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REVENUE RECOGNITION FOR MOBILE GAME COMPANIES IN HONG KONG

Introduction

The penetration of smartphones has made mobile game players a common sight in Hong Kong. You can find them basically anywhere: almost on every corner of the street, every train, every café… Players may spend several hundred dollars or even a few thousand dollars on games each month. This has given rise to a number of successful mobile game companies in recent years which allow players to download games free of charge via various distribution platforms, such as Apple Store or Google Play. The revenue is derived primarily from in-game "Virtual Items" – including virtual currency, goods and services – which are sold through cooperation with third party payment vendors, such as Alipay and Paypal.

Now, how do these mobile game companies recognise their revenue in their financial statements?

Revenue recognition under Hong Kong Financial Reporting Standards (HKFRS)

Currently, HKFRS does not have any guideline that specifically addresses the recognition of revenue from sales of Virtual Items. Mobile game companies have to determine their accounting policies with reference to the basic concepts of HKFRSs, mainly those set out in "Hong Kong Accounting Standard 18 (HKAS 18) – Revenue". [1]

Normally, mobile game companies that operate games as principals treat the sales of Virtual Items as rendering services rather than as sales of goods as there would be an implied obligation for them to provide the services which enable the Virtual Items to be displayed, used or converted into other Virtual Items in the games. As a result, sale proceeds received from paying players for the Virtual Items are initially recorded as deferred revenue.

1 Note: "Hong Kong Financial Reporting Standard 15 (HKFRS 15) – Revenue from Contracts with Customers" will become effective for annual reporting periods beginning on or after 1 January 2017. This new standard will replace the existing requirements for revenue recognition which are currently set out in a number of different standards and interpretations, including HKAS 18.

There are three commonly accepted methods for recognising the deferred revenue to profit or loss: game-based method, player-based method and item-based method. A mobile game company has to select a method that is most suitable to its circumstances. The period for recognition of revenue is different depending on the method used. For example, under game-based method, a mobile game company recognises revenue from sales of Virtual Items ratably over the estimated life of the respective game; while under player-based method, a mobile game company recognises revenue from sales of Virtual Items ratably over the estimated average game playing period of paying players.

Item-based method

This is the most commonly adopted method in Hong Kong. Under item-based method, revenue from sales of Virtual Items is recognised over the period during which the paying players are expected to be able to access and consume the benefits inherent in purchased Virtual Items, which are normally categorised as "consumable Virtual Items" and "durable Virtual Items" with reference to the characteristic of the Virtual Items.

Consumable Virtual Items can be consumed by a single action and players will not continue to benefit from the Virtual Items thereafter, eg virtual grenade used in a war game. When these items are consumed, the relevant services are rendered and revenue is recognised by mobile game companies immediately.

Durable Virtual Items are accessible to the paying players or enhance the paying player's game playing experience over an extended period of time, such as a virtual bulletproof jacket or a virtual machine gun. Revenue for these items is normally recognised by mobile game companies ratably over the estimated life of durable Virtual Items but limited to the average game playing period of paying players, ie how long a paying player will continue to play a particular game.

Challenges

When applying item-based method in recognising revenue, mobile game companies may face a number of challenges.

First of all, this method requires a company to gather and maintain sufficient data for analysis. This may not be an easy task. For example, certain mobile game companies adopt a real time system without any backup data. Under this situation, it is impossible to track when Virtual Items are consumed.

Also, once a game becomes more popular, the number of players increases, and more features may be introduced to the game. As a result, the size of data becomes unwieldily large and sophisticated system tools may be required to extract and analyse the data.

Another challenge is that this method requires many significant judgements. For example, how do you decide whether a Virtual Item should be categorised as "durable" or "consumable"? How do you determine the average game playing period of paying players? How do you account for the free or discounted Virtual Items provided to the game players?

There are many practical issues, problems and challenges for mobile game companies in terms of revenue recognition. Assistance from accounting experts is highly recommended when dealing with these issues. In particular, compared to the existing HKFRSs, HKFRS 15 contains significantly more prescriptive and precise requirements and introduces considerably more disclosures about revenue recognition. It is possible that new and/or modified internal control and accounting systems will be needed in order to obtain the necessary information to implement the new financial reporting requirements. For that reason, mobile game companies are advised to start their HKFRS 15 assessments as soon as possible.

Looking forward

The mobile game industry is a young and fast evolving industry. New challenges will continue to emerge and we expect more reference materials to be developed for this industry. Everyone in this industry should stay abreast of the latest developments.

CALVIN WONG
Assurance Services
calvinkwwong@bdo.com.hk

BDO SUPPORTS THE CHAMBER OF HONG KONG LISTED COMPANIES (CHKLC) DIRECTOR TRAINING SERIES 2015


香港上市公司商會
THE CHAMBER OF HONG KONG LISTED COMPANIES

CHKLC DIRECTOR TRAINING SERIES 2015
A six-part training programme aiming at supporting directorship in Hong Kong

Programme Partner: BDO Limited

Dates: 21 April 2015 | 19 May 2015 | 23 June 2015 | 8 September 2015 | 13 October 2015 | 17 November 2015

Company directors play a pivotal role in company success. With the increasing demand of corporate governance of listed companies both from the regulators and shareholders, coupled with the tightening of various sets of rules and regulations with more serious consequences, cheerleader directors operate in an increasingly challenging environment. Once again, the Chamber of Hong Kong Listed Companies is launching a training programme for company directors. Addressing the common issues faced by directors, the programme will equip directors with the most relevant information and updated knowledge about directorship and will help them discharge their duties effectively.

