

MONETARISM AND BEHAVIORAL FINANCE

by Tai-Yuen Hon

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Preface

We compile ten of KSP Journals articles published during 2015 to 2016 in this volume. This volume includes the part I monetarism: we review both the theoretical as well as empirical literature relevant to monetarism and examine the empirical study on causality relationship between money, income, price and exchange rates (3 articles); the part II behavioral finance: we analyze the behavior of Hong Kong small investors in stock markets and derivatives markets (4 articles); we also discuss foreign-invested enterprises and sourcing in China, online securities trading service in Hong Kong (3 articles in commentaries).

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Introduction

Monetarist theory has its origin in the quantity theory of money. The article 1 ‘A Review of Monetarism’ reviews both the theoretical as well as empirical literature relevant to monetarism. Friedman (1957) states that permanent consumption is a function of permanent income in the long-run. We applied for an error-correction form in the article 2 ‘The Relationship between Consumption and Income’ to conform the linear long-run relationship between permanent income and permanent consumption under special conditions and the elasticity of permanent income in logarithms with respect to permanent consumption in logarithms is unity. The article 3 ‘Causality Relationship between Money, Income, Price and Exchange Rates in a Small Open Economy: the Case of Hong Kong’ investigates the direction of causation among income, price, exchange rates and money supply in Hong Kong. We use the Granger causality concept to find the existence of such a relationship. The article presents the results of two separate bivariate analyses: on involving money and income, and the other involving money and exchange rates. A notable result to come out of the article is that there is no causality relationship between them.

Behavioral finance is a new approach to financial markets that has emerged, at least in part, in response to the difficulties faced by the traditional paradigm. In broad terms, it argues that some financial phenomena can be better understood using models in which some agents are not fully rational. More specifically, it analyzes what happens when we relax one, or both, of the two tenets that underlie individual rationality. Behavioral finance helps to explain why and how markets might be inefficient. Behavioral finance is the study of the influence of psychology on the behavior

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of financial practitioners and the subsequent effect on markets. The article4 ‘A Factor Analysis of Investment Behavior for Small Investors in the Hong Kong Stock Market’ identifies and analyses the important factors that capture the behavior of small investors in the Hong Kong stock market, especially during the financial crisis. Exploratory factor analysis is employed to analyze the data, we find that reference group is the most important factor and monitor investments is the second important factor. The article5 ‘The Preferences and Investment Behavior of Small Investors in the Hong Kong Bank Stock Market’ and the article6 ‘Decision-Making in the Hong Kong Bank Stock Market’ investigate the behavior of small investors in the Hong Kong bank stock market. The results suggest that we can derive the following ascending order of importance: reference group, stock nature, returns performance and bank performance. Reference group is the least important factor and bank performance is the most important factor. The article7 ‘Rank Correlation Analysis of Investment Decision for Small Investors in the Hong Kong Derivatives Markets’ also base on behavioral finance theory to investigate the factors, investing characteristics and decision making processes that affect Hong Kong’s small investors who participate in derivatives markets. We can derive the ascending order of importance of reference group, return performance and personal background. Reference group is the least important factor and personal background is the most important factor. We use an indicator (Kendall rank correlation coefficients) to measure the different ranking of factors and are therefore attempting to give advice for financial advisers approaching target customers (small investors) in the Hong Kong derivatives markets.

The article 8 ‘Foreign-Invested Enterprises in China: Development and Sustainability’ is to illustrate the development and sustainability for foreign-invested enterprises in China. Banks would react to banking regulation of Basel III. The traditional loans are very costly in capital. Banks restrict lending and treat lending as a marketing tool. Foreign-invested enterprises will be difficult to get the traditional loans. The development of peer to peer (P2P) lending perform will be targeted for the foreign-invested enterprises’ new financing channel in China and the world. Also, brand name is the key factor for enterprise survival. It represents the commercial integrity. Foreign-invested enterprises can use the concept of creating shared value (CSV) as reference to sustain their business in China. “One Belt, One Road” creates to open new routes for commercial exchange between China and Europe. That will help China redefine the rules of international

direct investment in its favor. The article9 ‘Sourcing in China’ is to examine a Europe Company in the telecommunication industry that had set up a localization project headed by a global sourcing director. The telecommunication industry is a high-tech and frequently changing industry that illustrate the current localization process in China. We also illustrate the current investment opportunities to foreign investors and potential chance in western development in China. The article10 ‘An Overview Online Securities Trading Service in Hong Kong’ finds that the market for online securities services is mature in Hong Kong. International standards of anti-money laundering and counter-terrorist financing are set by the Financial Action Task Force. The client opening procedures (especially anti money laundering) cannot satisfy both U.S. Securities Exchange Commission and Hong Kong Securities and Futures Commission regulators. Some online brokerage companies will close their business in Hong Kong.

1. A Review of Monetarism

Introduction

Economists agree that significant changes in the growth rate of the money supply influence economic activity. How these changes are transmitted to the economy and the time of this transmission, however, remain arguable points. Monetarist theory has its origin in the quantity theory of money (Friedman, 1987) which is represented by the equation: $MV = PY$ where M stands for the total money supply, V stands for the velocity of circulation of money, P stands for the general price level and Y stands for the real national income (or full employment output). The monetarists argue that V is predictable. While recognizing that the value of V might change over time, they argue that its long-term trend is fairly stable. They further argue that Y tends to follow a long-term naturally determined trend so that the economy always adjusts towards a full employment position. Following on from these arguments, the monetarists, who view the economy as inherently stable, conclude that an increase the money supply will have no effect on real output and employment in the long-run but will raise the price level. Within the broad theoretical confines known as monetarism, the level of economic activity depends on the relationship between the demand for and the supply of money. The quantity of money supply is determined by the monetary authority. The demand for money is that an individual's desire to hold a portion of his income in the form of money. So, the demand for money is determined primarily by income, interest rates, prices and price expectations.

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When the quantity of money that individuals desire to hold is either greater or less than the quantity that the monetary authority is supplying, there exists a monetary disequilibrium. Since individuals attempt to maintain equality between desired and actual money holdings, they change their spending habits in order to get back to their monetary equilibrium. Consequently, these actions affect the current level of economic activity. The change in total spending eventually influences the rate of inflation. In the short run, producers are unable to tell the difference between a permanent and a temporary change in aggregate demand (spending). This information problem leads producers initially to change production instead of prices. For example, a decline in the growth of the money supply creates a situation that individuals desire to hold larger money balances than they actually holding. To increase their money holdings, they reduce their spending. Producers react initially by reducing output because they are unsure whether the slackening demand for their products will be lasting. Therefore, in the short run, the decline in money growth results in slow-down in real economic activity; if pronounced enough and sustained long enough, it can produce a recession. Only when the decline in spending has been identified as permanent will producers reduce their prices and increase production back to normal levels which are consistent with the long-run growth of productive resources and technology. In other words, the impact of the monetary contraction on real output reduces in the long run; whereas the impact on the rate of inflation remains unchanged. According to the monetarist theory, inflation is defined as the continuing, rapidly rising price level. Monetarists maintain that “inflation is always and everywhere a monetary phenomenon.” As such, they assert that inflation is primarily caused by the continually increasing money supply. In the long-run, permanent changes in the rate of money growth should be reflected by equivalent changes in the rate of inflation, other things being equal. The implication of this result is obvious: the control of money growth over the long term is necessary for control of inflation. If short-run money growth is volatile, the growth of real output (and employment) will be similarly volatile. In other words, sufficiently unstable money growth in the short-run, by which we mean frequent and substantive reductions in money growth relative to its trend, may cause recession. Therefore, it should minimize the variability of short-run money growth and greatly enhance the potential for a stable environment in which the economy can grow.

A review of monetarism

The most explicit monetarist alternative is the recently influential rational expectations version of monetarism. This view insists that unpredictable shifts in the money stock are primarily generated by random policy decisions, not systematically related to contemporaneous private-sector developments. Lucas (1972) supports this version of monetarism which depends on introducing persistent informational asymmetries across common agents. A rational expectations approach implies that if the money stock could be made to grow in a smoothly predictable way, real fluctuations would be smaller. We use the Lucas aggregate supply curve for the determination of the general price level and rate of inflation as follows.

Lucas aggregate supply curve:

$$y_t - y_n = f(p_t - E_{t-1} p_t)$$

if

$$p_t > E_{t-1} p_t \Rightarrow y_t > y_n$$

where:

y_t : the actual level of output

y_n : the natural level of output

p_t : prevailing price level

$E_{t-1} p_t$: the public's prior expectation of the contemporaneous price level.

If you are a supplier and the price of your product increase, you should be expected to increase your output. But, is the rising price due to relative increment in demand or is it only product of inflation? If you know that it is product of inflation, you will not increase output because you know there is no extra demand for your output. The model says that output will deviate from its trend value if prevailing prices differ from expected prices. We can rearrange the model as follows.

$$y_t = y_n + f(p_t - E_{t-1} p_t)$$

and we know the quantity equation:

$$p = \left(\frac{V}{Y_R}\right) m_t^s$$

People look at the money supply to form their expectations about prices.

$$y_t = y_n + f(m_t^s - E_{t-1}m_t^s)$$

$$y_t = y_n + f(m_t^s - m_t^e)$$

where $m_t^s - m_t^e =$ money surprise.

If people make an error in forecasting m^s , then, they make an error in forecasting inflation and we get an output deviation. Any central bank would fail consistently to create “money surprise” after a short time. It is because people learn about it and central bank can only achieve this objective if it uses the technique occasionally. We can explain the Lucas aggregate supply (AS) curve more clearly by using Figure 1.

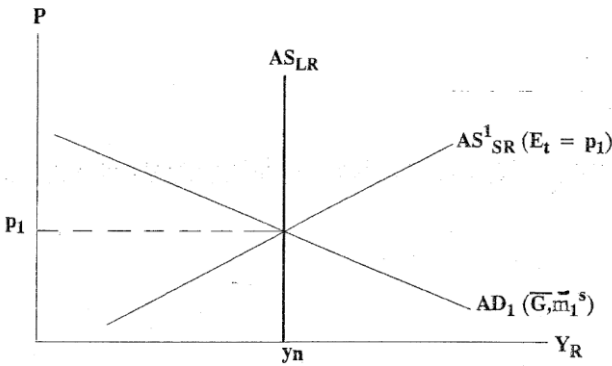


Figure 1. Lucas aggregate supply curve

$$y - y_n = f(p_t - E_{t-1}p_t)$$

$$y = y_n + f(p_t - E_{t-1}p_t)$$

if $E_{t-1}p_t = p_t$ (no error for price expectation)

Then $y = y_n$ (here, money is neutral in long-run)

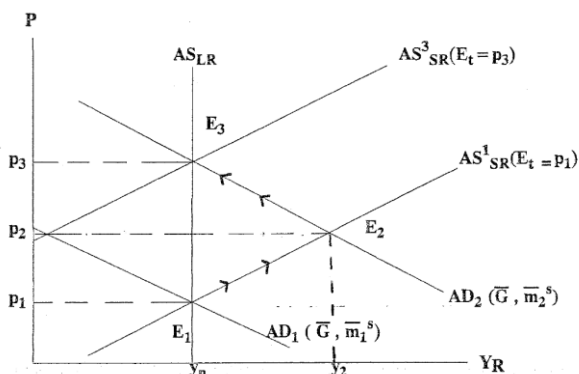


Figure 2. Monetary expansion: no real output effects in long-run

As shown in Figure 2, the initial full-employment equilibrium at E_1 is disturbed by an increase in the money stock that shifts aggregate demand to AD_2 . Short-run equilibrium is at point E_2 where both output (y_2) and (p_2) have increased. Prices are higher because the output and employment expansion have increased wages, and firms pass these cost increases into higher prices. As long as output is above y_n , wage costs and equilibrium prices will be rising. From the short-run equilibrium at E_2 , the upward-shifting aggregate supply schedule leads to declining output and rising prices as shown by the arrows. The adjustment continues until at E_3 , prices have risen in proportion to the increase in money stock. At this point, output and employment have returned to full-employment level. In the long-run, therefore, a monetary expansion has no real output effects. People make mistakes in their expectation of price level, so a monetary expansion ($+\Delta m^s$) has a real effect on changes in real output in short-run. However after full adjustment, monetary expansion has a lasting effect on the price level in the long-run and has no lasting effect on real output in the long-run. If people do not make mistakes (they are not fooled) in their expectation of the price level, a monetary expansion ($+\Delta m^s$) just has a direct effect on the price level and no effect on output and employment. This is the basis of the long-run Phillips Curve. Thus after a period of years, the expected inflation rate will catch up to the actual inflation rate. In the long-run, the actual and expected inflation rates are equal. The long-run Phillips

Curve describes the tradeoff, if any, between inflation and unemployment when the actual and expected inflation rate are equal. When inflation has been high in the past, people are not easily fooled. However, if inflation has never been present, people are more likely to make mistakes. This is because people learn from the past. Some evidence suggests that unpredictable changes in money supply cause real output to change but other evidence also suggests that predictable changes in money supply cause real output to change, because of contracts and sticky prices in those countries. In high inflation countries, people are not fooled and they adjust their expectations as soon as prices start to rise (see Figure 3). If people correctly interpret the monetary expansion, the supply curve shifts as soon as the demand curve shifts, there is no mistake and the change in the money supply will be reflected immediately in rise in price from p_1 to p_2 and output (y_n) is unchanged.

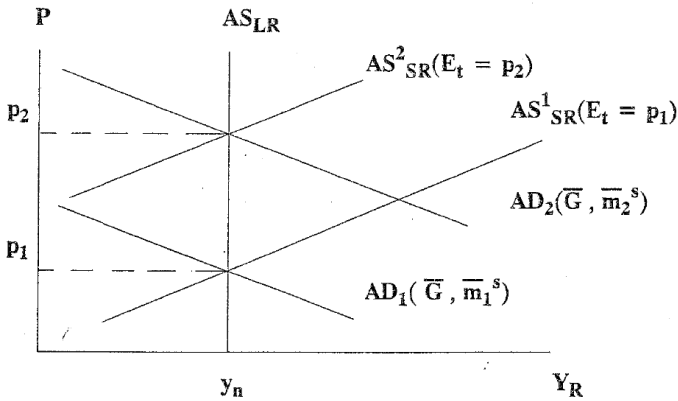


Figure 3. Monetary expansion: the supply curve shifts as soon as the demand curve shifts

The ‘Lucas critique’ is that if expectations are rational the type of structure which many econometric models have estimated is not the constant structure and will not be policy invariant. On the contrary, it will depend amongst other things on the policies the government is pursuing. We consider the Barro model as follows.

$$Y_t = \pi_1 W_t + \pi_2 DM_t + \pi_3 X_{t-1} + \pi_4 Z_{t-1} + V_t$$

where:

Y_t : real output.

W_t : a variable or a number of variables which determine the natural level of output.

DM_t : the rate of growth of the quantity of money in period t.

X and Z: variables whose values in periods t-1 partly determine monetary growth in period t.

π_i : estimated coefficients.

If this model is used to persuade a government to change its policies the non-rational expectation model of Y_t will collapse whereas the rational expectation will not.

Lucas's point is that if expectations of a variable are rational they will be determined by the process governing that variable. Estimated models of the economy which do not allow for changes in expectations when policy regimes change are therefore likely to be seriously flawed in that they will begin to predict the behavior of the economy badly whenever a policy regime change occurs. Lucas (1973) concentrates on testing the prediction. The more unpredictable aggregate demand is, the less the effect on real output of any given unpredictable movement in aggregate demand. Barro (1997) and Barro & Rush (1980) test that only the unpredictable component of aggregate demand affects real variables such as output and real unemployment. Some notable criticisms and extensions of the Lucas and Barro tests have been discussed by Gordon, Mishkin & Pesaran (1991). Gordon summarizes his interpretation as follows: to the extent that output was insulated from the impact of anticipated monetary changes... this occurred more because of a restricted impact of money on spending than because of any independence of real output from anticipated changes in spending. In other words, policy ineffectiveness... is more related to factors set forth in early postwar Keynesian models than those advanced by Lucas. Mishkin lengthened the lag on unanticipated money, nominal income and inflation and also found that anticipated change in aggregate demand had important output and employment effects in the US economy. Lastly, Pesaran tested the Barro model against an alternative Keynesian model and found he could reject the Barro model on the assumption that Keynesian model is true; however, he was not able to reject the Keynesian model under the assumption that Barro model was true. Another aspect of this problem concerns the credibility of government policy. Recent

theoretical literature on this topic uses the model of the game between the public and central bank behavior as follows.

The Monetary Policy Game: Basic Model

I Output Relationship

$$y = y_n + (m - m^e) \tag{1}$$

II Social Welfare Function = Policymaker’s Objective Function

$$W = -m^2 + 2(y - y_n) \tag{2}$$

III Policymaker’s Objective Function in terms of m

$$W = -m^2 + 2(m - m^e) \tag{3}$$

IV Public’s Utility Function

$$U = -(m - m^e)^2 \tag{4}$$

Payoff Tables for Basic Monetary Policy Game:

Table 1. *Policymaker’s Payoff Table (from equation 3)*

	Public expect (m^e)	
Policymaker choose (m)	0	1
0	0	-2
1	1	-1

Table 2. *Public’s Payoff Table (from equation 4)*

	Public expect (m^e)	
Policymaker choose (m)	0	1
0	0	-1
1	-1	0

Source: Cukierman (1986), pages 6-7.

In Table 1, inflation is clearly the dominant strategy from the point of view of monetary authority, the payoffs for $m = 1$ are higher regardless of what inflation rate the public expects. In Table 2, the inflationary bias occurs because the monetary authority has the incentive to inflate in order to increase employment once the public’s inflationary expectations have been set. The policymaker is assumed to have imperfect control of the money supply and to be T.-Y. Hon, (2018). *Monetarism and Behavioral Finance ...*

uncertain about his own future objectives. If he expected to care more about employment in the future than he does now, he will increase his ability to create surprises at relatively low inflation in future periods by choosing a relatively low current monetary growth. If he expects to care less about employment in the future than he does at present, he will choose faster current monetary growth (and faster inflation). The important point is that the policymaker must predict his own uncertain objectives in the future when choosing the current rate of money growth. The policymaker must also take into account the costs of reversing inflationary expectations. Fisher (1984) has stressed the importance of the speed with the public's expectations adjust for determining the costs of disinflation policy actions. The faster expectations adjust, the lower the output costs of disinflation will be. Following Cukierman (1986) if the best predictor of future inflation is given by the following equation.

$$m_i^e = (\rho - \lambda)m_{i-1} + \lambda m_{i-1}^e + (1 - \rho)B_0 A^1$$

This equation specifies the expected money growth as a weighted-average of last period's expectation, m_{i-1} , the last period's expectation, m_{i-1}^e and $B_0 A$ ($B_0 A$ can be recognized as the unconditional mean money growth). Cukierman conceive of credibility as the speed with which the public recognizes that a change in the policymaker's objectives has actually occurred. This concept of credibility seems appropriate when policy is discretionary and the policymaker's objectives (known only to him) are in constant flux. The parameter (λ) from the above equation is a natural and convenient measure of credibility. Using this measure, credibility is higher, the more precise monetary control is.

