers are required to recognise the values of customer relationships regardless of whether they arise from contracts or otherwise. They are normally valued using the Income Approach, whereby the cash flows attributable to them are estimated and present valued. Certain key assumptions are required for this calculation:

- The attrition rate – at what rate would someone expect the sales from the customer relations to erode;
- Expected (EBIT or EBITDA) margins;
- Contributory asset charges – the notional costs for use of other assets (tangible, intangible and assembled workforce)

*Trademarks and Technologies* – these are typically valued using the relief from royalty method, which is based on the concept that if the entity did not already own the item, how much would it be willing to pay to use it? While the assessment of expected sales will focus on the Company, the determination of an appropriate royalty rate will look to available market-based information.

*Non-compete agreements* – typically part of the most transactions, these are valued using an income approach, whereby expected cash flows are estimated under two scenarios – with and without the agreement in place. The probabilities of competition actually occurring are also assessed; the more likely the key employee would compete in the absence of the agreement, the higher is its Fair Value.

*In-process research & development* - Often part of the consideration is paid for an ongoing product development effort by the Target. IFRS requires immediate expensing of internally incurred research costs but capitalization and amortization of development expenditures. However, in a slight departure from this general principle, purchased IPR&D is generally recorded as an intangible asset separate and distinct from Goodwill. This will normally be done by a Discounted Cash Flow method under the Income Approach. SFAS 141 required a write-off while 141R follows IFRS

The December 2007 Balance Sheet showing both the Book and Fair values for each item is set out on the next page

	<u>Book</u> <u>Value</u> <u>\$'000</u>	<u>Purchase Price Allocation</u>		
		<u>Fairtr</u> <u>Value</u> <u>\$'000</u>	<u>WARA</u> <u>Rate</u> <u>%</u>	<u>Return</u> <u>\$'000</u>
<b>Purchase Price</b>		165,000		
<b><u>Assets Acquired</u></b>				
<b>Current</b>				
Cash & equivalents	35,122	35,122	1.5%	527
Receivables	4,227	4,185	6.0%	251
Inventories	3,241	3,354	6.5%	218
Other	726	726		-
<b><u>Liabilities Assumed</u></b>				
Notes and accounts payables	(621)	(621)	1.5%	(9)
Other Payables	(923)	(923)	1.5%	(14)
Advance receipts for common stock	(2,662)	-		
<b>Working Capital</b>	<u>39,110</u>	<u>41,843</u>	2.3%	<u>974</u>
<b>Equity in Affiliate</b>	<u>4,798</u>	<u>4,798</u>	21.0%	<u>1,008</u>
<b>Fixed</b>				
Property and Equipment	1,311	16,809		
Accumulated Depreciation	(98)			
Prepayment--Equipment	3,121	3,121		
	<u>4,334</u>	<u>19,930</u>	9.0%	<u>1,794</u>
<b>Other</b>				
Purchased Intangibles				
UI Listing	851	851	16.6%	141
Know-how	122	122	22.0%	27
Trade-name	2,771	2,771	25.0%	693
Miscellaneous	155	155		-
	<u>3,899</u>	<u>3,899</u>	22.1%	<u>861</u>
<b>Net recorded position</b>	<u>52,141</u>	<u>70,470</u>	6.6%	<u>4,636</u>
<b>Unrecorded Intangible Assets</b>				
Customer relationships		6,700	25.0%	1,675
Assembled Workforce		670	20.0%	134
Trade-name		26,000	25.0%	6,500
Goodwill - Other		61,160	35.5%	21,705
		<u>94,530</u>	31.8%	<u>30,014</u>
		<u>165,000</u>	21.0%	<u>34,650</u>

From this difference of \$113 million between the consideration of \$165 million and the \$52 million of Equity reported, suggests a significant number of unrecorded Intangible assets. After discussions with management, we determined that there are at least the unrecorded assets listed below as well as goodwill:

1. Customer Relationships
2. Low cost furnaces
3. Trade-name
4. Assembled Workforce
5. Tools, Jigs, Dies and Moulds

### **Treatment of Selected Items**

#### *Current Assets*

The cash is simple; the receivables a bit more complicated. Their fair value is supposed to be obtained by deducting, in place of the standard accounting provisions for doubtful accounts, a discount to reflect when, if at all, payment is likely to be received. This will vary a lot between customers. For example, many government agencies, with no credit risk, normally pay in 120 days compared with the standard 30, in such circumstances, a deduction of 2.0% for the time value of money on the receivables ( $3/12 \times \text{say } 8\%$ ) must be made. For a 90 day delinquency the discount might be as high as 20%. Inventories

were discussed previously.

### *Property Plant and Equipment*

The target's assets included a great deal of unrecorded knowledge. Some of this related to its major plant which when bought in 2000 had 48 non-functioning specialized furnaces of which half are now in service. Currently their replacement cost is about \$600,000 each, but HoldCo has developed know-how allowing it to rehabilitate the existing units at a cost of only about \$150,000, mainly for computer controls. After they are rebuilt, so as to be effectively as good as new, engineering studies indicate the rehabilitated units have as an economic/physical life of 25 years. This is substantially the same as the 30 years that is specified by the manufacturer for new units. The increase in the replacement cost of the 24 operating units is \$9,617,000 while the present value of the future savings is \$4,671,000 for a total increase of \$14,288,000.

### *Tools, Jigs, Dies & Moulds*

Another significant part of the know-how related to casting technology to obtain the particular physical properties for which customers are willing to pay a premium. The necessary moulds have an indefinite physical life while having been written-off for tax and book purposes. They have been restored at their replacement cost of \$1,210,000.

*Customer Relationships*

This particular industry has for a long time functioned as if the European and American markets were totally different, although in reality both are mainly supplied by Asian producers. From 2004 to 2008 the unit price in Euros (unconverted) differed by less than 5% from the similar dollar cost in the US. For example, in April 2004, sales in Europe were €46.40 (\$56.50) a unit compared with \$43.00/kg in the US domestic market. Three years later the Euro price was 47.10 (\$73.30) compared \$47.10. As a result European gross margins in 2007 were running about 26.3% compared with 10.2% for US and Asian sales. Management expects this benefit to continue for a number of years. Based on an annual reversion to the mean over 10 years the present value at 25% of the net benefits from sale to European customers, after contributory charges for capex, working capital, assembled work force and trade-name was \$6,700,000.

*Assembled Workforce*

The assembled workforce of 113 employees, including 12 managers has an annual payroll of \$1.692,000. Allowing for headhunter fees of from 8.5% for production workers to 20.0% for Managers and learning curves of between 3 and 10 months the value of the assembled workforce is \$670,000.

*Trade name*

The Trade –name was valued by the relief from royalties method previously discussed.

Using a royalty rate of 2.75% the present value at a discount rate of 25%, of the after tax savings from ownership is \$ 26 million .

**Conclusion**

Preparing a PPA is a complex technical process, which in many ways is more difficult than merely an overall business. When performing a PPA management and the valuation analysts must assess numerous cash flows and establish rates of return applicable to each of them. At the same time they have to ensure that their asset specific analyses are consistent not only with each other but also with the entity's expected overall results.

Intangible Assets are amount the most important features of most firms. Their valuation by the PPA process not only sheds light on the “value drivers” of the business but also forces management to explicitly assess why it paid a particular price for the target.