The whole programme comprises six sessions dealing with the important aspects of directorship for a listed company. These range from corporate governance, risk management to the latest updates in various applicable rules and laws. Experienced professionals as well as directors from listed companies will act as speakers to share their knowledge and first-hand experience, ensuring the practical value of this training programme. Attending this training series will fulfil the training requirements under the revised Code of Corporate Governance by the HKEX.

The Chamber is pleased to partner with BDO in offering this programme whose involvement assures the relevance of the topics covered and adds depth to the discussion.

Time: 4:00 pm Registration; 4:30 – 6:30 pm Course Session
Venue: BDO Limited, 25/F, Wing On Centre, 111 Connaught Road Central, Hong Kong
Language: English
CPT: Total 12 CPT Hours

(Board portal: Note to registrants)

REGISTRATION

	Full Course	Per Session
CHKLC Members / BDO Clients & Contacts	HK$3,200	HK$630
Non-members	HK$3,700	HK$730

Enquiry: CHKLC Secretariat ☎ (852)2970 0886 ⁂ (852)2970 0555 ✉ info@chklc.org
Online Registration: http://www.chklc.org/web/eng/events_htm

BDO supports the CHKLC Director Training Series for the fifth consecutive year.

Running from April to November, the programme comprises six sessions dealing with the important aspects of directorships for a listed company, ranging from corporate governance, risk management to the latest updates in various applicable rules and laws. The programme will also address common issues faced by directors.

BDO Director & Head of Risk Advisory Services **Patrick Rozario** & Principal of Specialist Advisory Services **Gabriel Wong** are invited to speak on some of the important aspects of directorship for a listed company.

The schedule and topics for the forthcoming sessions are shown below.

Dates	Topics
8 September (Tue)	Global M&A Overview and the Relevance to Valuations
13 October (Tue)	New Connected Transaction Rules
17 November (Tue)	Quick Guide to Knowing Fraud

If you are interested in attending, please enroll with CHKLC directly. For more information, visit their website www.chklc.org

INTRODUCTION TO THE VALUATION OF CONVERTIBLE BONDS

INTRODUCTION TO CONVERTIBLE BONDS

A convertible bond (CB) is a hybrid instrument that combines the features of a bond and equity. It is an option to acquire the underlying equity of the company issuing the CB. The bondholder may have the right to partially or fully convert the bond into equity, based on a preagreed conversion ratio.

Payoff profile

Chart 1 shows the payoff profile of a basic CB. The red dotted line represents the value of the CB when converted into the underlying shares. When the stock price is low, there is no incentive for investors to exercise the conversion option, and the value of the CB must be at least the value of the straight bond, with the holder continuing to receive interest and principal payments. The CB is also worth at least the value of the shares into which it can be converted, as the holder can always exercise the conversion option and hold shares instead. Generally, the CB price will trade above both lines, as the CB is likely to give the bondholder interest payments prior to any conversion. A convertible bond therefore provides the holder with both an income from the annual interest payments and also potential upside from the equity conversion. Alongside this equity upside, the bondholder has downside protection from the cash coupon, fixed maturity and status in the capital structure, which is senior to common and preferred equity. Due to the potential equity upside, a CB usually carries a slightly lower interest rate than a straight bond.

Common types of CB

Other derivative features are commonly incorporated into the basic CB structure to form more complex CB instruments, including call options and put options. These will need to be included in any valuation.

Callable CB: A CB with a call feature is referred to as a callable convertible, which allows the issuer to buy back the bonds before maturity at a stated call price. When the issuer calls the CB, the bondholder is usually given the option to convert the CB into shares. The call option allows the issuer to refinance the bond with a lower coupon rate (ie if interest rates have fallen), and can limit the upside price of the bond, and therefore is considered a negative value to the CB.

Chart 1

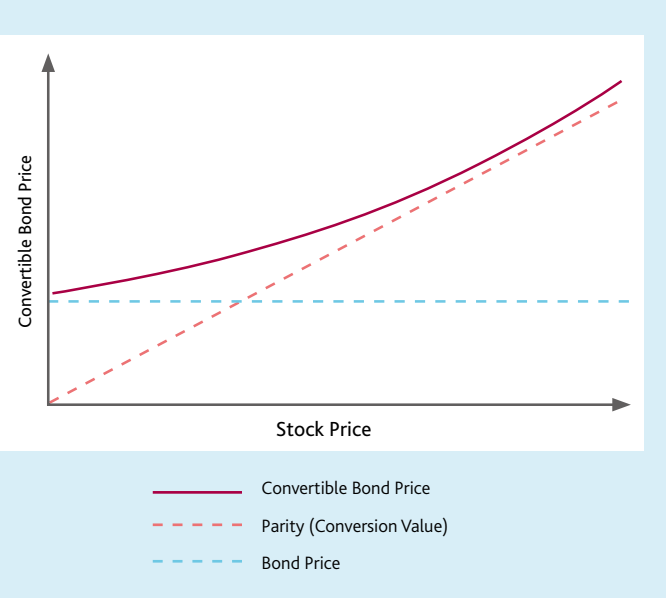


Table 1

Why do companies issue CBs?	Why do investors invest in CBs?
• A CB carries a lower coupon rate than an otherwise identical straight bond, lowering borrowing costs	• Because CBs provide both income and equity upside, they are attractive to investors (especially to Mezzanine funds)
• Until exercised, the dilution of common stock and earnings per share (EPS) is delayed	• A CB is less volatile than stock, but generates equity-like returns
• Issuer can add call protection (in case share price starts to rise sharply) thereby adding some ceiling	• A CB typically has a higher running yield than a share dividend
• CBs are a common form of debt financing, for which interest payments are generally tax deductible	• Investor can add put protection (providing an option to redeem the bond for refinancing)

Puttable CB: A CB with a put feature is called puttable convertible, which allows the bondholder to sell the CB back to the issuer before maturity at a predetermined put price. If market interest rates have risen above the coupon of the bond, the bondholder can sell the bond back and reinvest the proceeds with another issuer at a higher interest rate. This is a sweetener to a bondholder, increasing the value of the CB.