Dornbusch (1976a; 1976b) developed the sticky-price monetary model which makes the assumption that the domestic level is sticky, but money markets and foreign exchange markets adjust instantaneous to any disturbance. It holds that uncovered interest parity: $r = r^* + x$ (where r is domestic interest rate, r^* is foreign interest rate, x is rate of depreciation) exists. If the domestic monetary authority starts an expansionary monetary policy, the domestic price level cannot adjust immediately (sticky price). The

¹In statistical terms m_i^e is the expected value of m_i conditioned on m_{i-1} , m_{i-2} , ...

pressure from the monetary expansion must be felt somewhere. The exchange rate will depreciate in line with equation: $P = EP^*$ (where P is domestic price level, P^* is foreign price level, E is exchange rate) in long-run. However, there is a problem: the right shift of the LM curve will lower domestic interest rate. This means that, for equation ($r = r^* + x$) to hold, the domestic currency must be expected to appreciate ($x < 0$). This apparent inconsistency between the need for long-run depreciation and an expected appreciation is the source of overshooting. Bilson (1978) demonstrated the vicious circle view of the international monetary system. The vicious circle view is based upon the belief that flexible exchange rate systems have a significant propensity toward dynamic instability and that exchange rate changes constitute an independent source of inflationary pressure. There are at least two major objectives that can be raised against this test of vicious circle hypothesis. First, the approach ignores the fact that the exchange rate is an endogenous variable. The causality tests may indicate that exchange rate 'cause' price when the correct explanation is simply that exchange rates respond more rapidly than prices to changes in underlying economic conditions. Second, the vicious circle hypothesis is that the implicit economic model underlying the discussion neglects the expenditure – reducing role of the exchange rate in adjustment process. The pattern of price, wage and exchange rate dynamics described by proponents of the vicious circle hypothesis may be derived from a general equilibrium model of an economy operating under a regime of managed flexible exchange rate. Although it appears that the exchange rate causes subsequent movements in prices and wages, Bilson has demonstrated that the probable cause of both the depreciation of the exchange rate and inflation of domestic prices is an expansionary money supply.

Conclusion

When asset price, exchange rates and interest rate are determined in auction markets, while wages and commodity prices are set by contract, changes in underlying economic conditions are first reflected in the auction price, so that the impression is created that these prices cause change in the contractual prices. Proponents of the vicious circle hypothesis express the view that rapid adjustment in price and wages limits the effectiveness of monetary policy, and that monetary policy is likely to be less effective in more open economies. However, the opposite conclusion was reached in regard to policies that attempted directly to increase the demand for, or the supply of, domestically-produced goods. In

these cases, rapid price and wage adjustment not only results in a greater stimulus to output and employment but also serve to lessen the inflationary pressure on prices and costs. Tight monetary policy may be infeasible because of the resulting increase in unemployment. As an alternative, an expansionary demand or supply policy was found to both stimulate output and employment and reduce the inflation of prices and costs. The only necessary restriction on the policy is that the increase in demand must not be financed, either directly or indirectly, by an expansion in the money supply. The increase in real income will increase the demand for money. This increase in demand for Money will lead an incipient balance of payments surplus, which will be eliminated by an appreciation of the exchange rate. The appreciation of the exchange rate will lessen the inflation of wages and prices by lowering the cost of imported final and intermediate goods. This conclusion should not be interpreted as an avocations of persistent policy of deficit financing. The benefits of higher level of real income must be weighed against the increase in the level of international indebtedness in assessment of the long-run impact the policy.

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2. The Relationship between Consumption and Income

Introduction

The magnitudes termed "permanent income" and "permanent consumption" that play such a critical role in the theoretical analysis cannot be observed directly for any individual consumer unit (Friedman, 1957). Permanent income is defined as expected long-term average income. Permanent consumption is proportional to permanent income. Permanent income is a subjective notion of likely medium-run future income. Permanent consumption is a similar notion of consumption. A relation between permanent income and permanent consumption specifies that the ratio between them is independent of the size of permanent income but does depend on other variables, in particular: (1) the rate of interest or sets of rates of interest at which the consumer unit can borrow or lend; (2) the relative importance of property and non-property income (the ratio of non-human wealth to income); and (3) the factors (the portmanteau variable) determining the consumer, unit's tastes and preferences for, consumption versus additions to wealth. Co-integration theory is first used to test whether a long-run equilibrium relation exists between the two variables. Granger & Weiss (1983), and Engle & Granger (1987) have proved a theorem showing that existence of an error-correction form between two variables is necessary and sufficient for them to be cointegrated. An error-correction form is special case of a data-based approach. The work by DHSY [Davidson, Hendry, Srba & Yeo (1978)] is the first important example of this 'data-based' approach to applied T.-Y. Hon, (2018). *Monetarism and Behavioral Finance ...*

econometric work. The DHSY paper is a thorough study of postwar UK quarterly data, concentrating mainly on the dynamic properties and lag structure of the relationship between disposable income and non-durable consumption rather than the economic behavior underlying it. DHSY find that, even when a common sample period of identical non-seasonally adjusted data is used, with identical functional forms and data transformations, the three models [those of Hendry (1974), Ball, et al. (1975) and Wall, et al. (1975)] still seem to lead to different conclusions. There are varying lag structures employed in the three studies and different estimating methods and test statistic used. Sims (1972) states that if and only if causality runs one way from current and past value of some list of exogenous variables, then in a regression of endogenous variables on past, current and future value of the exogenous variables, the future values of exogenous variables should have zero coefficient. The objective of this study was to conform the linear long-run relationship between permanent income and permanent consumption.

The rest of the paper is organized as follows: Section 2 reviews the related literature; Section 3 reports the findings; and Section 4 provides the conclusion.

Literature review

According to Hansen (1947), consumption is a function of income in the long as well as the short run. In his opinion, there is an upward secular drift of the consumption function. He concludes, however, that this up ward drift could not occur except as a result of a secular rise of income. The new consumption theorists² have produced a theory of the consumption function that unifies the effects of asset holdings and measured income through the concept of normal or permanent income. Cave (1950) concludes that the consumption function varies cyclically, also has certain theoretical implications relating to Keynesian theory. Brown (1952) states that the consumer theory finally selected is fitted to the observed Canadian data by first building around it a small macro model of the economy followed by simultaneous estimation of parameters. The goodness of fit is studied of first, the individual equations and then of the model treated as a whole. Finally, short-run and long-run multipliers are estimated for the complete model. Friedman (1957) states that permanent consumption is a function of permanent income in the long-run. Farrell (1959) conclude that the hypothesis also has implications for the use of budget studies to

² For example, Morgan (1951), Goldsmith (1951), Boulding (1950).
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throw light on consumption behavior. We have seen that where the Friedman Effect is present and the Normal Income Hypothesis holds, a simple regression analysis will give a biased estimate of the income elasticity of consumption. Heckman (1974) view earnings as resulting from a life cycle labor supply decision. If individuals are free to set their hours of work, and if wage rates change systematically over the life cycle, the path of consumption of market goods will depend on the wage rate at each age unless goods and leisure are independent of each other in utility. Davidson et al. (1978) conclude that it is worth while trying to explain the completes of existing findings; that restrictions derived from economic theories can be valuable in econometric modeling incorrectly implemented to restrict the model but not the data; that seasonal adjustment of data can confuse the selection of an appropriate dynamic specification; that "multicollinearity" is not necessarily resolved by restricting the parameter space rather than by enlarging it, and that econometric relationships can predict accurately over periods in which the behavior of the regressors is sufficiently different that mechanistic time-series methods will fail. Carroll (1996) conclude that many consumers ensure that retirements is taken care of by joining a pension plan, buy a house, and then subject the post-pension-plan, post-mortgage-payment income and consumption streams to buffer-stock saving rules. Buffer-stock savers have a target wealth-to-permanent-income ratio such that, if wealth is below the target, the precautionary saving motive will dominate impatience and the consumer will save, while if wealth is above the target, impatience will dominate prudence and the consumer will dissave. Hall (1979) have the strong implication that beyond the next few quarters consumption should be treated as an exogenous variable. There is no point in forecasting future income and then relating it to income, since any information available today about future income is already incorporated in today's permanent income. Cutler (2005) finds a stable relationship between consumption, labour income and wealth with plausible long-run estimates of the implied marginal propensity to consume out of income and wealth.

Result

The standardization by sample period enables DHSY to 'nest' the three competing hypothesis as special cases of a general hypothesis or estimating equation. This enables them to test, on purely statistical grounds, which provides the best description of the UK relationship between income and consumption. On the basis of standard statistical criteria such as goodness of fit, the best

of the three models appears to be that Wall, et al. (1975) which is the form:

$$\Delta \log C_t = a_0 + a_1 \Delta \log Y_t + a_2 (\log C_{t-1} - \log Y_{t-1}) \quad a_0 > 0.$$

Where:

$\Delta \log C_t$: the quarterly changes in consumption in logarithms form.

$\Delta \log Y_t$: the quarterly changes in income in logarithms form.

This equation has some rather strange economic properties. For example, it implies that even if the level of income were to remain constant indefinitely, in which case

$$\Delta \log Y_t = \Delta \log Y_{t-1} = 0$$

consumption would continue to rise without limit since under such conditions

$\Delta \log C_t = a_0 > 0$, which means that this equation has no static equation solution. This equation implies that the adjustment of consumption to any change in income is completed after just two quarters and, moreover, is apparently independent of any disequilibrium in the previous levels of variables $\log C_t$ and $\log Y_t$. When consumption is ‘well above’ its equilibrium level relative to income, the increase in

$\log C_t$ accompanying an increase in $\log Y_t$, it can be expected to be much smaller than would have been the case if $\log C_t$ and $\log Y_t$ had previously been well adjusted to each other.

In the steady state (equilibrium relationship between income and consumption):

$$\Delta \log C_t = \Delta \log Y_t = 0$$

If the above condition is substituted into an error-correction model, then:

$$\begin{aligned} -a_0 &= a_2 \log C_t - a_2 \log Y_t \\ \Rightarrow -a_0 + a_2 \log Y_t &= a_2 \log C_t \\ \Rightarrow \frac{-a_0}{a_2} + \log Y_t &= \log C_t \end{aligned}$$

$$\Rightarrow \log \left[Y_t e^{\frac{-a_0}{a_2}} \right] = \log C_t$$

$$\Rightarrow C_t = Y_t e^{\frac{-a_0}{a_2}}$$

$$\text{Setting } K = e^{\frac{-a_0}{a_2}}$$

We have $C_t^* = K Y_t^*$ (proportional)

Where C_t^* and Y_t^* represent 'equilibrium' values. It is the linear long-run relationship between C and Y which might represent an underlying relationship between permanent income and permanent consumption. Taking natural logarithms of the above equation.

$$c_t^* = k + y_t^*$$

where lower-case letters denote logarithms. Note that the elasticity of Y with respect to C is unity.

Now, we try to extend DHSY approach for any two variables case in our paper. In long-run:

$$Y_t = K X_t$$

or in logs:

$$y_t = k + x_t$$

In the short run:

$$y_t = a_0 + a_1 x_t + a_2 x_{t-1} + a_3 y_{t-1}$$

$$y_t - y_{t-1} = a_0 + a_1 x_t + a_2 x_{t-1} + (a_3 - 1) y_{t-1}$$

$$\Delta y_t = a_0 + a_1 x_t + a_1 x_{t-1} - a_1 x_{t-1} + a_2 x_{t-1} + (a_3 - 1) y_{t-1}$$

$$\Delta y_t = a_0 + a_1 (x_t - x_{t-1}) + a_1 x_{t-1} + a_2 x_{t-1} + (a_3 - 1) y_{t-1}$$

$$\Delta y_t = a_0 + a_1 \Delta x_t + a_1 x_{t-1} + a_2 x_{t-1} + (a_3 - 1) y_{t-1}$$

$$\Delta y_t = a_0 + a_1 \Delta x_t + (a_1 + a_2) x_{t-1} + (a_3 - 1) y_{t-1}$$

$$\text{First restriction } a_1 + a_2 = -(a_3 - 1)$$

$$\text{(to be test) or } a_1 + a_2 + a_3 = 1$$

Error-correction form:

$$\Delta y_t = a_0 + a_1 \Delta x_t + (a_3 - 1)(y_{t-1} - x_{t-1})$$

In the steady state: $y_t = y_{t-1}$ and $x_t = x_{t-1}$

$$(1 - a_3)y_t^* = a_0 + (a_1 + a_2)x_t^*$$

$$y_t^* = \frac{a_0}{1 - a_3} + \frac{(a_1 + a_2)x_t^*}{1 - a_3}$$

The unity elasticity implies that $a_1 + a_2 + a_3 = 1$, so it conforms to the postulated long-run relation:

$$y_t^* = k + x_t^*$$

where:

$$k = \frac{a_0}{1 - a_3}$$

$$\frac{a_1 + a_2}{1 - a_3} = \frac{1 - a_3}{1 - a_3} = 1$$

Conclusion

Friedman (1957) states that permanent consumption is a function of permanent income in the long-run. The definition of causality proposed by Granger (1969) essentially states that \mathbf{X} causes \mathbf{Y} , if the past history of \mathbf{X} can be utilized to more accurately predict \mathbf{Y} than only the past history of \mathbf{Y} . One drawback of the procedure of differencing is that it results in a loss of valuable “long-run information” in the data. The concept of co-integrated series has been suggested to solve this problem. Granger & Weiss (1983), and Engle & Granger (1987) have proved a theorem showing that the existence of an error-correction form between two variables is necessary and sufficient for them to be cointegrated. We applied for an error-correction form to conform the linear long-run relationship between permanent income and permanent consumption under special conditions and the elasticity of permanent income in logarithms with respect to permanent consumption in logarithms is unity.

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3. Causality Relationship between Money, Income, Price and Exchange Rates in a Small Open Economy: the Case of Hong Kong

Introduction

Causality testing is an important area of empirical economic research. Consequently, test procedures and the implications of results obtained need to be clearly understood. Many tests have been conducted for economic questions that can be stated as temporal causation. The tests have been conducted using the concepts known in the literature as ‘Granger-causation’. Hong Kong is a small open economy. The openness of Hong Kong’s economy is indicated by the very large shares of exports and imports in GDP. The most likely source of inflation in the case of a small open economy is imported inflation, which can be considered as a special type of cost-push inflation originating from abroad. There is no central bank in Hong Kong. The government only fixed exchange rate of banknotes – M1, and the exchange rate of deposit – M2 was still determined by market mechanism. The linked exchange rate system is a hybrid form of the fixed and floating rate system. Under the exchange rate US\$1 = HK\$7.8, the note-issuing banks must buy the Certificate of Indebtedness with US dollars from the Exchange Fund for issuing banknotes. The note issuing banks must pay US dollar to Exchange Fund as reserves, according to the official rate, for issuing new bank notes and the balance of payments determine the supply of Hong Kong dollars. So, the supply of Hong Kong dollars will then be controlled automatically and the related inflation problem will be solved because it possesses an automatic adjustment mechanism.

The objective of this study is to investigate the causality relationship between money, income, price and exchange rates in Hong Kong.

This paper is organized as follows. Section 2 reviews the related literature; section 3 explains the methodology of the present study and the data; section 4 reports the results; and section 5 provides the conclusion.

Literature review

Mills & Wood (1978) show that the monetary authorities in non-reserve centers can fully control domestic monetary conditions only under a completely freely floating rate regime. Enoch (1979) find that an exchange rate changes causes a change in relative retail price; however, it cannot tell whether this initial exchange rate change was truly exogenous or whether it is responding to money supply changes which will themselves cause the relative price change. Atesoglu & Tillman (1980) support the causal implication of the simply Keynesian approach that autonomous expenditures cause income. Osborn (1983) bivariate results support the Hsiao (1979) conclusion that a feedback relationship exists between GNP and M1, while GNP causes M2 unidirectionally. The results agrees with Sims (1972). Layton (1985) obtain results for two separate bivariate analysis: one involving money and nominal income and the other involving money and real income. Sheehan (1986) finds that the expectation formation process may differ by country or monetary authorities may have differing abilities or propensities to generate unexpected money changes. Serlets (1990) conclude that there may be more than one avenue of influence from monetary growth to velocity growth. Since monetary growth (in particular unanticipated monetary growth) appears to influence both velocity growth and real GNP growth in causal sense, it seems that the behavior of velocity can be explained in terms of monetary growth but in a complex way that probably involves more than the demand for money. Causal reading of a seminal paper by Sims (1972) and an earlier paper by Granger (1969) has left many economists with the contrary impression that observed correlations can be used to infer the direction of causation. Cooley & Leroy (1985) state that to understand the Granger and Sims tests, support that the Federal Reserve determines the money stock by spinning a roulette wheel. The money stock can depend on past as well as present spins of the wheel, but assume that the Federal Reserve pays no attention whatever to income in setting the money stock. Now, if in this environment one regresses the money stock on its own past values

and past income, in large samples the latter will take on a zero coefficient.

Method and data

Co-integration theory is first used to test whether a long-run equilibrium relation exists between the two variables. After co-integration has been established, causality measures are constructed to quantify various types of feedback between the variables. It is then examined whether the causality measures are longitudinally related to certain basic economic indicators in Hong Kong. The theory of co-integration was developed by Granger and others in a series of papers such as Engle & Granger, (1987). Co-integration of a pair of variables may be defined as follows. A series, x_t which has a stationary, invertible, non-deterministic ARMA (autoregressive- moving average) representation after differencing d times is integrated of order d , denoted $x_t \approx I(d)$. Thus a series which is integrated of order zero ($I(0)$) is itself stationary, whilst the simplest example of an $I(1)$ series is a random walk. For a pair of variables to be cointegrated, a necessary (but not sufficient) condition is that they be integrated of the same order. If both x_t and y_t are $I(d)$ then the linear combination

$$z_t = x_t - \alpha y_t$$

will generally also be $I(d)$. However, if there exists a constant scalar α such that $z_t \approx I(d-b)$, $b > 0$, x_t and y_t are said to be cointegrated of order d , b denoted $(x_t y_t) \approx CI(d, b)$.