Other types of CBs include exchangeable CBs, contingent CBs, redemption readjustment CBs and mandatory conversion CBs, with a wide variety of bond features available.

Valuation methodology

The Black Scholes Model and the Binomial Model are two methods used to value a CB.

A basic CB could be viewed as a straight bond with a call option on shares, which can be valued separately. The value of the call option can be calculated using the Black-Scholes option pricing model, which although simple to apply, cannot be applied when the bond has more complicated derivative features, and is therefore rarely used in CB valuation today.

A Binomial Model is a more commonly used valuation methodology for CBs. This involves building a stock price tree using a geometric Brownian motion model. The basic principles of this model are based on backward induction and are arbitrage-free.

The valuation of a CB using a Binomial Tree Model comprises three steps:

(1) building a stock price tree; (2) applying a backward induction method to calculate the CB price at each node of the tree; and (3) repeating step (2) until a value in the vertex node has been calculated. This is completed as follows:

1. The future stock price at each node is projected in a binomial tree under a discrete time process with a predetermined time interval, assuming the stock price either moves up or down at each step following the arbitrage-free pricing principal. The nodes of the entire tree are then filled. The key parameters involved in the price tree development are presented in the table on the right.

   Where

   e = base of the natural logarithm, σ = stock price volatility, r = risk free rate, q = dividend yield, Δt = time interval for each step.
   All formulae above assume a risk-neutral position.

2. Using the backward induction method to calculate the CB price in each node, working from the right to the left-hand side of the tree, the payoff of the CB at each node is then determined by comparing the Hold Value, Conversion Value, Call Value, etc, as defined below. Whichever amount is the greater will become the payoff value at each node, shown by the formula:

   Max[min(V1,V2),V3]

   Where

   V1 is the Hold Value - the discounted value of the probability weighted average payoffs of the two nodes attached to it at the next time interval;

   V2 is equal to the Call Value - the call price of the CB; and
   V3 is the Conversion Value - the stock price at the corresponding node multiplied by the number of convertible shares (ie the value if the CB is converted to equity).

3. Subject to other features of the CB, additional mathematical conditions may be needed.

The above process is repeated until the CB value has been derived at the vertex of the price tree. The value at the vertex is the value of the CB.

Parameters	Definition	Formula
P_u	equity price up movement probability	$p_u = \frac{e^{(r-q)\times\Delta t} - d}{u - d}$
P_d	equity price down movement probability	$p_d = \frac{u - e^{(r-q)\times\Delta t}}{u - d}$
u	up movement factor	$u = e^{\sqrt{\sigma^2 \times \Delta t}}$
d	down movement factor	$d = \frac{1}{u}$

NUMERICAL EXAMPLE

We illustrate below how the Binomial Model Method can be applied. The following is assumed in all examples:

1. The default probability is ignored.
2. The discount rate for the straight bond is the risk-free rate.
3. The CB has no coupon payments.
4. Five time steps are used to build the binomial tree (for ease of illustration).

Convertible and terms			
Issue date	31 Dec 2014	Maturity date	31 Dec 2015
Principal	HK$50m	Risk free rate	5.00%
Stock price	HK$50	Dividend yield	1.00%
Conversion price	HK$60	Volatility	45.0%
Conversation ratio	100/conversation price	Call price (for example 2)	HK$112

a) Example 1: Basic CB, with no embedded options

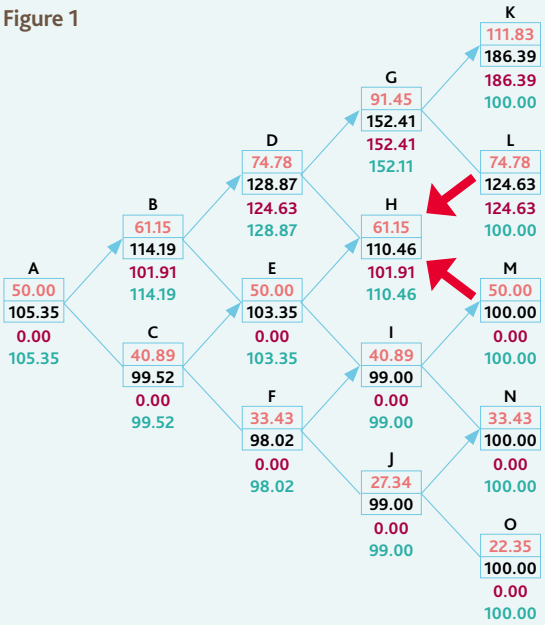
This is a basic CB without any call or put options. The up and down movement probabilities, up and down movement factors calculated using the formulas above are:

$u = 1.22$, $d = 0.82$, $P_u = 0.47$, $P_d = 0.53$.

Where P_u is the probability that the stock price rises in the next time step and u is the multiple factor by which the stock price rises. On the other hand, P_d is the probability that the stock price declines in the next time step and d is the multiple factor by which the stock price declines.

The binomial tree is built as **Figure 1**:

Figure 1



The pink-coloured underlying equity price is projected to increase or decrease at each node by factors of 1.22 and 0.82 respectively. The CB's Conversion Value is shown in burgundy[1] and the Hold Value of the CB in green. The CB price at each node is calculated from these three values, and is shown in black in the chart above.

Let's analyse some examples to see what happens at nodes L, M and H:

For node L, the stock price is 74.78, which is higher than the conversion price 60. The Conversion Value is thus equal to the conversion ratio × stock price = (100/60) × 74.78 = 124.63. Since node L is at the bond's maturity date, the Hold Value of the bond is equal to its face value, which is 100. With the formula above, the CB price at node L is max (124.63, 100) = 124.63, which means at Node L, the CB would have been converted to equity, which is a higher value than the Hold Value of the bond.

For node M, the stock price is 50, which is lower than the conversion price 60. A rational investor would not convert the CB to equity, with a Conversion Value of zero. Similar to node L, since node M is at the bond's maturity date, the Hold Value is equal to the face value, which is 100. With no conversion, the CB price is 100 (ie its Hold Value).

The Hold Value of the CB at node H is equal to:

$(P_u \times \text{convertible price at node L} + P_d \times \text{convertible price at node M}) / e^{r \times \Delta t}$

$= (0.47 \times 124.63 + 0.53 \times 100) / e^{5 \times 0.2} = 110.46$

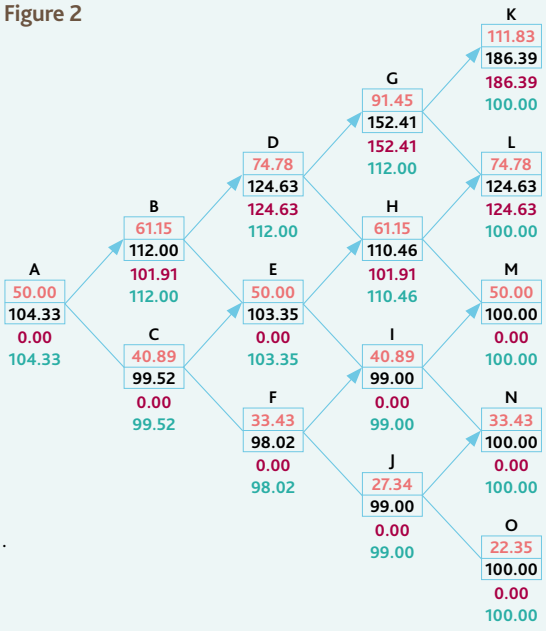
The Hold Value of the bond is then higher than its Conversion Value, and so the bond would not have been converted, and the CB price is equal to the bond's Hold Value of 110.46.

Repeating the above process, and assessing whether the bond would have been converted or held at each time node, the fair value of the CB is calculated by backward induction at each node, and is calculated as 105.35 at node A. Based on a bond principal of HK$50m, a 1 year CB will be priced at 105.35/100 × HK$50m = HK$52.68m at the valuation date.

b) Example 2: A Callable CB

The same CB in example 1 has been modified to a callable CB, with a call price of HK$112, which means that the issuer can repay the CB at any time at this price. The binomial tree is rebuilt as **Figure 2**:

Figure 2



With the callable feature, only the figures in green colour in the tree have been changed to the lower of the bond's Call Value and its Hold Value (since the issuer will choose to either call the bond or hold, in order to minimise the payment to the holder). If the Call Value is smaller than the Hold Value, the green colour cell would show the Call Value, otherwise, the green colour would show the Hold Value. Figures in other colours have the same meaning as the basic CB in example 1.

Here we illustrate the detailed calculation for node G, and node B to see how the callable feature affects the value of the CB as compared to the straight bond in example 1.

At node G, the stock price is 91.45, which is higher than the conversion price 60. The conversion value is equal to the conversion ratio × stock price = (100/60) × 91.45 = 152.41.

1 If stock price is higher than the conversion price, it is assumed the bond is converted to equity, and shows the Conversion Value; if the stock price is lower than conversion price, the conversion value is zero.

The Hold Value of the CB at node G is equal to:

(P_u × convertible price at node K + P_d × convertible price at node L)/ $e^{-r \times \Delta t}$

= (0.47 ×186.39 + 0.53 × 124.63)/ $e^{5 \times 0.2}$ = 152.11,

which is higher than the call price 112. As a rational issuer, the CB would be called and repaid at 112, and the issuer could issue new bonds at a lower finance cost. For most CBs, however, when the issuer calls back the CB, the bondholder has a preemptive right to convert to equity, if it is optimal to do so. In this case, at node G, the bondholder would choose to convert the CB, which means the CB price is equal to max (152.41, 112) = 152.41.

At node B, the stock price is 61.15, which is also higher than the conversion price 60, the Conversion Value is equal to conversion ratio × stock price = (100/60) × 61.15 = 101.91. The Hold Value of CB at node B is equal to

(P_u × convertible price at node D + P_d × convertible price at node E)/ $e^{-r \times \Delta t}$

= (0.47 ×124.63+ 0.53 ×103.35)/= 114.19,

which is higher than the call price 112. The issuer would choose to call back the CB. In this case the Conversion Value is only 101.91, so the bondholder would receive a higher return of 112 by not converting, with the CB price equal to max (min (114.19, 112), 101.91) = 112.

The fair value of the callable CB by backward induction at node A is derived to be 104.33, which means that a HK$50m 1 year CB is worth 104.33/100 × HK$50m = HK$52.17m at the valuation date.