In this paper, we are most concerned that x_t and y_t are both $I(1)$ and $z_t \approx I(0)$. For then although x_t and y_t may each have infinite variance, the linear combination z_t is stationary. We mainly use tests based on the work of Fuller (1976) and Dickey and Fuller (1979, 1981) to test for unit roots and cointegration. First, we test for integration to find d .

$$\Delta x_t = \alpha_0 + \alpha_1 x_{t-1} + \varepsilon_t$$

If x_t is random walk, it implies $\alpha_1 = 0$ ($\alpha_0 = 0$); or, if x_t is random variable, it implies $\alpha_1 < 0$. We set the hypothesis as follows;

$$\begin{aligned} H_0: x_t &\approx I(1) \\ H_1: x_t &\approx I(0) \end{aligned}$$

We run the regression by OLS:

$$\Delta x_t = \alpha_0 + \alpha_1 x_{t-1} + \sum_{i=4}^{2or4} \beta_i \Delta x_{t-i} + \varepsilon_t$$

So, we can find t – statistic for $\hat{\alpha}_1$ and compare with Augmented Dickey-Fuller (ADF) table. If the value of t – statistic for $\hat{\alpha}_1$ is statistically insignificant, we accept the null hypothesis [$x_t \approx I(1)$]. If from the other hand, the value of t – statistic for $\hat{\alpha}_1$ is significant, then, we reject the null hypothesis [x_t is I(0) and not I(1)].

Suppose we get all the results to accept the null hypothesis for the above equation, then, we can run the regression for the twice differenced variable as follows;

$$\Delta^2 x_t = \alpha_0 + \alpha_1 \Delta x_{t-1} + \sum_{i=4}^{2or4} \beta_i \Delta^2 x_{t-i} + \varepsilon_t$$

Similarly, we may compute the t – statistic and compare with ADF table. If the t – statistic value for $\hat{\alpha}_1$ is statistically insignificant, we conclude that $\Delta x_t \approx I(1)$ [or $x_t \approx I(2)$]. Alternatively, if the t – statistic for $\hat{\alpha}_1$ is significant, we propose that

$\Delta x_t \approx I(0)$ [or $x_t \approx I(1)$]. Also, the present paper concentrates on two tests: Sargan & Bhargava (1983) Durbin-Watson (DW) test and the Augmented Dickey Fuller (ADF) test of residuals from the cointegrating regression. The cointegrating regression for the present model has the following form:

$$x_t = INT + \alpha Y_t + \varepsilon_t$$

[Note that this equation is simply the stochastic version with an intercept term (INT)] Engle & Granger (1987) report tables of critical values generated by Monte Carlo simulation for the DW statistic from the cointegrating regression; these are 0.511, 0.386 and 0.322 for test sizes of one, five and ten per cent, and 100 observations. Augmented Dickey & Fuller (ADF) test is computed by first running the cointegrating regression and find the residuals

$e = x - \hat{x}$ then, we run the following regression:

$$\Delta e_t = \phi_0 + \phi_1 e_{t-1} + \sum_{i=1}^{2n-4} \phi_i \Delta e_{t-i} + U_t$$

The test statistic is computed as the ratio of ϕ_1 to its estimated standard error. The estimated residual series, U_t , is white noise. The t ratio is known as the ADF statistic. If it is necessary to add one or more lagged first differences into the auxiliary regression in order to induce an approximately white noise disturbance, then the ‘t – ratio’ of the lagged level (‘Augmented Dickey & Fuller statistic’) has approximate critical values of -3.77, -3.17 and -2.84 for nominal test sizes of one, five and ten per cent and a sample size of 100 observations. Granger (1983), and Engle & Granger (1987) have proved a theorem showing that the existence of an error-correction form between two variables is necessary and sufficient for them to be cointegrated. The definition of causality proposed by Granger (1969) essentially states that X causes Y, if the past history of X can be utilized to more accurately predict Y than only the past history of Y. This view of causality give rise to a one-sided distributed lag approach. The test consists of estimating the following two equations:

$$Y_t = a_0 + \sum_{i=1}^{m1} \alpha_i Y_{t-i} + \sum_{i=1}^{n1} \beta_i x_{t-i} + e_{1t} \quad (1)$$

$$X_t = b_0 + \sum_{i=1}^{m2} \gamma_i x_{t-1} + \sum_{i=1}^{n2} \delta_i Y_{t-i} + e_{2t} \quad (2)$$

In estimating these two equations, it is assumed that X and Y are stationary time series and that e_{1t} and e_{2t} are uncorrelated. Decisions regarding the lag length of the variables and the

appropriate filter to achieve stationary must be made when employing this test procedure.

Unidirectional causality from X to Y is said to exist if the estimated coefficients on the lagged values of X in Equation (1) are significantly different from zero as a group, while the set of δ_i is statistically zero.

Unidirectional causality from Y to X is said to exist if, as a group, δ_i is statistically different from zero and the β_i is not.

Bidirectional causality is indicated when the sets of β_i and δ_i are both statistically non-zero.

No causality is indicated when the sets of β_i and δ_i are both statistically zero.

All data were taken from Datastream and Hong Kong Monthly Digest of Statistics. Due to avoid the influence of June Fourth Incident³ in 1989, the analysis covers the period from the first quarter 1981 to fourth quarter 1988. Quarterly data were used as this was thought more appropriate. The definition of money supply are:

Money Supply definition 1. (Total): Notes and coins with public, plus customers' demand deposits with and licensed banks.

Money supply definition 2. (Total): M1 plus customers' savings and time deposits with licensed banks, plus negotiable certificates of deposit issued by licensed banks and held outside the monetary sector.

Money supply definition 3. (Total): M2 plus customers' deposit with licensed and registered deposit-taking companies plus negotiable certificates of deposits issued by deposit-taking companies held outside the monetary sector.

HK\$M1, HK\$M2 and HK\$M3 are the Hong Kong dollar components of these definitions. Gross domestic product (GDP) is an aggregate measure of the value of goods and services produced by residents within the domestic boundary of a country or a territory, net of their import contents before provision for depreciation (or capital consumption).

³The Tiananmen Square protests of 1989, commonly known as the June Fourth Incident or '89 Democracy Movement in Chinese, were student-led popular demonstrations in Beijing which took place in the spring of 1989 and received broad support from city residents, exposing deep splits within China's political leadership.

The two consumer price index series were derived from the household expenditure survey conducted in 1984-1985. They are defined in terms of the percentage distribution of households by expenditure as follows;

INDEX	Approximate percent of households covered	Monthly expenditure range in 1984/85
CPI(A)	50	HK\$2,000-HK\$6,499
CPI(B)	30	HK\$6,500-HK\$9,999

The effective exchange rate indexes (EERI) measures movements in weighted-average of nominal exchange rates of HK Dollar against the currencies of 15 principal trading partners. Since quarterly data on GDP are not available from the first quarter 1981 to fourth quarter 1988, we have derive them indirectly. We use the total domestic export data to estimate the quarterly GDP. One plausible method is that GDP as annual data (GDP_A) is regressed on total domestic export as annual data (DX_A). We find the intercept term (INT_A) and the slope (S_A), then the whole equation is divided by four to give the estimate of GDP as quarterly data (GDP_Q) as follows.

$$GDP_A = INT_A + S_A DX_A$$

$$\frac{GDP_A}{4} = \frac{INT_A}{4} + S_A \frac{DX_A}{4}$$

$$GDP_Q = INT_Q + S_A DX_Q$$

Results

Cointegration techniques for examining long-run equilibrium relationships are used as the basis of our study. Quarterly data were obtained on M1, M2, M3, GDP, CPIA, CPIB and effective exchange rate indexes (EX) for the period first quarter 1981 to fourth quarter 1988 for the Hong Kong. First, we tested for a unit root in the above macroeconomic variables series, the results of which are reported in Table 1.

Table 1. Test for a unit root in M1, M2 M3, GDP, CPIA, CPIB and EX series

	\hat{T}_μ		\hat{T}_μ
$\Delta(LM1)$	1.5147	$\Delta^2(LM1)$	-4.2591
$\Delta(LM2)$	-2.2058	$\Delta^2(LM2)$	-3.1581
$\Delta(LM3)$	-1.9659	$\Delta^2(LM3)$	-3.3597
$\Delta(LGDP)$	-0.9689	$\Delta^2(LGDP)$	-6.4374
$\Delta(LCPIA)$	-0.6387	$\Delta^2(LCPIA)$	-2.2867
$\Delta(LCPIB)$	-0.6658	$\Delta^2(LCPIB)$	-2.2169
$\Delta(LEX)$	-2.1046	$\Delta^2(LEX)$	-3.5625

Where:

LM1 is the money supply definition 1 (Total) in logarithms;
 LM2 is the money supply definition 2 (Total) in logarithms;
 LM3 is the money supply definition 3 (Total) in logarithms;
 LGDP is the gross domestic product in logarithms;
 LCPIA is consumer price index (A) in logarithms;
 LCPIB is consumer price index (B) in logarithms;
 LEX is the effective exchange rate indexes in logarithms.

Critical values for the \hat{T}_μ statistic are -2.93 and -2.60 for 5% and 10% level of significance respectively (critical values are taken from Fuller, 1976). In all seven cases we are unable to reject the null hypothesis of a unit root in the framework of equation $\left[\Delta x_t = \alpha_0 + \alpha_1 x_{t-1} + \sum_{i=1}^{2 \text{ or } 4} \beta_i \Delta x_{t-i} + \varepsilon_t \right]$. Moreover when the data series are twice differenced the hypothesis is accepted that LM1, LM2, LM3, LGDP, LEX may be intergrated of the order I(1) with rejection region $\{\theta : \theta < -2.93\}$; LCPIA and LCPIB may be integrated of order I(2) with rejection region $\{\theta : \theta < -2.93\}$. We ran the cointegrating regressions for each of the possible combinations, normalizing alternately on the LM1, LM2, LM3, LGDP and LEX. These regressions are reported in Table 2.

Table 2. Cointegrating regressions (1981-1988)

(1)	M1-GDP	LM1=-12.1554+2.1204 LGDP	DW=1.2154
		LGDP=6.6037+0.3869 LM1	DW=1.3319
(2)	M1-EX	LM1=27.9125-3.6631 LEX	DW=0.1859
		LEX=6.1524-0.1348 LM1	DW=0.2802
(3)	M2-GDP	LM2=-20.9363+3.1256 LGDP	DW=0.9488
		LGDP=7.3037+0.272 LM2	DW=1.0967
(4)	M2-EX	LM2=40.9633-6.0007 LEX	DW=0.2423
		LEX=6.0426-0.1046 LM2	DW=0.3679
(5)	M3-GDP	LM3=-15.8753-2.6727 LGDP	DW=1.1085
		LGDP=6.5321+0.328 LM3	DW=1.2585
(6)	M3-EX	LM3=36.3688-4.9858 LEX	DW=0.2143
		LEX=6.2935-0.1226 LM3	DW=0.3422

Approximate critical value for DW statistic at 5% level is 0.386, with rejection region $\{DW|DW > 0.386\}$; the result are largely invariant to choice of normalizing variable. Only for the M1-EX, M2-EX and M3-EX regressions do the Durbin-Watson statistic fall below the 5% critical level for the test of I(1) residuals. For all other regressions (M1-GDP, M2-GDP, M3-GDP) the Durbin-Watson statistic is large enough to reject the null of I(1) residuals at 5% test size. This impression is confirmed by examining the Dickey-Fuller test statistics for a unit root in the residuals from the cointegrating regression, which are reported in Table 3.

Table 3. Augmented Dickey-Fuller test statistic for residuals from cointegrating regressions

Normalised on	LM1	LM2	LM3	LGDP	LEX
(1)M1-GDP	-2.3741			-3.3502	
(2)M1-EX	-1.4423				-2.8429
(3)M2-GDP		-6.5804		-6.9287	
(4)M2-EX		-2.3317			-2.8652
(5)M3-GDP			-4.8429	-6.3616	
(6)M3-EX			-2.1172		-2.9077

Approximate critical value for Augmented Dickey-Fuller (ADF) statistic at the 5% level is -3.17, with rejection region $\{ADF|ADF < -3.17\}$. With the exception of the M1-EX, M2-EX and M3-EX combinations, the null hypothesis of a unit root in the residuals is rejected for all variables combinations (M1-GDP, M2-GDP, M3-GDP) at or below the 5% significance level. We can in some cases reject the null hypothesis of I(1) residuals using Augmented Dickey-Fuller statistics or the Durbin-Watson statistic; i.e. we find cointegration between M1-GDP, M2-GDP and M3-GDP. If cointegration exists then causality tests may be performed with regard to the levels of the variables concerned (X causes Y or vice versa). If cointegration does not exist, one way may still

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difference the data and perform causality tests on the differenced (i.e. stationary) series (ΔY causes ΔX ; ΔX causes ΔY). We examine M1-GDP, M2-GDP, M3-GDP, M1-EX, M2-EX, M3-EX, GDP-M1, GDP-M2, GDP-M3, EX-M1, EX-M2 and EX-M3 to find an error-correction forms which are reported in Appendix 1. Period of estimation is 1981 quarter 2 – 1988 quarter 4. Figures in parentheses are heteroscedastic-consistent standard errors [White(1980)], figures in brackets are critical values. DW is Durbin-Watson statistic. LM is a Lagrange multiplier test statistic for up to fourth order serial correlation (Breush & Pagan, 1980); Q is the Ljung-Box statistic; ARCH is a test statistic for autoregressive conditional heteroscedasticity (Engle, 1982); WH is White's (1980) test statistic for general heteroscedasticity and functional misspecification; N is a test statistic for normality of the residuals based on the coefficient of skewness and excess kurtosis; CHOW is Chow's (1960) test statistics for post sample predictive failure, obtained by estimating up to 1987 quarter 4 and forecasting twelve months out of sample. Q, ARCH and N are central chi-square under the appropriate null, all other statistic (except R^2 and DW) are central F. The estimated error-correction forms for (1) to (12) are quite impressive. Error correction forms re-estimated up to 1987 quarter 4, forecast well for twelve months out of sample. For models (7) to (12), the Q statistic are too large to accept the hypothesis of no autocorrelation and we can reject the models, since the probability that the residuals are not white noise is at least 95 percent; thus we need not accept the hypothesis that the residuals are nonwhite, and for (1) to (6) models would be acceptable. To determine the "best" specification, we might want to specify and estimate some models to see whether a low chi-square statistic can be obtained. For models (1) to (12), since the value of the CHOW statistic are smaller than the critical value of the F distribution at the 5 percent level, we accept the null hypothesis. It is plausible to assume equal coefficients (no structure change). Except model (4), for models (1) to (12), since the value of the White's F statistic is smaller than the critical value of the F distribution at the 5 percent level, there is no evidence of heteroscedasticity; but, if we consider the LM version of the statistic for normality test, for model (1) to (4), the value of the $\chi^2_{N(2)}$ statistic are greater than the critical value of the χ^2 distribution at 95 percent level, there is evidence of heteroscedasticity for them.

For models (1) to (12), an ARCH test, since the value of the chi-square statistic are smaller than critical value of the χ^2 distribution at 95 percent level, there is no evidence of heteroscedasticity; but, if we consider the Lagrange Multiplier (LM) test statistic for up to fourth order serial correlation, in models (1), (7), (8) and (9), since the value of the F version statistic are greater than the value of the F distribution at the 5 percent level, there is evidence of autocorrelation. The **R**-squares are quite small for each model. It means that they are not quite representative. However, these results concur with my cointegration analysis for models (1) to (6). Long-run relationships go through for M1-GDP, M2-GDP, M3-GDP, M1-EX, M2-EX and M3-EX. We report next the results of ‘Granger’ causality testing between the above variables. There is strong evidence of no causality relationship between them.

Table 4. *Granger’s technique*

Hypothesis	F-stat.	d.f.
GDP \rightarrow M1	1.366	4, 19
M1 \rightarrow GDP	0.833	4, 19
GDP \rightarrow M2	0.5677	4, 19
M2 \rightarrow GDP	1.482	4, 19
GDP \rightarrow M3	0.446	4, 19
M3 \rightarrow GDP	1.135	4, 19
$\Delta EX \rightarrow \Delta M1$	0.464	4, 18
$\Delta M1 \rightarrow \Delta EX$	0.357	4, 18
$\Delta EX \rightarrow \Delta M2$	1.186	4, 18
$\Delta M2 \rightarrow \Delta EX$	2.35	4, 18
$\Delta EX \rightarrow \Delta M3$	1.059	4, 18
$\Delta M3 \rightarrow \Delta EX$	1.347	4, 18

As seen in Table 4. Critical value for the F(4, 19) and F(4, 18) are 2.9 and 2.93 for 5 percent level of significance respectively. This suggests neither variable in each of these pairs causes the other in Granger sense. Taken with the cointegration results this may suggest other factors ‘cause’ both variables.

Conclusion

In our analysis there is no evidence of a causality relationship between money supply, income, prices and exchange rates in Hong Kong. All data covered the period from first quarter 1981 to third quarter 1983 in the floating exchange rate system and the period from fourth quarter 1983 to fourth quarter 1988 in the linked

exchange rate system. The period covers a structural break⁴ in the fourth quarter of 1983. When the linked exchange rate system was adopted. This may be a source of criticism on our finding. However, if we just consider under the linked exchange rate system, we can only obtain twenty-one observations, the validity of our tests may be jeopardized. Hence, we have to extend our data coverage. GDP is annually published before 1989. Since we should take GDP as quarterly data, we use the total domestic export data to estimate the quarterly GDP. However, in Hong Kong, GDP is sometimes propelled by exports, sometimes by domestic demand. Typically, in an upswing, growth is first propelled by exports, and then by domestic demand. It is not perfect cyclical considerations. This can be considered as a serious data limitation and may invalidate our results. The Granger approach relies on heuristic justification, i.e. ‘post hoc ergo propter hoc’. Thus, they give the wrong result if an event occurs before the event which causes it. This is equivalent to the ‘Christmas card’ and ‘Travel agent’ example – people go to travel agents and book their holidays; subsequently they take their holidays. This does not mean that the act of booking actually causes the holiday. For instance, if it is announced that wage increases over the next pay round will be very high so that the market expects large future price increases, the exchange rate may depreciate immediately. These tests would suggest that exchange rate change caused the subsequent price changes. Instantaneous causality (i.e. where one variable has an effect on other variable within the same period) may not be discovered by the tests. Moreover, when this test is extended to form ‘triangular’ causality, they may give misleading results. If A causes B and B causes C within the same period, it is possible that the effect on A on C may appear within the next period. Thus it will appear that the only causality between the variables is from A to C. The test cannot distinguish the actions of the authorities from those of other market participants: for instance, if it is found that exchange rate movements, unexplained by past price movements, lead to price movements, the implication for policy will be different, depending on whether the exchange rate movements are caused by the authorities or by private speculators. ‘Causality’ may be a misleading term in these tests since both variables may in fact

⁴The Sino-British Joint Declaration, formally known as the Joint Declaration of the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the People's Republic of China on the Question of Hong Kong, was signed by Prime Ministers Zhao Ziyang of the People's Republic of China (PRC) and Margaret Thatcher of the United Kingdom (UK) on behalf of their respective governments on 19 December 1984 in Beijing.

respond to another variable. In Hong Kong the money supply cannot be treated as an exogenous variable with respect to change in aggregate economic activity. The linked exchange rate system provides sufficient current capital to the economy. It will not be excessive or inadequate because money is determined by the balance of payments. But, firstly, because of the depreciation of US dollars, the depreciation of HK dollars leads to 'imported inflation' which will raise the price of raw materials and production costs, and will finally lower the competitiveness of Hong Kong export goods. However, 'imported inflation' was, in fact, lower than expected in the period of 1985 to 1987. It is because Japan has cut down its export prices so as to maintain the market share in Hong Kong. There are so many speculators who want to get profit from the revaluation of the official rate. So, there was so much 'hot money' which flows into Hong Kong's money market so as to press the government to revalue. For this reason the government considered the introduction of a negative interest rate policy for capital inflows. And also if HK dollars was pressed to revalue, the public holding assets valued in terms of US dollars will suffer great loss immediately and cause the public to lose confidence in the government which may trigger some kind of political impact. Furthermore, speculators would disturb the monetary system again and again in order to gain profits from the time after time revaluation. Interest rates do not reflect the actual need of Hong Kong economy but only the tool of maintaining the official rate. It fluctuated rapidly and frequently. And also, Hong Kong economy will directly be affected by US economy, Hong Kong will suffer economic recession whenever the US economy is contracted. The linked exchange rate system is still practical and feasible, because it can stabilize the confidence of public and the automatic adjusting mechanism of this system is satisfactory to a certain extent, because it can control the money supply according to the balance of payment.