Comparing the two examples above, the price of the simple CB in example 1 is HK$52.68m, and with an embedded call option in example 2 is HK$52.17m. The call option effectively allows the issuer to limit the appreciation of the bond value, and if the underlying equity price starts to rise sharply, the issuer can call the bond at the preagreed call price. The call option therefore benefits the issuer, and results in a price lower than a straight CB.

PRACTICAL CHALLENGES

In our numerical examples above, several assumptions are adopted for simple illustration purposes. In reality, the tree building process is more complex and would usually require a thorough analysis of real CB characteristics, market conditions and selection of model parameters.

Other factors (such as any dilution effect on the CB) may need to be reflected in the valuation as well. Any coupon payments too would need to be incorporated. Other risk premia should be considered and added to the risk-free rate to derive the discount curve for real CBs based on their credit rating and liquidity conditions. At least 50 time steps or more are usually adopted in constructing the tree, in order to generate a more accurate calculation.

PAUL WILLIAMS
Special Advisory Services
paulwilliams@bdo.com.hk

CHRISTINA ZHAO
Special Advisory Services
christinazhao@bdo.com.hk

ALBERT AU APPOINTED AS NON-EXECUTIVE DIRECTOR OF THE SECURITIES AND FUTURES COMMISSION (SFC)

BDO Hong Kong Chairman Albert Au was appointed by the Securities and Futures Commission (SFC) as Non-Executive Director for a term of two years with effect from 26 May 2015.

The SFC is an independent statutory body, which regulates Hong Kong's securities and futures markets. As a financial regulator in an international financial centre, the SFC strives to strengthen and protect the integrity and soundness of Hong Kong's securities and futures markets for the benefit of investors and the industry.

EMPLOYEE OR CONTRACTOR?

Finding your way in the labyrinth of conflicting interpretations

The number of self-employed workers in Hong Kong keeps growing. That is the view of 58% of Hong Kong respondents to a recent survey by global workplace provider Regus. It asked 22,000 business people from over 100 countries what changes they have witnessed in their working landscape. The majority said that, compared to five years ago, there has been an increase in the outsourcing of work and in the number of remote workers globally. In Hong Kong, most had noticed more self-employed workers engaged in contractual and freelance work.

It is not uncommon nowadays for individuals with the right skills and expertise to provide consultancy or subcontracting services to several organisations in return for a fee. They do so to maintain their standard of living and, more importantly, to have a more flexible, open-ended lifestyle that suits their personal needs.

If you are considering hiring one or more individuals to perform services for your organisation, it is important to evaluate the costs and benefits, and to consider the legislative provisions for employing an employee or engaging an independent contractor/self-employed person. In Hong Kong, however, there is a lack of clear legislation clarifying the distinction between employee and contractor/self-employed person. In order to determine whether the parties have an employer-employee relationship or a principal-contractor relationship, the courts use indicators and factors (such as a control test).

Over the past few years, a number of labour disputes have touched upon various aspects of these two types of relationship, especially after the implementation of the Minimum Wage Ordinance in May 2011. Certain labour disputes involved proposals by employers to change the status of their employees to contractors/self-employed persons. In one case, a distilled water supplier proposed to its delivery workers that they should resign so that they could be reengaged as independent contractors. Concerned that the company merely wanted to save costs and shirk paying its employee benefits, the labour union called a strike. Work resumed only after the company had undertaken 2½ days later to address the issues.

Since the two types of relationship – employment or contractual – entail very different benefits, rights and obligations, an employer/principal may want to consider the following points:

What are the criteria to differentiate between an employee and a self-employed person?

There is no clear-cut answer here. It is not as though one or two tests can draw a line between who is an employee and who is a self-employed person. Rather, it is a matter of the balance of different criteria and the overall impression in different scenarios – in addition to the industry type one is considering. Here are some relevant reference questions and criteria:

1. To what extent does the company control the work of the individual, in terms of working hours and the method of service to be provided?
2. Is the individual an integral part of the business? Is the individual properly regarded as one of the staff members of the organisation?
3. Does the individual have to follow the internal rules of the company?
4. Does the company have the power to dismiss the individual?
5. Economic test: Is the individual carrying on a business of his/her own account? Does he/she have management and investment responsibilities?
6. Is the individual paid wage or salary in a wage period, or is the payment with reference to each project/work completed or number of hours worked?
7. Is the individual required to bear the financial risk of the business (eg chance of profit or risk of loss)? Does the individual control the fee rate for the service performed?
8. Is the individual provided with work tools, equipment and materials?
9. Is there a mutual obligation – on the part of the individual to perform the job and on the part of the company to provide work?
10. Does the individual perform the service by himself/herself? Is there the freedom to hire assistants to help in providing the service? Can the service be delegated or outsourced?
11. How do the parties view the relationship themselves?
12. Does the company have the right to demand exclusive services of the individual or does the individual work simultaneously with different companies?
13. What are the traditional practices and structures of the trade or profession?
14. Does the individual work in the company's place or his/her own place?
15. Is a particular outcome or task required? Or is the work of a more general nature?
16. Is an insurance cover provided? Who contributes to the Mandatory Provident Fund (MPF) of the individual? Does the individual pay salaries tax?
17. What types of agreement were signed? (Courts may disregard this point if other indications suggest something different.)
18. Does the company have liability for certain acts engaged in by the individual, and to what extent?
19. Are there any other factors that the courts consider as relevant?

A real life example

When installing an air conditioner, a worker suffers a partial loss of his vision in an accident. His company views the worker as a self-employed person and refuses to pay compensation for his work injury. The worker lodges a claim for compensation to the District Court and the Court of Appeal of the High Court. Subsequently, he makes an appeal to the Court of Final Appeal which decides that the worker has been an employee of the defendant company and the defendant company is liable to pay compensation for the work injury under the Employees' Compensation Ordinance (ECO). The grounds of the above case are as follows:

1. The defendant company owns the air conditioning business and the worker bears no financial risk.
2. Travelling costs incurred by worker have been reimbursed by the defendant company.
3. The equipment used at work is mainly provided by the defendant company.
4. The defendant company decides the jobs to be assigned to the worker and pays him an agreed daily rate plus overtime payment.
5. The worker personally carries out the work and does not hire anyone to help.
6. That the worker works for the defendant company and occasionally also works for other companies does not affect his right for compensation for work injuries under the regulations.

Even though the worker identifies himself as 'self-employed' for the purpose of his MPF contributions, the facts strongly support there is an employer-employee relationship between the two and the defendant company is thus held responsible for its legal obligations.

What are the benefits, rights and obligations of an employee and a contractor or a self-employed person?

Benefits, rights and obligations	For employee	For contractor or self-employed person
1) Entitlement to protection under the Minimum Wage Ordinance (ie being paid no less than the statutory minimum wage rate)	✓	✗
2) Entitlement to protection under Employees' Compensation Ordinance (ie covered by employees' compensation insurance on work injury and sick leave)	✓	✗
3) Entitlement to basic protection under Employment Ordinance. If employee has been employed under a continuous contract of employment (Note 1), he/she will be entitled to statutory rights and benefits.	✓	✗
4) Restrictions on employers under Employment Ordinance (eg the requirement to observe the period for providing a notice of termination of employment, even though such a period is not stated in the employment contract, etc).	✓	✗
5) Entitlement to protection under Mandatory Provident Fund Schemes Ordinance (eg employer's statutory requirement to make MPF contributions for their employees. See Note 2).	✓	✗

Note 1

The Employment Ordinance does not distinguish between part-time, full-time, temporary, substituted and permanent employees. All employees covered by the Employment Ordinance, irrespective of their working hours or designated job titles are entitled to statutory rights and protection such as remuneration payment, restriction on deductions from wages and granting of statutory holidays, etc.

An employee who has been employed continuously by the same employer for four weeks or more, with at least 18 hours worked in each week is regarded as being employed under a continuous contract. If the employee is employed under a continuous contract, the company as an employer needs to provide benefits to employees such as sickness allowance, paid annual leave and rest days, wages in lieu of notice, long service payment and severance payment, etc.

Note 2

A contractor or self-employed person should make contributions himself/herself by enrolling in a Mandatory Provident Fund scheme.

What are the obligations required by employer/principal for employee and contractor or self- employed person from the prospective of taxation, employees' compensation and MPF compliance?

Employer/principal's statutory requirements on taxation, MPF and insurance	For employee	For contractor or self-employed person
a) Annual filing of Employer's Return of Remuneration and Pensions (Forms BIR56A and IR56B); and/or filing of Cessation Notification (Form IR56F) when employee ceases to be employed; and/or filing of Departure Notification (Form IR56G) and withhold the final payment within the stipulated period of time as prescribed by the Inland Revenue Department (IRD).	✓	✗
b) Filing of Notification of Remuneration paid to persons other than employees (Form IR56M) for payments for service rendered by contractors or self-employed persons within the stipulated period of time as prescribed by the IRD.	✗	✓
c) Strict adherence to the statutory requirements which include Employment Ordinance, Mandatory Provident Fund Schemes Ordinance, Employees' Compensation Ordinance (Note 3) and Minimum Wage Ordinance.	✓	✗

Other points which employers should take note of

The pitfalls of false self-employment

Good employers do not shirk their obligations. Less ethical employers may be tempted to avoid paying the rightful employment benefits to their employees by making them "self-employed".

Complaints by employees to the Labour Department regarding such kind of false self-employment have increased over time, in particular after the implementation of the Minimum Wage Ordinance in May 2011. The Labour Department has implemented measures to educate the employees about the difference between genuine and false self-employment – and has taken strong action against those employers involved in false self-employment cases. Still, perhaps the government of the Hong Kong SAR needs to consider passing legislation to regulate the scenarios of employment and self-employment. Such move could stop employees falling into the trap of false self-employment.

On the other hand, the employers themselves should be mindful of the possible adverse effects of unilaterally proposing a change in their employees' status to contractors or self-employed persons. Employees could, for example, lodge a claim for remedies against the employer based on unreasonable changes in the terms of the employment contract under the Employment Ordinance. Also, the employees could make a claim for "termination compensation" from the employer under the Common Law, on the grounds of constructive dismissal. A conviction could be detrimental to the employer's business – including risk of increasing financial costs for compensation, lengthy legal proceedings and damage to the company's reputation.

Protect employers against disputes

Employers/principals should clearly communicate to employees/contractors/self-employed persons what the employment relationship (or mode of cooperation) is between the two parties. The employers should provide unambiguous terms of employment/engagement in the employment contract/service agreement so as to avoid any misunderstandings. Full compliance with the law offers for the best protection of the rights of both parties during the course of their employment/ engagement.

JOSEPH HONG
Payroll & HR Outsourcing Department
josephhong@bdo.com.hk

VINCI TAM
Payroll & HR Outsourcing Department
vincitam@bdo.com.hk

Note 3

A contractor or self-employed person should consider setting up of a personal accident insurance policy to provide himself/herself with sufficient insurance coverage.