It is hoped that the present work can stimulate and arouse future research to use causality test. In this paper, we suggest to use an advanced technique to confirm the assumption of the endogeneity of money supply in Hong Kong. It is highly recommended to use a vector autoregressive (VAR) test. This view can be put to rigorous empirical test. One relevant test would be that of causality between the money supply and factors which might have caused it or have been caused by it. Bivariate causality tests based on Granger's (1969) conception have been very popular with econometricians and various versions have been developed. However, they suffer from the fact that only two variables could be considered despite

Granger's original multivariate formulation. The vector autoregression (VAR) technique popularized by Sim (1980; 1982) overcomes this drawback. Therefore, we recommend to adopt VAR test in determining the direction of causality between the money supply and other relevant variables in Hong Kong.

Appendix

Estimated error correction forms

(1) M1-GDP

$$\Delta LM1_t = 0.0515 - 0.4248\Delta LGDP_t + 0.0123(LM1 - LGDP)_{t-1}$$

$$(0.0179) \quad (0.2145) \quad (0.0584)$$

$$R^2 = 0.1256 \quad DW = 2.948 \quad LM(4,24) = 4.0557$$

$$[2.78]$$

$$N(2) = 64.6271 \quad WH(1,29) = 1.2776 \quad Q(10) = 13.3706$$

$$[5.99] \quad [4.17] \quad [18.31]$$

$$ARCH(12) = 11.5602 \quad CHOW(3,25) = 0.1916$$

$$[21.03] \quad [2.99]$$

(2) M1-EX

$$\Delta LM1_t = -0.0352 - 0.3003\Delta LEX_t + 0.0126(LM1 - LEX)_{t-1}$$

$$(0.2) \quad (0.5254) \quad (0.0339)$$

$$R^2 = 0.0154 \quad DW = 2.7635 \quad LM(2,24) = 2.5631$$

$$[2.78]$$

$$N(2) = 24.5252 \quad WH(1,29) = 0.000124 \quad Q(10) = 10.3977$$

$$[5.99] \quad [4.17] \quad [18.31]$$

$$ARCH(12) = 12.4071 \quad CHOW(3,25) = 0.384$$

$$[21.03] \quad [2.99]$$

(3) M2-GDP

$$\Delta LM2_t = 0.1062 - 0.0983\Delta GDP_t - 0.0197(LM2 - LGDP)_{t-1}$$

$$(0.0321) \quad (0.1046) \quad (0.0168)$$

$$R^2 = 0.0854 \quad DW = 1.0025 \quad LM(4,24) = 2.6914$$

$$[2.78]$$

$$N(2) = 28.4925 \quad WH(1,29) = 1.1702 \quad Q(10) = 18.2935$$

$$[5.99] \quad [4.17] \quad [18.31]$$

$$ARCH(12) = 18.6475 \quad CHOW(3,25) = 0.0262$$

$$[21.03] \quad [2.99]$$

(4) M2-EX

$$\Delta LM2_t = 0.1986 + 0.0741\Delta LEX_t - 0.0166(LM2 - LEX)_{t-1}$$

$$(0.0891) \quad (0.2487) \quad (0.0112)$$

$$R^2 = 0.074 \quad DW = 0.9869 \quad LM(4,24) = 2.5877$$

$$[2.78]$$

$$N(2) = 11.2233 \quad WH(1,29) = 12.3122 \quad Q(10) = 17.4107$$

$$[5.99] \quad [4.17] \quad [18.31]$$

$$ARCH(12) = 18.0208 \quad CHOW(3,25) = 0.1994$$

$$[21.03] \quad [2.99]$$

(5) M3-GDP

$$\Delta LM3_t = 0.0928 - 0.0167 \Delta GDP_t - 0.0167 (LM3 - LGDP)_{t-1}$$

(0.0236) (0.0548) (0.0113)

$$R^2 = 0.0813 \quad DW = 1.637 \quad LM(4,24) = 0.8951$$

[2.78]

$$N(2) = 1.7875 \quad WH(1,29) = 2.8958 \quad Q(10) = 10.8333$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 15.2786 \quad CHOW(3,25) = 0.1524$$

[21.03] [2.99]

(6) M3-EX

$$\Delta LM3_t = 0.1431 - 0.001788 \Delta LEX_t - 0.0106 (LM3 - LEX)_{t-1}$$

(0.0558) (0.1298) (0.0068768)

$$R^2 = 0.0783 \quad DW = 1.6335 \quad LM(4,24) = 0.8755$$

[2.78]

$$N(2) = 1.4655 \quad WH(1,29) = 3.9336 \quad Q(10) = 10.1015$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 15.0926 \quad CHOW(3,25) = 0.6945$$

[21.03] [2.99]

(7) GDP-M1

$$\Delta LGDP_t = 0.0415 - 0.2893 \Delta LM1_t - 0.0653 (LGDP - LM1)_{t-1}$$

(0.0149) (0.146) (0.0466)

$$R^2 = 0.1815 \quad DW = 2.3639 \quad LM(4,24) = 9.0454$$

[2.78]

$$N(2) = 0.6078 \quad WH(1,29) = 0.2662 \quad Q(10) = 42.4173$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 15.5253 \quad CHOW(3,25) = 1.8773$$

[21.03] [2.99]

(8) GDP-M2

$$\Delta LGDP_t = 0.0135 - 0.3112 \Delta LM2_t - 0.0151 (LGDP - LM2)_{t-1}$$

(0.0673) (0.3311) (0.0304)

$$R^2 = 0.0487 \quad DW = 2.1075 \quad LM(4,24) = 19.0017$$

[2.78]

$$N(2) = 2.7929 \quad WH(1,29) = 0.038 \quad Q(10) = 70.5774$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 16.5572 \quad CHOW(3,25) = 1.8398$$

[21.03] [2.99]

(9) GDP-M3

$$\Delta LGDP_t = 0.0855 - 0.2003 \Delta LM3_t - 0.02(LGDP - LM3)_{t-1}$$

(0.0881) (0.6541) (0.0342)

$$R^2 = 0.0209 \quad DW = 2.0803 \quad LM(4,24) = 16.8168$$

[2.78]

$$N(2) = 3.1524 \quad WH(1,29) = 1.4128 \quad Q(10) = 71.5513$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 17.0743 \quad CHOW(3,25) = 1.9752$$

[21.03] [2.99]

(10) EX-M1

$$\Delta LEX_t = -0.0346 - 0.0384 \Delta LM1_t - 0.0048198(LEX - LM1)_{t-1}$$

(0.0713) (0.0672) (0.0121)

$$R^2 = 0.0161 \quad DW = 1.2365 \quad LM(4,24) = 1.192$$

[2.99]

$$N(2) = 0.1324 \quad WH(1,29) = 0.7047 \quad Q(10) = 21.7623$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 16.2709 \quad CHOW(3,25) = 0.0272$$

[21.03] [2.99]

(11) GDP-M2

$$\Delta LEX_t = -0.0307 + 0.0426 \Delta LM2_t - 0.0025365(LEX - LM2)_{t-1}$$

(0.0731) (0.1432) (0.008845)

$$R^2 = 0.0047984 \quad DW = 1.2158 \quad LM(4,24) = 1.2038$$

[2.78]

$$N(2) = 0.2025 \quad WH(1,29) = 0.7696 \quad Q(10) = 22.3458$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 13.9485 \quad CHOW(3,25) = 0.37$$

[21.03] [2.99]

(12) EX-M3

$$\Delta LEX_t = -0.0237 + 0.0067243 \Delta LM3_t - 0.0046128(LEX - LM3)_{t-1}$$

(0.0393) (0.2753) (0.0092964)

$$R^2 = 0.0092543 \quad DW = 1.2333 \quad LM(4,24) = 1.1774$$

[2.78]

$$N(2) = 0.2612 \quad WH(1,29) = 1.5922 \quad Q(10) = 22.5568$$

[5.99] [4.17] [18.31]

$$ARCH(12) = 14.2073 \quad CHOW(3,25) = 0.3889$$

[21.03] [2.99]

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4. A Factor Analysis of Investment Behaviour for Small Investors in the Hong Kong Stock Market

Introduction

Hong Kong is a small open economy. It is common to find that some small investors have done less-rational things in the financial markets, especially when investing in stocks. The primary objective is to identify and analyse the important factors that capture the behaviour of small investors in the Hong Kong stock market. It is important to find out whether their investment behaviour can be explained by some underlying factors grounded in the behavioural approach to the study of financial markets. We collected our data from 1,199 respondents via a survey questionnaire. Hon (2012) concluded that small investors were overconfident and bought more stock during the buoyant market in the Hong Kong stock market. Small investors also exhibited herd behaviour. Exploratory factor analysis was employed to analyse the data. In doing so, we hope to extend Hon's paper and contribute to the study of behavioural finance in the context of an Asian financial centre, namely Hong Kong.

This paper is organised as follows: Section 2 reviews the related literature; Section 3 explains the methodology of the present study; Section 4 reports the research findings; and Section 5 provides the conclusion.

Literature review

Although many personal and situational factors may influence the behaviour of small investors in the stock market, research on this topic is sparse. Previous studies found that interpersonal

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influence (Hoffmann & Broekhuizen, 2009), knowledge (Wang, 2009), and some other personal factors such as gender and personality traits (Durand *et al.*, 2008) are crucial in explaining investment behavior. However, it is important to explore the psychological processes (such as perception, attitudes, learning, and motivation) that affect individual's decision regarding investment. For example, one's gender and educational level (i.e., individual factors) may affect his or her knowledge and orientation in investment, which then influences the risk perception, and finally his or her investment behaviour. Graham *et al.* (2009) noted that male investors, and investors with larger portfolios or more education, are more likely to perceive themselves as competent as are female investors, and investors with smaller portfolios or less education. Hoffmann & Post (2012) found that past returns positively impact investors' return expectations and risk tolerance, and negatively impact their risk perception. Besides, Korniotis & Kumar (2011) suggested that older people make better investment choices as they gain more investment knowledge and experience, or whether their investment skill deteriorates with age is largely due to the adverse effects of cognitive aging.

Obviously, the notion of risk tolerance is highly important for investor's assets allocations. The determinants of risk tolerance are central to the study of behavioural finance. Portfolio theory postulates that risk tolerance is a salient factor in portfolio construction and asset allocation. Risk tolerance, reflecting a person's attitude towards taking on risk, is a complex psychological concept. Jackson *et al.* (1972) contended that risk tolerance has four dimensions: financial, physical, social, and ethical. Hoffmann *et al.*, (2011) showed how an investor's perceptions change, drive trading and risk-taking behaviour, and impact investment performance during the financial crisis of 2007-2009. They noted that revisions in return expectations and risk tolerance are positively, and revisions in risk perceptions are negatively, related to overall market developments. Successful investors had higher return expectations and lower risk tolerance, which led them to trade less, take less risk, and have lower buy-sell ratios. Hallahan *et al.* (2004) found that people's self-assessed risk tolerance and ProQuest risk tolerance score (RTS) generally accord, and there is considerable variation with a tendency for respondents to underestimate their risk tolerance. Wang & Hanna (1997) showed that risk tolerance increases with age when other variables have been controlled.

As argued by Shefrin (2000), the financial community ignores the psychology of investing at its own peril. Beyond greed and fear

illuminate behavioural finance for today's investors. Behavioural finance can help practitioners to recognize and avoid bias and error in their decisions, as well as to modify and improve their overall investment strategies. Tversky & Kahneman (1974) defined availability as the situation which people assess the frequency or probability of an event by the ease with which instances can be brought to mind. Generally speaking, availability is the degree to which information is readily available. Availability bias exists when the investors wrongly weight the importance or relies upon available information for decision making without examining other alternatives (Sewell, 2010). Singh (2012) pointed out that individual investors can benefit by increasing awareness of the various human biases and the high costs they impose on their portfolio. Law (2010) argued that traditional risk disclosure requirements, known as financial risk disclosure, cannot sufficiently protect retail investors from cognitive and psychological biases. Kannadhasan (2006) reported that an optimum investment plays an active role and is a significant consideration. There is suggestive evidence that the experience of the investor has an explanatory role in this regard with less experienced investors being prone to extrapolation (i.e., representativeness), while more experienced investors commit the gambler fallacy, which is misconception of chance. Tversky & Kahneman (1971) defined gambler's fallacy as a misconception of the fairness of the law of chance. Under gambler's fallacy, people apply small samples as well as to large samples.

Data and method

The data for the present study were collected from small investors in Hong Kong through a survey questionnaire. The main purpose of the survey is to collect their opinions, investment behaviour, and financial decision-making behaviour in the stock market. The survey was conducted between October and November 2008. The snowball method was adopted to select individuals aged 18 or above in Hong Kong population. A group of undergraduate students helped to distribute 1,200 questionnaires to the respondents. Finally, there were 1,199 selected respondents who completed and returned the questionnaires and this represents a response rate of 99.92 per cent. Before we begin using the survey dataset for factor analysis, we need to ensure the survey results are reliable enough. According to Carmines & Zeller (1987), reliability focuses on the extent to which the empirical indicator provides consistent results across repeated measurements. In testing the applicability of survey results, we used the Cronbach alpha

(Cronbach, 1947; Cronbach & Shavelson, 2004) to test the reliability. Also, we use the coefficient of variation for comparing the reliability and precision of the results of our survey (Bruton, 2000) which are subject to sample error and non-sampling error. It should be noted that the measure used to assess the statistical significance of the item was the coefficient of variation (CV), which expresses the ratio of the standard error to the arithmetic mean $C.V. = \frac{\sum \bar{x}}{|\bar{x}|}$. The CVs for each of questionnaire items have been

shown in the table 1. Taking a look at these CVs, we can find the maximum and minimum value is 1.91% and 0.99% respectively with mean 2.73%. Accordingly, it was considered the consensus had been achieved when the level of item was on the statistically significant (that is $C.V. \leq 5\%$)

Factor analysis is employed to identify the key factors that affect the behaviour of small investors in the Hong Kong stock market. We make the factor structure more interpretable. The initial extracted factor matrix must be rotated before the final factor solution is achieved. Bartlett's test of sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy are both tests that can be used to determine the factorability of the matrix as a whole. If Bartlett's test of sphericity is large and significant and the Kaiser-Meyer-Olkin measure is greater than 0.6, then factorability is assumed. If the sums of squares of the loadings on the extracted factors are no longer dropping but are remaining at a low and rather uniform level, factor extraction may be reasonably terminated. Cattell's (1966) Scree test is based on this principle. SPSS use a default option of extracting all principal factors with eigenvalues of 1.0 or more (i.e., the Kaiser-Guttman rule). The main thing to consider in deciding when to stop factoring is that it is better to err on the side of extracting too many factors rather than too few. One of the most commonly used is Cronbach's coefficient α , which is based on the average correlation of items within a reliability test if the items are standardised. Cronbach's coefficient α can be interpreted as a correlation coefficient; it ranges in value from 0 to 1. However, content validity refers to the representativeness and comprehensiveness of the items used to create the scale. It is assessed by examining the process through which the scale items are generated (Straub 1989; Woobock & Kim 2002). In this research, the definitions of behavioural finance were initially proposed based on reviews of Tversky & Kahneman (1971, 1974). Previous studies on behavioural finance and other disciplines were comprehensively reviewed to develop the

measurement items. On the other hand, construct validity examines the extent to which a scale measures a theoretical variable of interest. There are many different aspects of construct validity that have been proposed in psychometric literature (Bagozzi et al. 1991; Straub 1989). To test construct validity, factor analysis with varimax rotation were performed. For convergent validity, the corrected item-to total correlation (that is, the correction of each item to the sum of the remaining items) is appropriate.

Results

The coefficient of variation (CV) of the estimates of the main items in the survey questionnaire and the profile of the respondents is reported in Table 1.

Table 1. *The coefficient of variation (CV) of the estimates of the main items in the survey questionnaire*

Items	No.	% of total
1. When making investment decisions <i>today</i> , which of the following factors do you consider most important when making investments? Choose one alternative: (C.V = 1.91%)		
Information from the company as a basis for a fundamental analysis.	303	25.3
Recommendations, advice and forecasts from professional investors.	221	18.4
The overall past performance of the market seen from a historical perspective.	301	25.1
Information from newspapers / TV.	113	9.4
Information from the Internet.	47	3.9
Discussion with personal friends.	85	7.1
Information from colleagues at work.	30	2.5
Own intuition of future performance.	99	8.3
2. When you made investment decisions <i>during</i> the period from January 2006 to the end of October 2007, which of the following factors did you consider most important when making decision. Choose one alternative: (C.V. = 1.82%)		
Information from the company as a basis for a fundamental analysis.	242	20.2
Recommendations, advice and forecasts from professional investors.	265	22.1
The overall past performance of the market seen from a historical perspective.	287	23.9
Information from newspapers / TV.	125	10.4
Information from the Internet.	58	4.8
Discussion with personal friends.	89	7.4
Information from colleagues at work.	38	3.2
Own intuition of future performance.	95	7.9
3. Do you monitor your investments with a short-term investment horizon more often today compared with the period before the market decline at the end of October 2007. Choose one alternative: (C.V. = 1.34%)		
Yes	413	34.4
No	222	18.5
The same	448	37.4
Cannot say	116	9.7

4.	Do you monitor your investments with a long-term investment horizon more often today compared with period before the market decline at the end of October 2007. Choose one alternative: (C.V. = 1.26%)		
	Yes	383	31.9
	No	152	12.7
	The same	566	47.2
	Cannot say	96	8.0
5.	Please choose your relevant age group: (C.V. = 1.42%)		
	18 - 25 years old	397	33.1
	26 - 35 years old	297	24.8
	36 - 50 years old	332	27.7
	51 - 65 years old	148	12.3
	over 65 years old	25	2.1
6.	Your average monthly income (including salaries, interest, rent and other earnings): (C.V. = 1.67%)		
	Below HK\$5,000	265	22.1
	HK\$5,000 - HK\$9,999	226	18.8
	HK\$10,000 - HK\$14,999	268	22.4
	HK\$15,000 - HK\$19,999	193	16.1
	HK\$20,000 - HK\$24,999	117	9.8
	HK\$25,000 - HK\$29,999	46	3.8
	HK\$30,000 - HK\$49,999	52	4.3
	HK\$50,000 or above	32	2.7
7.	During the increases in equity prices from January 2006 up to the end of October 2007, did you at any point in time think that you could forecast the future market development? (C.V. = 1.09%)		
	Yes	336	28.0
	No	490	40.9
	Cannot say	369	30.8
8.	During the increases in equity prices from January 2006 up to the end of October 2007, how did you react to announcements and other information from companies? Choose one alternative: (C.V. = 1.07%)		
	I made changes in my portfolio after the first news announcements	182	15.2
	I made changes in my portfolio after a number of consequent news announcements that pointed into the same direction	465	38.8
	I was not concerned about news announcements	393	32.2
	I cannot say	158	13.2
9.	What do you think was the most important contributing factor to the <i>decline</i> in the market from the end of October 2007 up until today? Choose one alternative: (C.V. = 1.10%)		
	The news stories in the media.	120	10.0
	The forecasts of analysts.	95	7.9
	Loss of confidence among investors in the stock market.	391	32.6
	Earnings and profitability of the listed companies.	214	17.8
	Herd behavior, i.e. small investors following the majority.	294	24.5
10.	According to you, what is generally the reason for your less successful investments? Choose one alternative: (C.V. = 0.99%)		
	Incorrect recommendations or advice from broker /analyst/ banker etc.	151	12.6
	Incorrect recommendations or advice from other sources	161	13.4
	The market has, in general, performed poorly	460	38.4
	Own errors	404	33.7
	Others (please specify):	22	1.8

The majority of the respondents were under the age of 50 (85.6%), and only 14.4% were aged 51 or above. The median income was \$12,034. 37.4% of the respondents monitored their investments with a short-term investment horizon the same today compared with the period before the market decline at the end of October 2007. Also, 47.2% of the respondents monitored their investments with a long-term investments horizon the same today compared with the period before the market decline at the end of October 2007. These group may have superiority in strategy formulation in decision making than those who responded “Yes”. These groups of small investors were overconfident. In view of the above demographic profile of the respondents, we believe that they are representative of small investors in Hong Kong.

Table 2. Descriptive statistics

Item name	Mean	Standard error of mean	Standard deviation	t	d.f.	Sig. (two-tailed)
1 Reference group affects investment decision today	3.2085	0.06132	2.12346	52.320	1198	0.000
2 Reference group affected past investment decision	3.3219	0.06045	2.09334	54.949	1198	0.000
3 Monitor short-term investments	2.2227	0.02968	1.02780	74.882	1198	0.000
4 Monitor long-term investments	2.3133	0.02914	1.00813	79.389	1196	0.000
5 Age	2.2552	0.03197	1.10693	70.547	1198	0.000
6 Personal income	3.1476	0.05255	1.81968	59.896	1198	0.000
7 Forecasting the future market development	2.0276	0.02221	0.76791	91.276	1194	0.000
8 Announcements from companies	2.4399	0.02608	0.90260	93.564	1197	0.000
9 Factor for bear market	3.4192	0.03777	1.26079	90.516	1113	0.000
1 Reason for investment failure	2.9875	0.02960	1.02468	100.913	1197	0.000

The importance of various items on the behaviour of small investors when they invested on stock market is presented in Table 2. All the items are statistically significant with high mean values. To identify the underlying dimensions of the items, which are perceived to be important by the respondents, the 10 items were then factor analysed. Initial visual assessment of the correlation matrix indicated considerable degree of inter-factor correlation (see Table 3). In addition, from the factor correlation matrix, the Barlett

test of Sphericity ($\rho < 0.000$) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy index (with a value of 0.546) confirm the appropriateness of the data for exploratory factor analysis.

Table 3. Factor correlation matrix

Item	1	2	3	4	5	6	7	8	9	10
1	1.000									
2	0.615**	1.000								
3	0.067*	0.035	1.000							
4	0.045	0.045	0.444**	1.000						
5	0.062*	0.057*	-0.014	-0.047	1.000					
6	-0.043	-0.020	-0.060*	-0.036	0.315**	1.000				
7	-0.002	0.022	0.104**	0.081**	0.002	-0.089**	1.000			
8	0.120**	0.092**	0.257**	0.195**	-0.023	-0.085**	0.206**	1.000		
9	-0.009	0.012	-0.025	0.049	-0.031	0.049	0.023	-0.020	1.000	
10	0.032	0.054*	0.055*	0.087**	-0.066*	0.058*	0.071**	0.059*	0.021	1.000

Notes: *Correlation is significant at the 0.05 level (one-tailed) and **Correlation is significant at the 0.01 level (one-tailed) Extraction method: principal component analysis, Rotation method: Varimax with Kaiser Normalization, Kaiser-Meyer-Olkin (KMO) index: 0.546, Bartlett’s test of Sphericity: $\rho < 0.000$. Item name (see also Table3) 1.Reference group affects investment decision today, 2. Reference group affected past investment decision, 3.Monitor short-term investments, 4. Monitor long-term investments, 5.Age, 6. Personal income, 7. Forecasting the future market development, 8. Announcements from companies, 9. Factor for bear market, 10.Reason for investment failure

Given that our aim was to identify the minimum number of factors that would account for the maximum portion of variance of original items, the principal component analysis was selected (Nunnally, 1978) to reduce the number of factors with an eigenvalue greater than 1. A cumulative percentage of variance explained being greater than 50% is the criteria used in determining the number of factors. On the basis of the criteria, five factors were extracted (see Table 4).

Table 4. Principal component analysis

Item	Item name	Communality	Factor (Component)	Eigenvalue	Per cent of variance	Cumulative per cent
1	Reference group affects investment decision today	0.813	1	1.877	18.768	18.768
2	Reference group affected past investment decision	0.811	2	1.545	15.451	34.219
3	Monitor short-term investments	0.716	3	1.268	12.678	46.897
4	Monitor long-term investments	0.704	4	1.052	10.520	57.417
5	Age	0.720	5	1.013	10.130	67.547
6	Personal income	0.700				
7	Forecasting the future market development	0.786				
8	Announcements from companies	0.513				
9	Factor for bear market	0.534				
10	Reason for investment failure	0.459				

The five factors, collectively, accounted for a satisfactory 67.547% of the variance. Communality values in between 1.0 and T.-Y. Hon, (2018). *Monetarism and Behavioral Finance ...*

0 indicate partial overlapping between the items and the factors in what they measure. Furthermore, the communality column, provides further evidence of the overall significance, albeit, moderate, of the solution. The underlying rationale for the Scree test is based on the fact that within a set of items, a limited number of factors are measured more precisely than the others. By graphing the eigenvalues, we found that the smaller factors form a straight line sloping downward. The dominant factors will fall above the line. Figure 1 demonstrates a five-factor solution is obtained.

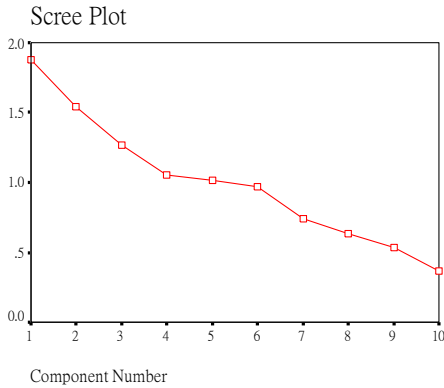


Figure 1. Scree plot

Table 5. *Varimax-rotated principal component loadings*

Item	Factor					Item name	Factor
	A	B	C	D	E		
1	0.900					Reference group affects investment decision today	A
2	0.898					Reference group affected past investment decision	A
3		0.836				Monitor short-term investments	B
4		0.828				Monitor long-term investments	B
5			0.817			Age	C
6			0.799			Personal income	C
7				0.877		Forecasting the future market development	D
8				0.594		Announcements from companies	D
9					0.722	Factor for bear market	E
10					0.651	Reason for investment failure	E

Having established that the analysis has provided a stable solution, examination of the varimax-rotated principal component loading was performed (see Table 5). The cumulative factors revealed that the first factor accounts for 18.768% of the variance. The second factor accounts for 34.219% of the variance. The third factor accounts for 46.897% of the variance. The fourth factor

accounts for 57.417% of the variance. Finally, the fifth factor accounts for 67.547% of the variance. After the rotation, there are no negative loadings on any consequence on factor A, factor B, factor C, factor D or factor E. We found five factors affecting the behaviour of small investors in the Hong Kong stock market as follows: factor A might be interpreted as reference group which includes commentators' recommendations from newspapers/ TV/ magazines, relatives/friends, Internet, investment consultants, and companies' annual reports; factor B as monitor investments which includes monitor short-term and long-term investments; factor C as personal background which includes age, personal income; factor D as reaction to announcements which includes announcements and other information from companies, forecasting the future market development and factor E as cognitive style which includes factor for bear market and reason for investment failure. The specific name given to each factor is designed to reflect an item or notion that conceptually relates to the rest of the items under a particular factor.

Table 6. Internal consistency and related decisions of first structure

Factors and items	Corrected item- total correlation	α value	Decision
Factor A (Reference Group)			
Reference group affects investment decision today	0.6155	0.7619	Retained
Reference group affected past investment decision	0.6155		
Factor B (Monitor Investments)			
Monitor short-term investments	0.4436	0.6145	Retained
Monitor long-term investments	0.4436		
Factor C (Personal Background)			
Age	0.3149	0.4370	Eliminated
Personal income	0.3149		
Factor D (Reaction to announcements)			
Forecasting the future market development	0.2060	0.3380	Eliminated
Announcements from companies	0.2060		
Factor E (Cognitive Style)			
Factor for bear market	0.0214	0.0410	Eliminated
Reason for investment failure	0.0214		

The reliability test is reported in Table 6. At this point only initial of internal reliability of the expected factors was performed in the form of Cronbach's coefficient α . For the purposes of this study, the cut-off value adopted was 0.5 (Nunnally, 1978) and the acceptable benchmark level of item-to-total correlation was set above 0.3. Corrected item-total correlation gives the Pearson correlation coefficient between the score on the individual item and the sum of score on the remaining items. Following the decision T.-Y. Hon, (2018). *Monetarism and Behavioral Finance ...*

relating to the internal reliability, the factors were re-specified. This was undertaken to further reduce the number of factors. The internal reliability of the first structure was tested and the decision results provide evidence as to the weakness of the structure since two factors (factor A and B) exceeded the adopted criteria. It is found that factor A contains two items and relates to “reference group”. Factor B is made up of two items and refers to “monitor investments”. The derived scales appear to possess moderate to weak internal consistency. So, we eliminated among factors C, D and E (see Table 7).

Table 7. *Internal consistency of final revised structure*

Items	Number of item	Corrected item-total correlation	α value
Factor A (Reference Group)			
Reference group affects investment decision today	2	0.6155	0.7619
Reference group affected past investment decision		0.6155	
Factor B (Monitor Investments)			
Monitor short-term investments	2	0.4436	0.6145
Monitor long-term investments		0.4436	

To examine possible differences in the perceived importance of five factors, our analyses indicate that out of four criteria (i.e., rotated principal component loadings, scree test, KMO and Bartlett’s test, reliability test) examined, only two factors (reference group and monitor investments) are significant. Based on these results, monitor investments is the second important factor and reference group is the most important factor.

Conclusion

The primary objective is to identify and analyse the important factors that capture the behaviour of small investors in the Hong Kong stock market. Using factor analysis, we identify five factors that capture the behaviour of small investors in the Hong Kong stock market. The factors are reference group, monitor investments, personal background, reaction to announcements and cognitive style. The factor of reference group includes commentators’ recommendations from newspapers/TV/magazines, relatives/friends, Internet, investment consultants, companies’ annual reports; the factor of monitor investments includes monitor

short-term and long-term investments; the factor of personal background includes age and personal income; the factor of reaction to announcements includes announcements and other information from companies, forecasting the future market development and the factor of cognitive style includes factor for bear market and reason for investment failure. In order to examine possible differences in the perceived importance of the five factors, our analysis indicate that out of four criteria (including rotated principal component loadings, scree test, KMO and Bartlett's test, and reliability test) examined, only two factors (i.e., reference group, monitor investments) stand out to be significant. Accordingly, it can be concluded that monitor investments is the second important factor and reference group is the most important factor

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5. The Preferences and Investment Behaviour of Small Investors in the Hong Kong Bank Stock Market

Introduction

In the new millennium, the financial markets have become increasingly volatile. Even in some advanced economies such as Hong Kong, the stock market has experienced wild fluctuations over the past decade. There are lines of reasoning that less-rational behaviour can have significant impacts on stock market. One concerns noise trading. Fischer Black, in his 1986 American Finance Association Presidential Address, put it aptly: People sometimes trade on information in usual way. They are correct in expecting to make profits from these trades. On the other hand, people sometimes trade on noise as if it were information. If they expect to make profits from noise trading, they are incorrect. A small investor (noise trader) uses irrelevant, or inaccurate, information when making investment decisions. The errant price movements caused by noise traders might be expected to be corrected by rational investors. According to Hon (2012), small investors tended to be overconfident and often bought the stock during the buoyant stock market. Also, herd behaviour occurred frequently among the small investors, and they tended to sell their stock during the sharp correction period. However, small investor had no mental accounting during the buoyant stock market in Hong Kong. We hope to extend this paper and focus on Hong Kong bank stock market. Banks provide a broad range of financial services, including retail banking, loans and money transfer. The Hang Seng

Index (HSI) in Hong Kong has four sub-indexes which are finance, utilities, properties, and commerce and industry, and there are 50 constituent stocks in the index. The finance sector has 12 constituent stocks including 8 bank stocks in it. They are HSBC, Hang Seng Bank, Bank of East Asia, China Construction Bank, Industrial and Commercial Bank of China, BOC Hong Kong, Bank of Communications and Bank of China. 100% of these banks reported that they used at least one derivative for hedging the risks (Hon, 2013). They reduced borrowing cost and protected group's earnings or cash flows. That may be the reason why these banks can stably pay dividends to shareholders. Do the small investors favour to invest in bank stocks? If any, which of the above bank stocks do they invest in most frequently?

Many retail investments are stock market related. Psychological research (Barber & Odean, 2001) has indicated that there are biases in decision making. These biases have implications for the decision as to whether to invest in stock market-related products, the extent of such investment and the nature of these investments, and could cause investors to make poor decisions or financial advisers to give poor advice. One bias, suggested by prospect theory, is the tendency for people to weigh prospective losses around twice as heavily as prospective gains. This is sometimes known as loss aversion. Loss averse savers take fright from declining stock markets. Psychological research (Ferris, et al., 1988; Sewell, 2010; Epley & Gilovich, 2001) has found a number of other systematic biases that affect investors. These include disposition effect, herd behaviour and anchors. All of these biases interfere with the process of rational decision making. The objective of this study was to search the factors, investing characteristics, and decision making processes that affect Hong Kong small investors who participate in bank stock market. Informed by behavioural finance, which is a new approach to the study of financial market, we develop four hypotheses regarding the opinions and investment behaviour of small investors in the Hong Kong bank stock market. These hypotheses are then tested with the data collected from 1,054 respondents via a survey. The present study attempts to contribute to the study of behavioural finance in the setting of an Asian financial centre, namely Hong Kong.

This paper is organized as follows. Section 2 states the research questions and hypotheses; Section 3 explains the methodology of the present study and the data; Section 4 reports the research findings; and section 5 contains the conclusion.

Research questions and hypotheses

The theories and concepts written on behavioural finance are relatively new. Whether or not they can be applied to the real setting is still controversial. More theoretical development and empirical studies are needed. To explain the change in the behaviour of small investors in Hong Kong bank stock market, we attempt to set four research questions based on behavioural finance and the concepts that discussed in the previous section. The following four questions are to be addressed in the present study. After discussing these questions with some theoretical explanations, we propose the corresponding hypotheses to be tested with empirical data.

1. Is there a correlation between the investment experience of small investors and their average return on investment of Hong Kong bank stock?

People dislike incurring losses much more than they enjoy making gains, and people are willing to gamble in the domain of losses, investors will hold onto stocks that have lost value (relative to the reference point of their purchase) and will be eager to sell stocks that have risen in value. They called this the disposition effect. Sophisticated and experienced small investors show less disposition effect because they have a better understanding of the market, are more aware of such a tendency, and hence likely to correct it. Therefore, less proportion of well-experienced small investors would suffer loss from their bank stocks investment comparing with the less-experienced small investors.

H1: A significant correlation exists between the investment experience of small investors and their average return on investment of bank stocks.

2. Is there a correlation between the reasons given by small investors for making changes in their security holdings and the reason they believed was most important for the decline in the market?

Herding or convergence in behavior, among investor is often proposed as an explanation for large swings in market prices. When small investors have herd behaviour, they are likely to sell their stocks as a result of the decline in the market. Herding affects the reason given by an investor to justify their decision to sell their stocks.

H2: A significant correlation exists between the reasons given by small investors for making changes in their security holdings today and the reason they believed was most important for the decline in the market.

3. Is there a correlation between the opinion of small investors on whether the market will recover if there is an economic downturn and their opinion on the market value today?

An anchor indicates that people start with a benchmark value and adjust it in the obvious direction. Small investors often have some reference points or anchors. A small investor who considers the bank stock market to be undervalued today may think that it will recover in the next few years to levels that prevailed during the buoyant stock market. In other words, they are confident and optimistic about the future.

H3: A significant correlation exists between the opinion of small investors on whether the bank stock market will recover if there is an economic downturn and their opinion on the bank stock market value today.

4. Is there a correlation between how small investors value the information given in a situation when a decision has to be made and their belief in the probability that stock prices will continue to rise after three days of continuous increase?