FIGHTING FRAUD THROUGH DATA ANALYTICS

Today's digitalised world calls for greater sophistication

Corporations, like banks and securities firms, deal with millions of transactions every day. As many of these transactions must be processed timely, it is commercially and practically not feasible to implement perfect preventive controls. By way of compensation, data analytics can be used to detect abnormal transactions. Think of the call from your credit card centre to verify whether you did indeed make a large purchase ten minutes earlier. That is data analytics put into practice.

Fraudsters too have their limitations. They may have insufficient resources to draft and execute their "business plan". A money launderer, for example, could be under pressure to whitewash $30 million in funds in a year's time but only have a small network to manipulate. Naturally, that makes it more likely that deviations from common patterns show up.

Common types of data analytics

Data analytics is an effective tool for detecting fraud, especially when applied to the oceans of transactions. The objective is to identify anomalies.

Traditionally, anti-fraud specialists have relied on trend analysis – comparing the actual figure with that of comparable periods, with that of companies in the same industry or with a pre set objective (such as a budget). In theory, trend analysis is a comparison of two results, which can be caused by different factors. It is more effective in identifying a difference than in explaining it.

To look for more indicative signs, anti-fraud specialists have to apply more sophisticated data analytical techniques. There are three common types of techniques, which should be used in combinations.

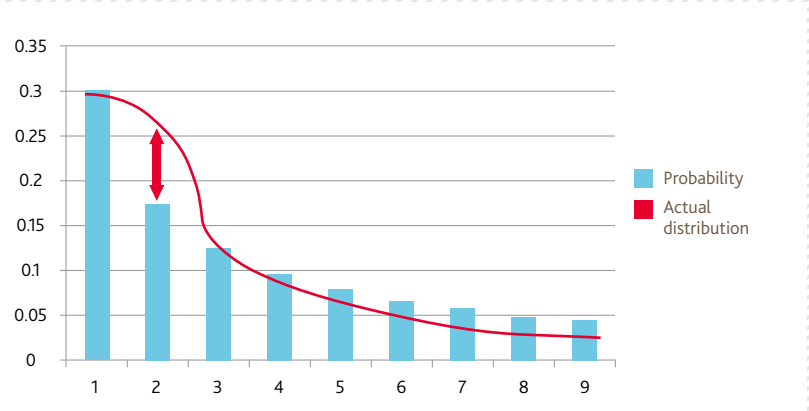
Distribution analysis

This is a study of the distribution of transactions. It is a technique generally applied in our daily lives as our attention is naturally drawn to more extreme cases. For example, auditors usually sample a few more sales transactions from the month where the sales amount significantly deviates from the norm.

Table 1

First Digit	Probability
1	0.301
2	0.176
3	0.125
4	0.097
5	0.079
6	0.067
7	0.058
8	0.051
9	0.046

Exhibit 1: Distribution table of first digit



When the pool of transactions becomes too large, however, there is a problem of finding the norm and the threshold. In such situations, anti-fraud specialists apply Benford's Law which compares the actual distribution against a set of statistical and mathematical norms.

Benford's law (also known as the First Digit Law) is named after physicist Frank Albert Benford. He discovered that figures beginning with the number 1 have the highest probability of occurring (at about 30%) in many listings, tables of statistics, etc. The probability of other numbers being the first digit decreases progressively, as shown in the **Table 1**.

When the pool of data is large enough, the normal distribution of data should conform to this statistical norm.

Fraudsters do not usually follow this pattern when making up transactions and figures.

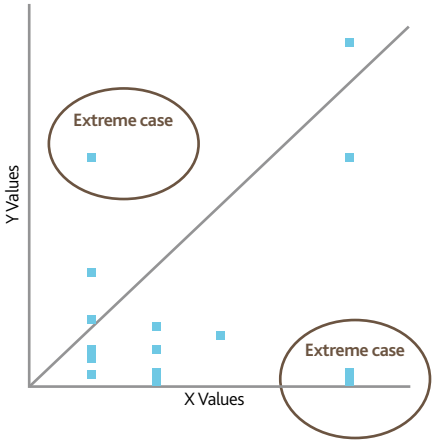
Accordingly, anti-fraud specialists apply Benford's law – comparing the actual distribution of transactions with the statistical norm – to identify any variances in sample distribution.

Exhibit 1 is an illustration of the result of Benford's Law testing. The result demonstrates that transactions starting with the number 2 have an abnormal distribution from the probability defined by Benford's Law. This provides an indication or direction for the anti-fraud specialists to pursue.

In the real world, there are successful stories in which Benford's Law was applied in the accounts payable process and resulted in the identification of falsified payments to shell vendors.

(Note: Mathematically, Benford's law has been tested by a number of scientists and is believed to be the result of exponents and logarithms)

Correlation of two factors



Correlation analysis

Correlation analysis is the study of the strength of the relationship of one dependent factor to one independent factor. It is most effective in identifying anomalies in a cause-and-effect relationship.

Assuming that management knows their business well enough, they should be able to identify the real cause of an effect. Taking an example from a call centre that has hundreds of staff answering calls and processing numerous small refunds, correlation analysis could be conducted by comparing two variables - the hours at work and the number of refunds processed. Since there is a strong correlation between the two variables over a period of time, anti-fraud specialists calculate the regression and identify the cases that fall beyond the scope. The objective is to identify possible fraudulent or careless refunds with an indication that company's policy could be overridden by those who handled too many cases compared to others.