According to prospect theory (Tversky & Kahneman, 1974; 1979), small investors will hold on to losing positions in the hope that prices will eventually recover. The theory also predicts they will be risk-averse in gains. In other words, when small investors believe that the Hang Seng Index will increase in value the next day, they will sell their stocks in the buoyant stock market.

H4: A significant correlation exists between how small investors value the information given in a situation when a decision has to be made and their belief in the probability that the Hang Seng Index will continue to rise after three days of continuous increase.

Method and data

The snowball method was adopted to select target small investors aged 18 or above in Hong Kong. Our students had different channels to contact with their friends, the first respondent referred a friend. The friend also referred a friend, etc. Students were also through their families' networks to contact with their family members' friends and colleagues. This sampling technique is often used in hidden populations which are difficult for us to access. The data for the present study were collected from small investors in Hong Kong through a survey. The objective of this study was to search the factors, investing characteristics, and decision making processes that affect Hong Kong small investors who participate in bank stock market. Since the majority of Hong Kong's population is Chinese, the questionnaire was written in

Chinese. After a pilot test on ten respondents, some amendments were made before we finalized the questionnaire. The survey was conducted during the period of September 23, 2013 to October 31, 2013. We conducted three classes of the course ‘Introduction to Corporate Finance’ in Hong Kong Shue Yan University. There were about 40 students to enrol in each class. We distributed 1,150 questionnaires to our students. There were 1,054 selected respondents who completed and returned the questionnaires and this represents a response rate of 92 per cent.

The questionnaire was designed to elicit information about demographics, investment experience and behaviour, and factors affecting financial decision-making of the respondents. The first part of the questionnaire focused on the factors, investing characteristics, and decision making processes that affect Hong Kong small investors who participate in bank stock market. The second part collected respondents’ demographic characteristics, including gender, age, education level, employment status, average monthly income, percentage of their average monthly income for stock investment, used the Internet or e-mail either at home or at work in the past six months, worked for a large for-profit company with over 1,000 employees, family size and their favour investments.

Table 1. *Demographic characteristics of the respondents and their favour bank stock investments*

Items and responses	No.	% of total
Gender:		
Female	457	43.8
Male	586	56.2
Age group:		
18- 24 years old	298	28.3
25 – 34 years old	254	24.1
35 – 44 years old	190	18.1
45 – 54 years old	212	20.2
55 – 64 years old	77	7.3
over 64 years old	21	2.0
Your education level is:		
Primary school	73	6.9
Secondary school	278	26.4
Post-secondary	286	27.2
University or above	399	37.9
others	17	1.6
Employment status:		
Employee	639	60.9
Self-employed	153	14.6
Retired	62	5.9
Others	196	18.7
Your average monthly income (including salaries, interest, rent and other earnings):		

Below HK\$5,000	175	16.6
HK\$5,000 -HK\$9,999	171	16.2
HK\$10,000 - HK\$14,999	204	19.4
HK\$15,000 - HK\$19,999	224	21.3
HK\$20,000 - HK\$24,999	139	13.2
HK\$25,000 - HK\$29,999	68	6.5
HK\$30,000 - HK\$49,999	56	5.3
HK\$50,000 or above	16	1.5
Items and responses	No.	% of total
How many percentage of your average monthly income for stock investment?		
%	368	35.0
I don't know	683	65.0
Have you personally used the Internet or e-mail either at home or at work in the past six months?		
Yes	915	87.3
No	133	12.7
Do you or does someone in your household currently work for a large for-profit company with over 1,000 employees?		
Respondent does	249	23.7
Other household member does.	342	32.6
No	458	43.7
How many members in your family (includes yourself)?		
1	41	3.9
2	110	10.5
3	338	32.1
4	385	36.6
5 or above	178	16.9
Which of the following sector do you invest most frequency?		
Finance	387	40.6
Utilities	219	23.0
Properties	199	20.9
Commerce & Industry	141	14.8
Others (Please specify)	7	0.7
Which of the following bank stock do you invest most frequency? (Choose one alternative)		
HSBC (Stock code: 0005)	258	27.0
Hang Seng Bank (stock code: 0011)	135	14.2
Bank of East Asia (stock code: 0023)	60	6.3
China Construction Bank (stock code: 0939)	143	15.0
Industrial and Commercial Bank of China (stock code: 1398)	99	10.4
BOC Hong Kong (stock code: 2388)	114	11.9
Bank of Communications (stock code: 3328)	43	4.5
Bank of China (stock code: 3988)	87	9.1
Others (Please specify)	15	1.6

The profile of the respondents is reported in Table 1. Just under half (43.8%) of the respondents were female and 56.2% were male. The majority of the respondents were under the age of 54 (90.7%) only 9.3% were aged 55 or above. Regarding their education level, 26.4% had secondary school level, 27.2% had post-secondary level, and 37.9% had university or above level. Regarding their

employment status, 60.9% of the respondents were employee, 14.6% were self-employed, 5.9% were retired, and 18.7% were classified as “other”, which includes housewives and students. The respondents’ median income was \$14,435.77. 35% of the respondents answered the percentage of their average monthly income for stock investment. About 43.5% of them used 10% or less for it. 87.3% of the respondents used the Internet or e-mail either at home or at work in the past six months. 23.7% of the respondents are working for a large for-profit company with over 1,000 employees. 68.7% of the respondents had 3-4 members in their family. The majority of the respondents (40.6%) favoured to invest in finance sector of the Hang Seng composite Index. HSBC was the most favorite bank stock; the results indicate that 27.0% of the respondents invested in it most frequently. The second frequently invested bank stock was China Construction Bank, with 15.0% of the respondents; the third frequently invested was Hang Seng Bank, with 14.2% of the respondents; the fourth frequently invested was BOC Hong Kong, with 11.9% of the respondents; the fifth frequently invested was Industrial and Commercial Bank of China, with 10.4% of the respondents; the least frequently invested was Bank of Communications only with 4.5% of the respondents. In view of the above demographic profile of the respondents, we believe that they are representative of small investors in Hong Kong bank stock market. To test hypotheses 1-4, we compare individual’s responses to different items in the questionnaire. The relationship of these responses is indicated by Cramer’s V and Chi-square (χ^2) test.

Results

The distribution of the respondents’ answers to various question items in the questionnaire is showed in Table 2. The items were designed in a way to reflect some important concepts in behavioural finance. The response to one item is supposed to be related to the response to another item, as stated in the hypotheses.

Table 2. Responses to various items

Items and responses	No.	% of total
1. How long have you invested in the financial market? (Choose one alternative)		
Never invested	102	9.7
Less than 1 year	241	22.9
1 year to under 3 years	234	22.2
3 years to under 5 years	202	19.2
5 years to under 10 years	141	13.4
10 years or above	134	12.7

2. What is your average return on bank stock investment in the past? (Choose one alternative)

Loss	100	10.5
Average return less than 10% p.a.	378	39.7
Average return 10% p.a. to under 30% p.a.	307	32.2
Average return 30% p.a. to under 50% p.a.	120	12.6
Average return 50% p.a. to under 100% p.a.	40	4.2
Average return 100% p.a. or more	8	0.8

3. When making bank stock investment decisions today, which of the following factors do you consider most important? (Choose one alternative)

Information from the bank as a basis for a fundamental analysis.	195	20.4
Recommendations, advice, and forecasts from professional investors.	178	18.7
The overall past performance of the market seen from a historical perspective.	207	21.7
Information from newspapers / TV.	127	13.3
Information from the Internet.	103	10.8
Discussion with personal friends.	60	6.3
Information from colleagues at work.	25	2.6
Own intuition of future performance.	58	6.1
Others (Please specify) _____	1	0.1

4. What do you think was the most important contributing factor to the decline in the bank stock market? (Choose one alternative)

The news stories in the media.	152	15.9
The forecasts of analysts.	195	20.4
Loss of confidence among investors in the bank stock market.	196	20.5
Decline earnings and profitability of the banks.	240	25.2
Herd behaviour (i.e., small investors following the majority).	165	17.3
Others (Please specify) _____	6	0.6

Items and responses	No.	% of total
5. If there was a significant downturn (e.g. the Hang Seng index had lost one-third of its market value as compared to its peak in the previous year) in the bank stock market today, do you agree that the bank stock market will surely return to its former level in a couple of years or so? (Choose one alternative)		
Strongly agree	37	3.9
Somewhat agree	289	30.3
Neutral	438	46.0
Somewhat disagree	167	17.5
Strongly disagree	22	2.3
6. If you look at the bank stock market today, in your opinion, is it: (Choose one alternative)		
Overvalued by _____ %	82	8.6
Undervalued by _____ %	91	9.5
Valued at a fundamentally correct level	470	49.3
Cannot say	311	32.6
7. Assume the following situation: during the last two years, the stock price of a certain bank has risen 70% and the future for the stock looks bright. How do you value this piece of information? (Choose one alternative)		
The bank stock is worth buying.	308	32.6
The information is not sufficient for buying the	498	52.7

bank stock.		
The bank stock is not worth buying.	139	14.7
8. If the Hang Seng Index has <i>increased</i> consecutively over the past three days, what is probability that it will <i>increase</i> in value during tomorrow? (Choose one alternative)		
Less than 10%	59	6.2
10% to under 20%	116	12.2
20% to under 30%	165	17.3
30% to under 40%	136	14.3
40% to under 50	144	15.1
50% to under 60%	161	16.9
60% to under 70%	72	7.6
70% to under 80%	54	5.7
80% to under 90%	33	3.5
90% to under 100%	8	0.8
100%	5	0.5

To test Hypothesis 1, we compare the responses to item 1 and item 2, which indicate the correlation between the investment experience and average return on investment. The existence of such a correlation implied that Shefrin and Statman's (1985) disposition effect is correct. As showed in Table 3, The Cramer's V value is 0.091, and the correlation is significant at 0.05 level. Given this finding, Hypothesis 1 is supported.

Table 3. Statistical results

Hypotheses	Cramer's V Value	Approx. Significance
Hypothesis 1 (correlation of responses to item 1 and 2)	0.091	0.033
Hypothesis 2 (correlation of responses to item 3 and 4)	0.231	0.000
Hypothesis 3 (correlation of responses to item 5 and 6)	0.103	0.003
Hypothesis 4 (correlation of responses to item 7 and 8)	0.187	0.000

Hypothesis 2 is tested by comparing the responses to item 3 and item 4. It is a more wide-ranging query concerning the composition and characteristics of bank stock investments and is based on a theory of herd behaviour as a cause of both overvaluation and decline of the market. If a small investor believed that the forecasts by analysts were important to the downturn, that investor would plausibly focus on analysts' forecasts today in order to be well-informed about important news stories that may affect his or her bank stock holdings. The Cramer's V value for the two is 0.231, which is significant at 0.01 level. In other words, Hypothesis 2 is also supported.

Hypothesis 3 is tested by comparing the respondents' answers to item 5 and item 6. The comparison was used to determine

whether there was a correlation between confidence and optimism on one hand, and anchoring on the other hand. A small investor who considers the bank stock market to be undervalued today is likely to believe that the bank stock market will recover in a few years to levels that prevailed during the buoyant stock market. This belief is expected to be related to his or her opinion regarding the bank stock market value today. The Cramer's V value is 0.103, and the correlation is significant at 0.01 level. Hypothesis 3 is supported.

The next hypothesis, Hypothesis 4, is tested by comparing the responses to item 7 and item 8. It specifies the correlation between how much small investors value the information they have in a situation when a decision has to be made and their belief that the stock price index will continue to rise after three days of continuous increases. The existence of such a relationship implies that Kahneman and Tversky's classic value function (i.e. prospect theory) is correct. The Cramer's V value for the two is 0.187, which is significant at 0.01 level. In other words, there is a significant correlation between the responses to item 7 and item 8. Thus, Hypothesis 4 is supported.

Conclusion

The objective of this study was to research the factors, investing characteristics, and decision making processes that affect Hong Kong small investors who participate in bank stock market. Based on some key concepts in behavioural finance (e.g. disposition effect, herd behaviour, anchors and prospect theory), we developed four hypotheses and test with a data set collected from 1,054 small investors in Hong Kong. Several findings came out from the study.

First of all, we find a significant correlation between the investment experience of small investors and their average return of their bank stock investments. Small investors are sophisticated and have more trading experience to have a lower disposition effect because they have a better understanding of the market, are more aware of such a tendency, and hence likely to correct it. Therefore, less proportion of well-experienced small investors would suffer loss from their bank stock investments comparing with the less-experienced small investors.

Second, a significant correlation is found between the reason given by small investors for changing their current security holdings and the reason given for the sharp correction in the bank stock market. This finding suggests that herd behaviour occurred frequently among the small investors, and they tend to sell their stock during the sharp correction period.

Third, we find a significant correlation between the opinion of small investors on whether the bank stock market would recover in the event of an economic downturn and the opinion of smaller investors on the bank stock market value today. This finding suggests that small investors have some reference points (i.e., anchors) in mind when they make their investments in the bank stock market. For example, a small investor who believes the bank stock market is undervalued today may plausibly think that the bank stock market will recover in a few years to levels that prevailed during the buoyant stock market.

Finally, here is also a significant correlation between how small investors value information in a situation when they have to make a decision and their belief in the probability that the stock price index would continue to rise after three days of continuous increase. This finding provides empirical support for Kahneman and Tversky's classic value function (i.e., prospect theory). Small investors tend to hold on to a position of loss in the hope that the stock prices will eventually recover. Prospect theory also predicts that small investors will be risk averse to gains, which means that they believe the stock price index will continue to increase in value, and hence they will sell their stock in a buoyant stock market.

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6. Decision-Making in the Hong Kong Bank Stock Market

Introduction

On 10 April 2014, the Securities and Futures Commission of Hong Kong and China Securities Regulatory Commission made a Joint Announcement regarding the in-principle approval for development of the Pilot Program (Shanghai-Hong Kong Stock Connect) for the establishment of mutual stock market access between Mainland China and Hong Kong. Under Shanghai-Hong Kong Stock Connect, the Stock Exchange of Hong Kong Limited (SEHK) and Shanghai Stock Exchange (SSE) established mutual order-routing connectivity and related technical infrastructure (Trading Links) to enable investors of their respective market to trades listed on the other's market. While all Hong Kong and overseas investor swere allowed to trade SSE Securities through Shanghai-Hong Kong Stock Connect, only mainland institutional investors and those individual investors who satisfy the eligibility criteria (i.e. individual investors who hold an aggregate balance of not less than RMB500,000 in their securities and cash accounts)were accepted to trade SEHK Securities through Shanghai-Hong Kong Stock Connect. In the initial phase, Hong Kong and overseas investors would be able to trade certain stocks listed on the SSE market (i.e. SSE Securities). Through Shanghai-Hong Kong Stock Connect, Mainland investors would be able to trade the constituent stocks of the Hang Seng Composite LargeCap Index and Hang Seng Composite Mid Cap Index, and all H shares (H simply represents Hong Kong. It was purely practical, to

distinguish the Hong Kong listings with the listings on the Mainland exchanges for the convenience of investors) that are not included as constituent stocks of the relevant indices but which have corresponding shares in the form of SSE-listed Shares (HKEx, 2014). Given the growing connection between the economics of China and Hong Kong, the economic policy of the Chinese government have significant impacts on the Hong Kong economy and stock markets. This in turn affects Hong Kong stock prices. The interesting question is why would a small investor bother to choose to invest in particular Hong Kong bank stock? The Hang Seng Index (HSI) in Hong Kong has four sub-indexes which are finance, utilities, properties, and commerce and industry, and there are 50 constituent stocks in the index. The finance sector has 12 constituent stocks including 8 bank stocks in it. They are HSBC, Hang Seng Bank, Bank of East Asia, China Construction Bank, Industrial and Commercial Bank of China, BOC Hong Kong, Bank of Communications and Bank of China. All of these banks reported that they used at least one derivative for hedging the risks (Hon, 2013). They reduced borrowing cost and protected group's earnings or cash flows. That may be the reason why these banks can stably pay dividends to shareholders and the reason why small investors to choose to invest in particular Hong Kong bank stock. Economists view the movement of capital between countries as fundamentally no different from movement between regions of a country (or between industries), because the capital is moved in response to the expectation of higher rate of return in the new location than it earned in the old location (Appleyard et al., 2010). Investors can potentially benefit a great deal from international diversification. The actual portfolios that investor hold however, are quite different from those predicted by the theory of international portfolio investment (Eun et al., 2012). Recently, various researchers, such as French & Poterba (1991), Cooper & Kaplanis (1994), Tesar & Werner (1993), Glassman & Riddick (1993), and Chan, Covrig, & Ng (2005), documented the extent to which portfolio investments are concentrated in domestic equities (home bias in portfolio holdings). Hong Kong investors can invest in any stock in the world. However, they typically invest individual stocks in Hong Kong. In 2012/13, overseas investors (individual/retail investors residing outside Hong Kong or institutional investors (investors who are not individual/retail investors) operating outside Hong Kong, with the source of funds overseas) contributed 46% to total market turnover (similar to their contribution in 2011/12) while local investors' (individual/retail investors residing in Hong Kong or institutional investors operating

in Hong Kong, with Hong Kong as the source of funds) contribution remained at a record low level of 38% (similar to their contribution in 2011/12). Overseas investor trading came mainly from institutions (41% of total market turnover vs 5% from retail). Local investor trading also came more from institutions (20% of total market turnover) than from retail investors (investors who trade on their personal account (18%)). Global investors (including small investors in Hong Kong) are concerning to make profit opportunity. The Shanghai-Hong Kong Stock Connect would be the channel for this opportunity. Especially, the bank stocks of constituent stocks of the Hang Seng Composite Index would be the best choice for them. If any, which of the above bank stocks do they invest in most frequently?

The decision-making theory really has its roots in valuation theory (Lumby & Jones, 2011), because all the alternatives in any decision-making situation have to be valued in order to be compared. Therefore, although we can say that all types of decision-making involve the same fundamental process, each is given its own unique characteristics by the valuation base that it employs. Most scholars (Hirshleifer, 1958; 1961; Cantor & Lippman, 1995) agreed that when selecting amongst a set of investment projects, the decision-maker cannot act as if her decision is made in isolation. The factors should play a role in the decision-making of the small investors. In this paper, we used Kendall rank correlation coefficients to measure the different ranking of factors for these bank stocks and are therefore attempting to give advice for financial advisers approaching target customers. The objective of this study was to search the factors, investing characteristics, and decision making processes that affect Hong Kong small investors who participate in bank stock market.

This paper is organized as follows. Section 2 reviews the related literature; Section 3 explains the methodology of the present study and the data; Section 4 reports the results; and section 5 provides the conclusion.

Literature review

Cohen & Kudryavtsev (2012) found that with respect to decision about stocks, irrationality cannot be established. Investment in stocks was influenced by expectation, past experience in the capital market, and knowledge about the past performance of selected market indices. Understanding how people perceive the underlying risk of different financial instrument is the first step to understand how investment decisions are made, and to further help investors to avoid biases and make sensible decisions.

Wang *et al.*, (2011) paper suggests that familiarity bias is common among private investors. Understanding investors' behavior will be useful in making decision about investments. Information on companies, the economic and financial environment, and technical analysis could be used to make better investment decisions (Fung *et al.*, 2010). Women want the same attention, advice, terms, and deals that men get with advisors providing clear objective recommendations based on their goals and risk portfolios (Malhotra & Crum, 2010). Williams (2007) results show that investor characteristics as consumers and their general attitude toward the social aims of firms appear to influence their investment choices. Peterson (2002) draws on the psychology literature to show that anticipation of reward (price appreciation) generates a positive affect (emotion, mood, or attitude) that drives increased risk-taking behavior and buy trading. Then, following the anticipated event or news, there is a reduction in positive affect that produces more risk-averse behavior and drives sell trading. Lewellen *et al.*, (1977) cover (1) basic portfolio objectives, (2) information collection and decision mechanics, (3) instrument selection and portfolio composition, (4) return perception and market attitudes. They regard these not only as the key behavioral dimensions but, in the hierarchy indicated, as a logical directional model of investment process.

Methodology and data

Factor analysis is employed to identify the key factors that affect the decision-making of small investors in Hong Kongbank stock market. We create ranking order of factors that are common for all decision-making for bank stocks: reference group, stock nature, return performance and bank performance. Rotated principal component loadings, scree test, Kaiser-Meyer-Olkin (KMO) index, Bartlett's test of sphericity, reliability test are used to examine possible differences in the perceived importance of the key factors. This factor ranking is different for every small investor. We try to do that using the idea of ranking correlation developed by the British mathematician Kendall (1955) to measure these differences as differences between factors ranking orders. According to Abdi's paper (2007) in the "Encyclopedia of Measurement and Statistics", when we are comparing two ordered sets we should look at the number of different pairs between the two sets which allow us to get something which is called the "symmetric difference distance" between the two sets. The symmetric difference is a set operation which associates to two sets of factors that belong to only one set.

$$2 \times [d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2)]$$

$$\tau = 1 - \frac{\quad}{\quad}$$

$$N(N-1)$$

Where the symmetric difference of distance between two sets of ordered pairs \mathcal{P}_1 and \mathcal{P}_2 is presented as $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2)$. N is number of ranked factors, in our case $N = 4$. With $N = 4$ factors we assume arbitrarily that first order is equal to 1234. Therefore, with two rank orders provided on N factors, there are $N!$ (i.e. $N! = 4! = 4 \times 3 \times 2 \times 1 = 24$) different possible outcomes to consider for computing the sampling distribution of τ . Kendall coefficient can have values between -1 and +1: $-1 \leq \tau \leq +1$ where -1 is the largest possible distance (equal to -1, obtained when one order is the exact reverse of the other order) and +1 is the smallest one (equal to +1, obtained when both orders are identical). The Kendall coefficient τ can be interpreted as the difference between the probability to have factors in the same order and the probability that they are in the different order. We use the Kendall coefficient between two ordered sets for selected three small investors: C, K and X. They represent different aspects of small investors for their decision-making.

The data for the present study were collected from small investors in Hong Kong via a questionnaire survey. Its main purpose is to investigate the decision-making of small investors in the Hong Kong bank stock market. The survey was conducted during September 23, 2013 to October 31, 2013. We distributed 1,150 questionnaires to our students and gave the similar topic for their research projects in their finance course. The students were eager to collect the data for their research. They got the marks for continuous assessment for returning questionnaires. There were 1,054 selected respondents who completed and returned the questionnaires and this represents a response rate of 92%. The snowball method was adopted to select target small investors aged 18 or above in Hong Kong. Our students had different channel to contact with their friends, the first respondent referred a friend. The friend also referred a friend, etc. Student families' networks contacted with their family members' friends and colleagues. The first part of the questionnaire focused on the factors, investing characteristics, and decision making processes that affect Hong Kong small investors who participate in bank stock market. The second part collected respondents' demographic characteristics, including gender, age, education level, employment status, average monthly income, percentage of their average monthly income for stock investment, used the Internet or e-mail either at home or at

work in the past six months, worked for a large for profit company with over 1,000 employees, family size and their favour investments.

Results

The profile of the respondents is reported in Table 1. Over half (56.2%) of respondents were male and the rest were female. The majority of the respondents were under the age of 54 (90.7%) only 9.3% were aged 55 or above. Regarding their education level, 26.4% had secondary school level, 27.2% had post-secondary level, and 37.9% had university or above level. Regarding their employment status, 60.9% of respondents were employee, 14.6% were self-employed, 5.9% were retired, and 18.7% were classified as “other”, which includes housewives and students. The respondents’ median income was HK \$14,435.77.35% of the respondents answered the percentage of their average monthly income for stock investment. About 43.5% of the mused 10% or less for it. 87.3% of the respondents used the Internet or e-mail either at home or at work in the past six month. 23.7% of respondents are working for a large for profit company with over 1,000 employees. 68.7% of respondents were 3-4 members in their family. The most frequent sector chosen by respondents for invest in the Hang Seng composite Index was finance (40.6%). HSBC was the most favorite bank stock; the results indicate that 27.0% of the respondents invested in it most frequently. The second frequently invested bank stock was China Construction Bank, with 15.0% of the respondents; the third frequently invested was Hang Seng Bank, with 14.2% of the respondents; the fourth frequently invested was BOC Hong Kong, with 11.9% of the respondents; the fifth frequently invested was Industrial and Commercial Bank of China, with 10.4% of the respondents; the least frequently invested was Bank of Communications only with 4.5% of the respondents. In view of the above demographic profile of the respondents, we believe that they are representative of small investors in Hong Kong bank stock market.

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Self-employed	153	14.6
Retired	62	5.9
Others	196	18.7
Your average monthly income (including salaries, interest, rent and other earnings)		
Below HK\$5,000	175	16.6
HK\$5,000 -HK\$9,999	171	16.2
HK\$10,000 - HK\$14,999	204	19.4
HK\$15,000 - HK\$19,999	224	21.3
HK\$20,000 - HK\$24,999	139	13.2
HK\$25,000 - HK\$29,999	68	6.5
HK\$30,000 - HK\$49,999	56	5.3
HK\$50,000 or above	16	1.5
How many percentage of your average monthly income for stock investment?		
%	368	35.0
I don't know	683	65.0
Have you personally used the Internet or e-mail either at home or at work in the past six months?		
Yes	915	87.3
No	133	12.7
Do you or does someone in your household currently work for a large for-profit company with over 1,000 employees?		
Respondent does	249	23.7
Other household member does.	342	32.6
No	458	43.7
Items and responses	No.	% of total
How many members in your family (includes yourself)?		
1	41	3.9
2	110	10.5
3	338	32.1
4	385	36.6
5 or above	178	16.9
Which of the following sector do you invest most frequency?		
Finance	387	40.6
Utilities	219	23.0
Properties	199	20.9
Commerce & Industry	141	14.8
Others (Please specify)	7	0.7
Which of the following bank stock do you invest most frequency? (Choose one alternative)		
HSBC (Stock code: 0005)	258	27.0
Hang Seng Bank (stock code: 0011)	135	14.2
Bank of East Asia (stock code: 0023)	60	6.3
China Construction Bank (stock code: 0939)	143	15.0
Industrial and Commercial Bank of China (stock code: 1398)	99	10.4
BOC Hong Kong (stock code: 2388)	114	11.9
Bank of Communications (stock code: 3328)	43	4.5
Bank of China (stock code: 3988)	87	9.1
Others (Please specify)	15	1.6

Table 2 shows the distribution of respondents' answers to various question items in the questionnaire. The items were designed to reflect some important concepts in decision-making theory. Relative high in profit growth rate (32.1%) is the relative importance criteria in representing the bank development capability; relative high in profit margin on total asset (28.0%) is the relative importance criteria in representing the bank profitability; relative high in dividend yield (34.1%) is the relative importance criteria in representing the profitability to shareholders; relative low in non-performing loan ratio (33.2%) is the relative importance criteria in representing the bank stability and safety.

Table 2. Responses to various items

Items and responses	No.	% of total
1. What is the relative importance of the following criteria in representing the bank development capability?		
Relative high in profit growth rate	306	32.1
Relative high in loan growth rate	212	22.2
Relative high in deposit growth rate	165	17.3
Relative high in asset growth rate	147	15.4
Cannot say	124	13.0
2. What is the relative importance of the following criteria in representing the bank profitability?		
Relative high in profit margin on total asset	267	28.0
Relative high in loan to deposit ratio	244	25.6
Relative low in cost to income ratio	204	21.4
Relative high in net interest margin	120	12.6
Cannot say	119	12.5
3. What is the relative importance of the following criteria in representing the profitability to shareholders?		
Relative high in dividend yield	325	34.1
Relative low in price / earnings ratio	203	21.3
Relative low in price / book ratio	151	15.8
Relative high in return on equity	162	17.0
Cannot say	113	11.8
4. What is the relative importance of the following criteria in representing the bank stability and safety?		
Relative high in provision coverage	215	22.5
Relative low in non-performing loan ratio	317	33.2
Relative high in capital adequacy ratio	263	27.6
Relative high in professionals confidence to the bank	54	5.7
Cannot say	105	11.0
5. What is your average return on bank stock investment in the past?		
Loss	100	10.5
Average return less than 10% p.a.	378	39.7
Average return 10% p.a.to under 30% p.a.	307	32.2
Average return 30% p.a to under 50% p.a.	120	12.6
Average return 50% p.a to under 100% p.a	40	4.2
Average return 100% p.a or more	8	0.8
Items and responses	No.	% of total
6. Do you satisfy the average return of the bank stocks that you invested in the past?		
Highly Satisfied	47	4.9
Satisfied	269	28.2
Normal	431	45.2

Dissatisfied	165	17.3
Highly dissatisfied	41	4.3
7. Which of the following bank stock do you invest most frequency?		
HSBC (Stock code: 0005)	258	27.0
Hang Seng Bank (stock code: 0011)	135	14.2
Bank of East Asia (stock code: 0023)	60	6.3
China Construction Bank (stock code: 0939)	143	15.0
Industrial and Commercial Bank of China (stock code: 1398)	99	10.4
BOC Hong Kong (stock code: 2388)	114	11.9
Bank of Communications (stock code: 3328)	43	4.5
Bank of China (stock code: 3988)	87	9.1
Others (Please specify)	15	1.6
8. Which of the following sector do you invest most frequency?		
Finance	387	40.6
Utilities	219	23.0
Properties	199	20.9
Commerce & Industry	141	14.8
Others (Please specify)	7	0.7
9. What do you think the risk level in investing the Hong Kong bank stocks?		
Very Low Risk	108	11.3
Low Risk	343	36.0
Medium Risk	405	42.5
High Risk	81	8.5
Very High Risk	16	1.7
10. How long have you invested in the financial market?		
Never invested	102	9.7
Less than 1 year	241	22.9
1 year to under 3 years	234	22.2
3 years to under 5 years	202	19.9
5 years to under 10 years	141	13.4
10 years or above	134	12.7
11. When making bank stock investment decisions today, which of the following factors do you consider most important?		
Information from the bank as a basis for a fundamental analysis.	195	20.4
Recommendations, advice, and forecasts from professional investors.	178	18.7
The overall past performance of the market seen from a historical perspective.	207	21.7
Information from newspapers / TV.	127	13.3
Information from the Internet.	103	10.8
Discussion with personal friends	60	6.3
Information from colleagues at work.	25	2.6
Own intuition of future performance.	58	6.1
Others (Please specify)	1	0.1

The importance of various items on the decision-making of small investors when they invested in bank stock is presented in Table 3. All the items are statistically significant with high mean values.

Table 3. Descriptive statistics

Item	Item name	Mean	Standard Deviation	t	d.f.	Sig. (two-tailed)
1	Development capability	2.25	1.407	55.993	953	0.000
2	Profitability to banks	2.56	1.345	58.798	953	0.000
3	Profitability to shareholders	2.51	1.408	55.102	953	0.000
4	Stability and safety	2.49	1.215	63.402	953	0.000
5	Average return	5.63	1.024	79.233	952	0.000
6	Satisfaction of average return	2.88	0.900	98.679	952	0.000
7	Favor bank stock	3.76	2.419	48.056	953	0.000
8	Investment sector	2.12	1.122	58.332	952	0.000
9	Risk level	2.53	0.864	90.430	952	0.000
10	Experience	3.42	1.521	72.959	1053	0.000
11	News	3.36	1.997	51.925	953	0.000

As shown in Table 4, the correlation analysis is employed to obtain a correlation matrix based on 11 items for each dimension, which is then used as an input of the factor analysis. The goal of factor analysis is to reproduce observed correlations among variables by identifying a smaller number of shared factors that account for the observed correlation. The correlations between the variables arise from the sharing of common factors. The common factors in turn are estimated as linear combinations of the original variables. The unidimensionality is the extent to which the items are strongly associated with each other, and represent a single factor, which is a necessary condition for Bartlett's test of sphericity ($p < 0.000$) and the Kaiser-Meyer-Olkin (KMO). KMO measure of sampling adequacy index (with a value of 0.636) confirmed the appropriateness of the data for exploratory factor analysis.

Table 4. Factor correlation matrix

Item	1	2	3	4	5	6	7	8	9	10
2	0.371**									
3	0.322**	0.265**								
4	0.308**	0.274**	0.278**							
5	-0.047	-0.088**	0.038	-0.052						
6	0.023	0.041	0.056*	-0.015	0.323**					
7	0.102**	0.092**	0.025	0.009	0.026	0.039				
8	0.018	0.048	0.030	-0.006	0.052	0.083**	0.093**			
9	0.092**	0.060*	0.097**	-0.051	0.050	0.077**	0.076**	0.050		
10	0.001	0.026	0.000	0.033	0.044	-0.039	0.053	0.030	-0.039	
11	0.059*	0.107**	0.032	0.053	0.029	-0.022	0.031	-0.033	-0.304	0.027

Notes: *, ** Significant at the 5% and 1% levels (one-tailed), respectively. Extraction method: principal components analysis, Rotation method: Varimax with Kaiser Normalization, Kaiser-Meyer-Olkin (KMO) index: 0.636, Bartlett's test of sphericity: $p < 0.000$. Item name (see also Table 3) 1. Development capability; 2. Profitability to banks; 3. Profitability to shareholders; 4. Stability and safety; 5. Average return; 6. Satisfaction of average return; 7. Favor bank stock; 8. Investment sector; 9. Risk level; 10. Experience; 11. News.

The communality measures the percent of variance in a given variable explained by all the factors jointly and may be interpreted as the reliability of the indicator. Hence, the higher the

communality, the more the common factors can explain the variance of the standardized variable. As shown in Table 5, all items had communality above 0.25. Item 11 (news) has the lowest communality (0.251). The eigenvalue for a given factor measures the variance in all the items which is accounted for by that factor. The ratio of eigenvalues is the ratio of explanatory importance of the factors with respect to the items. Eigenvalues measure the amount of variation in the total sample accounted for by each factor. Factor A, B, C, and D had eigenvalues above 1.000 (1.973, 1.338, 1.191 and 1.067 respectively). The four factors, collectively, accounted for a satisfactory 50.6% of the variance.

Table 5. Principal component analysis

Item	Item name	Communalities	Eigenvalue	Factor	% of Variance	Cumulative %
1	Development capability	0.552	1.973	A	17.9	17.9
2	Profitability to banks	0.499	1.338	B	12.2	30.1
3	Profitability to shareholders	0.484	1.191	C	10.8	40.9
4	Stability and safety	0.493	1.067	D	9.7	50.6
5	Average return	0.718				
6	Satisfaction of average return	0.670				
7	Favor bank stock	0.462				
8	Investment sector	0.398				
9	Risk level	0.557				
10	Experience	0.485				
11	News	0.251				

The following scree plot (see Figure 1) graphically displays the eigenvalues for each factor. In reference to the eigenvalues, we would expect four factors to be extracted because they have eigenvalues greater than 1.

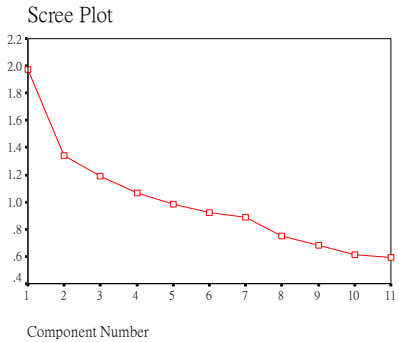


Figure 1. Scree Plot

Complex variables may have loadings on more than one item, and they make interpretation of the output difficult. Rotation may therefore be necessary. Varimax rotation is most frequently chosen. Ordinarily, rotation reduces the number of complex variables and improves interpretation (see Table 6).

Table 6. *Varimax-rotated principal component loadings*

Item	A	B	C	D	Item name	Factor
1	0.738				Development capability	A
2	0.677				Profitability to banks	A
3	0.673				Profitability to shareholders	A
4	0.654				Stability and safety	A
5		0.830			Average return	B
6		-0.779			Satisfaction of average return	B
7			0.663		Favor bank stock	C
8			0.626		Investment sector	C
9				-0.626	Risk level	D
10				0.601	Experience	D
11				0.475	News	D

After the rotation, there are no negative loadings on any consequence on either factor A or factor C. The rotated factors that represent the meaningful constructs ordinarily should not exhibit these large negative loadings. Thus, we eliminated item 6 in factor B and item 9 in factor D. Finally, we found four factors affecting the decision-making of small investors in the Hong Kong bank stock market as follows: factor A might be interpreted as bank performance which include development capability, profitability to banks, profitability to shareholders, stability and safety; factor B as return performance which include average return, satisfaction of average return; factor C as stock nature which includes favor bank stock and investment sector and factor D as reference group which includes recommendations from professional investors, information from newspapers/TV/Internet, discussion with personal friends and colleagues, information from the bank and the overall past performance of the market seen from a historical perspective. The specific name given to each factor is designed to reflect an item or notion that conceptually relates to the rest of the items under a particular factor.

Table 7. *Internal consistency and related decisions of first structure*

Factors and items	Corrected item-total correlation	α value	Decision
Factor A (Bank Performance)			
Development capability	0.4666	0.6348	Retained
Profitability to banks	0.4149		
Profitability to shareholders	0.3911		
Stability and safety	0.3884		
Factor C (Stock Nature)			
Favor bank stock	0.0990	0.1405	Eliminated
Investment sector	0.0990		
Factor D (Reference Group)			
Experience	0.0261	0.0483	Eliminated
News	0.0261		

A final step would be to determine Cronbach’s alpha coefficient of internal consistency to ensure that the items comprising the factors produce a reliable scale. The reliability test is reported in Table 7. This was undertaken to further reduce the number of factors. The cut-off value adopted was 0.5 and the acceptable level of corrected item-to-total correlation was set above 0.3 (Nunnally, 1978). The internal reliability of the first structure was tested and the decision results provide evidence as to the weakness of the structure since one factor (factor A) exceeded the adopted criteria. It is found that factor A contains four items and relates to “bank performance”. Factor C is made up of two items and refers to “stock nature”. Finally, factor D comprises two items and deal with “reference group”. The derived scales appear to possess moderate to weak internal consistency. So, we eliminated both factors C and D (see Table 8).