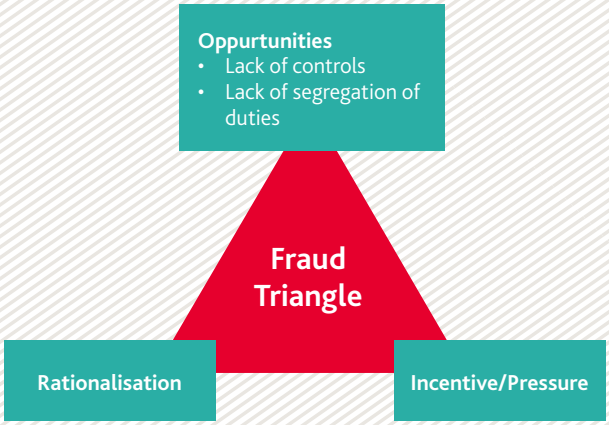
Correlation analysis is usually applied in the following situations:

1. The subject matter is not directly measurable (eg Quality of material inspections by corrupted engineer)
2. The volume of subject matter is large in number, but individual samples are small in value
3. The cost of detailed inspection is high

Scenario testing

Scenario testing is probably the most interesting assignment in fraud risk management. It is a simulation of the fraudster's mind, on which basis the possible fraudulent behaviors are tested, assuming the related internal controls have already been compromised.

The fraud triangle



According to the fraud triangle theory, Fraud occurs at the cracks of internal control systems. Pulling out the transactions from the cracks can help anti-fraud specialists identify:

1. any suspicious transactions;
2. the control loopholes in the system; and
3. the existing controls that are not present, but should be.

Certain anti-money laundering measures at banks are a manifestation of scenario testing. For example, there is a daily cash deposit threshold of HK$80,000. Crossing the threshold will set off an internal alarm. By scenario testing, anti-fraud specialists first assume that the fraudsters know the threshold and are trying to defeat the system by depositing cash in amounts ranging from HK$70,000 to HK$79,999. Accordingly, anti fraud specialists pull in the transactions in the range of HK$70,000 to HK$79,999 and study whether there are any unusual patterns – such as a concentration warning, when most of those deposits are made by a small number of account holders.

However, these data analytics techniques do have their limitations. Benford's law may not work accurately in a small pool of samples; operational data are not always available for conducting correlation analysis; and scenario testing requires both sufficient knowledge of business and unbiased creativity from fresh minds, which do not always come together.

There are no perfect detection systems, nor perfect scams. Fighting fraud through data analytics is about increasing the probabilities of winning the game of "Hide and Seek".

For further enquiries about applying data analytics in your fraud control programme, please contact our Director and Head of Risk Advisory Services, **Patrick Rozario** at 2218 3118 or patrickrozario@bdo.com.hk

JASON WONG
Risk Advisory Services
jasonwong@bdo.com.hk

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BDO GLOBAL NETWORK DEVELOPMENT AT A GLANCE

BDO appoints new member firm in Honduras

BDO is pleased to announce the appointment of a new member firm in Honduras effective 7 May 2015. The new firm, BDO Honduras SRL, formerly Mendieta y Asociados, S. de R.L., was established in 1978, making it one of the longest standing local firms in Honduras. The firm was previously a representative of AGN International and is headquartered in Tegucigalpa, with a further presence in San Pedro Sula. BDO Panama will cooperate closely with BDO Honduras to ease the transition into BDO.

The core services BDO Honduras provide are audit, outsourcing, tax and consulting. Their significant industry expertise is focused on the financial and commercial sectors, in which they have a number of major clients. The firm has witnessed stable development in recent years and growth is expected to accelerate under the BDO brand.

BDO NEW APPOINTMENTS

ANDY LAM
Principal
Assurance Services

Andy Lam was appointed as Principal of Assurance with effect from 1 May 2015.

Andy has extensive experiences in handling assignments of listed companies and private companies operating mainly in Hong Kong, Mainland China and various overseas countries over a wide variety of industries including manufacturing and trading, hotel operation, ship-management and chartering, mortgage and money lending and property development.

Andy also has extensive exposures on Initial Public Offerings, merger and acquisition exercises, as well as financial due diligence investigations for listed companies.

Andy is a fellow member of the Association of Chartered Certified Accountants.

BEATRICE YUEN
Principal
Tax Services

Beatrice Yuen was appointed as Principal of Tax Services with effect from 1 May 2015.

With more than 15 years' tax experience, Beatrice specialises in Hong Kong tax compliance, cross-border tax planning, corporate restructuring, tax due diligence, pre-listing tax review, and tax investigation.

She has extensive experience in advising on corporate and individual tax matters. She is also experienced in providing tax advice to both international and local clients in fields of trading, manufacturing, professional services, investment holding, logistics, and finance.

Beatrice is a fellow member of the Association of Chartered Certified Accountants, an associate member of The Taxation Institute of Hong Kong and also a Certified Tax Advisor in Hong Kong.

CELESTINE YEUNG
Principal
Tax Services

Celestine Yeung was appointed as Principal of Tax Services with effect from 1 May 2015.

With over 13 years' tax experience, Celestine specialises in Hong Kong tax compliance and consulting work for both corporate and individual clients. Her clients include multinational organisations, listed companies as well as private companies from a wide range of industries. She is also experienced in providing tax advice to clients in relation to group structuring, tax due diligence as well as tax planning for expatriates assigned to work in Hong Kong.

Celestine is a fellow member of the Association of Chartered Certified Accountants. She is also a Certified Tax Adviser in Hong Kong.

CONTACT
25th Floor Wing On Centre
111 Connaught Road Central
Hong Kong
Tel: +852 2218 8288
Fax: +852 2815 2239
info@bdo.com.hk

www.bdo.com.hk