Table 8. Internal consistency of final revised structure

Factors and items	Number of item	Corrected item-total correlation	α value
Factor A (Bank Performance)			
Development capability	4	0.4666	0.6348
Profitability to banks		0.4149	
Profitability to shareholders		0.3911	
Stability and safety		0.3884	
Factor B (Return Performance)			
Average return	1		

To examine possible differences in the perceived importance of the four factors, our analyses indicate that out of four criteria (i.e., rotated principal component loadings, scree test, KMO and Bartlett’s test of sphericity, reliability test) examined, only two factors (bank performance, returns performance) are significant. Based on these results, we can derive the following ascending order of importance:

1. Reference group (Group)
2. Stock nature (Nature)
3. Returns performance (Return)
4. Bank performance (Bank)

Reference group is the least important factor and bank performance is the most important factor.

We create ranking orders of the four factors that are common for all decision-making and respectively for all small investors. To get the factor ranking orders for each small investor, we should follow ascending order of importance.

The factor order for the pure decision-making: [Group, Nature, Return, Bank] with the following ranking: $\mathcal{P}_1 = [1, 2, 3, 4]$.

This factor ranking is different for every small investor. As an illustration, we show the entire $N! = 4 \times 3 \times 2 \times 1 = 24$ possible rank orders for a set of $N = 4$ factors along with its value of τ with the “canonical order” (i.e., 1234). As a result, each small investor has different ranking of factors for their decision-making. We find the Kendall rank correlation coefficients for small investor using initially the pure decision-making ranking order as the standard.

Choice of small investors: C, K, X

Small investor C: [Group, Return, Bank, Nature]

with the ranking: $\mathcal{P}_2 = [1, 3, 2, 4]$.

We are comparing two ordered sets. We should look at the number of different pairs between two sets which allow us to get to something which is called the “symmetric difference distance” between these two sets.

$$\tau = 1 - \frac{2 \times [d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2)]}{N(N-1)}$$

The symmetric difference distance between two sets of ordered pairs \mathcal{P}_1 and \mathcal{P}_2 is denoted $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2)$. N is number of ranked factors, in our case $N = 4$. Kendall coefficient of correlation is obtained by normalizing the symmetric difference such that it will take values between -1 and +1 with -1 corresponding to the largest possible distance (equal to -1, obtained when one order is the exact reverse of the other order) and +1 corresponding to the smallest possible distance (equal to +1, obtained when both orders are identical).

The Kendall coefficient of correlation of factor ranking for the small investor C and the pure decision-making is 0.67:

$\mathcal{P}_1 = \{[1, 2], [1, 3], [1, 4], [2, 3], [2, 4], [3, 4]\}$.

$\mathcal{P}_2 = \{[1, 3], [1, 2], [1, 4], [3, 2], [3, 4], [2, 4]\}$.

The set of pairs which are in only one set of ordered pairs is $\{[2, 3], [3, 2]\}$. So, the value of $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2) = 2$. That means that the value of the Kendall rank correlation coefficient between two orders of decision-making is:

$$\tau = 1 - \frac{2 \times 2}{4 \times 3} = 0.67$$

Small investor K: [Return, Bank, Group, Nature]
with the ranking: $\mathcal{P}_3 = [2, 4, 1, 3]$.

$$\mathcal{P}_1 = \{[1, 2], [1, 3], [1, 4], [2, 3], [2, 4], [3, 4]\}.$$

$$\mathcal{P}_3 = \{[2, 4], [2, 1], [2, 3], [4, 1], [4, 3], [1, 3]\}.$$

The set of pairs which are in only one set of ordered pairs is $\{[1, 2], [2, 1], [1, 4], [4, 1], [3, 4], [4, 3]\}$. So, the value of $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_3) = 6$. That means that the value of the Kendall rank correlation coefficient between two orders of factors is:

$$\tau = 1 - \frac{2 \times 6}{4 \times 3} = 0$$

Small investor X: [Bank, Return, Nature, Group]
with the ranking: $\mathcal{P}_4 = [4, 3, 2, 1]$.

$$\mathcal{P}_1 = \{[1, 2], [1, 3], [1, 4], [2, 3], [2, 4], [3, 4]\}.$$

$$\mathcal{P}_4 = \{[4, 3], [4, 2], [4, 1], [3, 2], [3, 1], [2, 1]\}.$$

The set of pairs which are in only one set of ordered pairs is $\{[1, 2], [2, 1], [1, 3], [3, 1], [1, 4], [4, 1], [2, 3], [3, 2], [2, 4], [4, 2], [3, 4], [4, 3]\}$. So, the value of $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_4) = 12$. That means that the value of the Kendall rank correlation coefficient between two orders of factors is:

$$\tau = 1 - \frac{2 \times 12}{4 \times 3} = -1$$

Respectively for the above discussed small investors, the Kendall rank correlation coefficients with the decision-making order would be: 0.67 for small investor C; -1 for small investor X, and 0 for small investor K. We can conclude that small investor C is the closest to the pure decision making (small investor C makes investment decision easily) and small investor X is the farthest from the pure decision-making among them (small investor X does not make investment decision). Small investor K is a classic case of dilemma for decision-making (small investor K has great difficulty making investment decision).

Conclusion

Using factor analysis, we create four factors that capture the decision-making of small investors in the Hong Kong bank stock market. Their decision-making has uniform views as to the ascending order of importance: reference group, stock nature, return performance and bank performance. Reference group is the least important factor and bank performance is the most important factor. To get the factor ranking orders for small investor in the decision-making, we should follow ascending order of importance. This factor ranking is different for every small investor. As a result, each small investor has different factors of ranking for decision-making. We have reported evidence from three small investors (C, K, X) that the factor ranking order of the farthest from the pure decision-making is extremely opposite to the factor ranking order of the pure decision-making. Respectively for the above discussed small investors, the Kendall rank correlation coefficients with the decision-making order would be: 0.67 for small investor C; -1 for small investor X and 0 for small investor K. We can conclude that small investor C is the closest to the pure decision-making and small investor X is the farthest from the pure decision-making among them. Small investor K is a classic case of dilemma for decision-making. This implies that financial advisors can approach the customers with Kendall rank correlation coefficients greater than zero. These customers are relatively easy to make investment decision in the Hong Kong bank stock market.

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7. Rank Correlation Analysis of Investment Decision for Small Investors in the Hong Kong Derivatives Markets

Introduction

In Hong Kong, small investors have actively participated in the derivatives markets. Derivative products including warrants, Callable Bull/Bear Contracts (CBBC), options and futures are the popular choices of the small investors. It is therefore interesting to understand how the small investors make the decisions in the derivatives markets. The primary objective is to investigate the factors, investing characteristics and decision making processes that affect Hong Kong's small investors who participate in derivatives markets. Some small investors make investment decision easily, but for other small investors, they do not make investment decision. Also, the dilemma of investment decision is popular for small investors. This is a problem offering two possibilities neither easy make investment decision nor they do not make investment decision. It means that a problem offers two possibilities neither of which is practically acceptable. Small investors have great difficulty making investment decision. In the present study, we employ exploratory factor analysis and the Kendall rank correlation coefficient as our empirical framework. Exploratory factor analysis can help to extract latent factors that can summarize the correlation of the investment decisions and characteristics of the investors' behaviours. Also, we used an indicator (Kendall rank correlation coefficients) to measure the different ranking of factors and are therefore attempting to give advice for financial advisers approaching target customers (small T.-Y. Hon, (2018). *Monetarism and Behavioral Finance ...*

investors) in the Hong Kong derivatives markets. After a careful review of literature on investment decision, we found that a number of journal articles were written examining investment decision, but unfortunately, there is dearth of scholarly studies on dilemma of investment decision in regard to the Hong Kong derivatives markets. This study aims to fill the literature gap. We undertook a questionnaire survey to conduct our study with 1,130 respondents. The sample size is large enough for factor analysis and rank correlation analysis.

The rest of the paper is organized as follows. Section 2 reviews the related literature, followed by Section 3 that explains the methodology of the present study and the data. Section 4 reports the results, and the last section contains the conclusion.

Literature review

Although many personal and situational factors may influence the behaviour of small investors in the Hong Kong derivatives markets, research on this topic is sparse. According to the Prospect Theory of Tversky & Kahneman (1974) the decisions made by decision-makers differ from the presumptions of economists, which they proved with the help of various experiments. Kahneman & Tversky (1979) illustrated that the investors usually try to avoid taking risk when they are gaining, however they might choose to take risk when they are with losing stocks. Based on Enoma & Isedu (2010) respond and analysis, it was asserted that investment decision making and risk assessment are multi criteria processes that cannot be defined or captured only by rigid mathematical quantitative factors. Qualitative decision making such as political, social religious and government intervention are among those factors that influence manager investment decision making in insurance company in Nigeria. Sparaggis' (1995) paper presents a top-down modeling framework that can be used to estimate excess valuations and yield spreads and to assist portfolio managers in adjusting their investment strategies according to prevailing markets conditions. This framework combined with the classical bottom-up approach of market valuation can increase a portfolio manager's confidence in determining market entry and exit points. Moreover, Korniotis & Kumar (2011) suggested that older people make better investment choices as they gain more investment knowledge and experience, and questioned whether deterioration of their investment skills with age was largely due to the adverse effects of cognitive ageing. Williams (2007) found little evidence that demographic factors affect socially responsible investment decision.

Methods and data

Before we begin using the survey dataset for analysis, we need to ensure the survey results are reliable enough. According to Carmines & Zeller (1979), reliability focuses on the extent to which the empirical indicator provides consistent results across repeated measurements. It should be noted that the measure used to assess the statistical significance of the item was coefficient of variation (CV), which expresses the ratio of the standard error to the arithmetic mean $CV = \frac{S_{\bar{x}}}{|\bar{X}|}$. Accordingly, it was considered the

consensus had been achieved when the level of item was on the statistically significant (that is $CV \leq 20\%$). The CVs for each of questionnaire items have been inserted to the Results on investment behaviour of small investors in derivatives markets in Hong Kong survey in the Appendix. Taking a look at these CVs, we can find the maximum and minimum value is 13.5% and 0.9% respectively with mean 3.96%.

The purpose of factor analysis is to summarize pattern of interrelationship among variables (items) and establish levels of variance in decision variable as they influence a given phenomenon. To examine possible differences in the perceived importance of the key factors, our analyses indicate that out of four criteria (i.e., rotated principal component loadings, scree test, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity, reliability test) examined. Bartlett's test of sphericity and Kaiser-Meyer-Olkin's to test the appropriateness of the sample from the population and the suitability of factor analysis. If Bartlett's test of sphericity is large and significant and the Kaiser-Meyer-Olkin measure is greater than 0.6, then factorability is assumed. If the sums of squares of the loadings on the extracted factors are no longer dropping but are remaining at a low and rather uniform level, factor extraction may be reasonably terminated. Cattell's (1966) Scree test is based on this principle. SPSS use a default option of extracting all principal factors with eigenvalues of 1.0 or more (i.e., the Kaiser-Guttman rule). The main thing to consider in deciding when to stop factoring is that it is better to err on the side of extracting too many factors rather than too few. One of the most commonly used is Cronbach's coefficient α , which is based on the average correlation of items within a reliability test if the items are standardised. Cronbach's coefficient α can be interpreted as a correlation coefficient; it ranges in value from 0 to 1. We agree that some small investors make investment decision easily and some

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other small investors do not make investment decision. There are absolutely opposite to each other in terms of key factors. We create ranking order of determinants that are common for all investment decisions: reference group, return performance and personal background. But why they are so different? Rotated principal component loadings, scree test, Kaiser-Meyer-Olkin and Bartlett's test, reliability test are used to examine possible differences in the perceived importance of the key factors. This ranking is different for every small investor. As a result, each small investor has used some key factors from the literature as potential determinants of the investment decision. We can say even more; in the case of some small investor make investment decision easily and other small investor do not make investment decision. These rankings are exactly opposite as we will show here. Can these differences be measured? We try to do that using the idea of ranking correlation developed by the British mathematician Kendall (1955) to measure these differences as differences between determinants ranking orders. In order to compare two ordered sets (on the same set of objects); the approach of Kendall is to count the number of different pairs between the two ordered sets. The number that gives a distance between these sets is called the "symmetric difference distance" (the symmetric difference is a set operation which associates with two sets of elements that belong to only one set).

$$\tau = 1 - \frac{2 \times [d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2)]}{N(N-1)}$$

The symmetric difference distance between two sets of ordered pairs \mathcal{P}_1 and \mathcal{P}_2 is denoted $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2)$. N is number of ranked elements (i.e. determinants), in our case $N = 3$. With $N = 3$ elements we assume arbitrarily that first order is equal to 123. Therefore, with two rank orders provided on N determinants, there are $N!$ (i.e. $N! = 3! = 3 \times 2 \times 1 = 6$) different possible outcomes (each corresponding to a given possible order) to consider for computing the sampling distribution of τ . Kendall coefficient can have values between -1 and +1: $-1 \leq \tau \leq +1$ where -1 is the largest possible distance (equal to -1, obtained when one order is the exact reverse of the other order), it means that small investor do not make investment decision; +1 is the smallest one (equal to +1, obtained when both orders are identical), it means that small investors makes investment decision easily; and 0 is in the middle

one, it means that small investor has great difficulty making investment decision. Kendall coefficient is equal to zero that means the dilemma of investment decision for the different ranking of factors. The Kendall coefficient τ can be interpreted as the difference between the probability to have determinants in the same order and the probability that they are in the different order:

$$\tau = P(\text{same}) - P(\text{different}).$$

We use the Kendall coefficient between two ordered sets for selected three small investors: Q, T and U.

The data for the present study were collected from small investors in Hong Kong via questionnaire survey. Its main purpose is to collect the opinions, investment behaviour, and financial decision making of the respondents in the Hong derivatives market. The survey was conducted during 21 January 2014 – 21 March 2014. Since the majority of Hong Kong's population is Chinese, the questionnaire was written in Chinese. After a pilot test on nineteen respondents, some amendments (such as rewording of some questions to eliminate ambiguities) were made before we finalized the questionnaire. This questionnaire consists of 9 questions (items): 3 questions for personal background, 4 questions for return performance, 2 questions for reference group. Since some respondents did not reply to all the questions in the questionnaire, we only used the number of replies (i.e., the questions that respondents did not answer were excluded) to calculate the total number of and the percentage of the total for the individual entries. We selected the respondents using non-probability sampling (snowball method). A group of undergraduate students helped to distribute the questionnaires to the respondents. The target population is the small investors on derivatives markets in Hong Kong. Finally, we distributed 1,200 questionnaires to our students. There were 1,130 selected respondents who completed and returned the questionnaires and this represents a response rate of 94%.

Results

The basic information about the respondents is depicted in Appendix. 41.7% of the respondents have less than 3 years of experience of investing in financial market. 40% of them have 3 years and under 10 years of experience of investing in financial market. The majority of the respondents (94%) are in the age group of 18-54. The median income was \$18,320. 40.1% of respondents invested 10% to under 30% of the total amount in their investment

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in derivatives products. About one-third of them have an average return of less than 10% and another one-third of them have an average return of 10-30%. Most of these respondents reported that they have a medium (45.4%) or high (25.9%) level of tolerance for investment risk. 18.5% of the respondents expected that if the Hang Seng Index has increased consecutively over past three days, 20% to under 30% probability that it will increase in value during tomorrow. The respondents also reported that they obtained the information and opinion that affected their investment decision from various sources such as overall past performance of the market seen from a historical perspective (22.7%). Recommendations, advice and forecasts from professional investors (21.3%). Warrants were the most favourite products; the results from item 9 indicate that 24.0% traded it most frequently. The second frequently traded derivatives product was stock options, with 23.0% of the respondents; the third frequently traded was Hang Seng Index futures, with 19.3% of the respondents; the fourth frequently traded was Callable Bull/Bear Contracts (CBBC), with 17.6%; the fifth frequently traded was Hang Seng Index options, with 12.3% of the respondents; the least frequently traded was Renminbi Non-deliverable forwards contract, only with 3.7% of the respondents. In view of the above survey results, we believe that respondents are representative of small investors in Hong Kong derivatives markets.

The goal of factor analysis is to reproduce observed correlations among variables by identifying a smaller number of shared factors that account for the observed correlation. The correlations between the variables arise from the sharing of common factors. The common factors in turn are estimated as linear combinations of the original variables. To identify the underlying dimensions of the items, which are perceived to be important by the respondents, the 9 items were then factor analysed. Initial visual assessment of the correlation matrix indicated considerable degree of inter-factor correlation (see Table 1). In addition, from the correlation matrix, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy gives a value of 0.688. The KMO is close to 1 which represent a perfectly adequate sample and the Barlett's test of Sphericity show a chi-square of 1,419.8 and a significance level of 1% (i.e. $p < 0.000$).

Table 1. Correlation matrix

Item	1	2	3	4	5	6	7	8
2	0.614**							
3	0.465**	0.418**						
4	0.052	0.061*	0.168**					
5	0.193**	0.146**	0.258**	0.468**				
6	0.162**	0.090**	0.260**	0.365**	0.293**			
7	0.110**	0.097**	0.115**	0.238**	0.229**	0.220**		
8	0.045	0.068*	-0.022	-0.031	-0.085**	0.002	0.050	
9	-0.087**	-0.007	-0.079*	-0.022	-0.025	-0.106**	-0.090**	0.062*

Notes: *Correlation is significant at the 0.05 level (one-tailed) and **Correlation is significant at the 0.01 level (one-tailed). Extraction method: principal component analysis, Rotation method: Varimax with Kaiser Normalization, Kaiser-Meyer-Olkin (KMO) index: 0.688, Bartlett's test of Sphericity: approx. Chi-Square= 1.419.8; $p < 0.000$. Item name (see also Table2) 1.Experience, 2.Age, 3.Income, 4.Portfolio, 5.Average Return,6. Tolerance, 7.Expectation, 8.Information, 9.Types.

Table 2 shows that the proportion of the variance of a variable is explained by common factor. Given that our aim was to identify the minimum number of factors that would account for the maximum portion of variance of original items, the principal component analysis was selected (Nunnally, 1978) to reduce the number of factors with an eigenvalue greater than 1. The social science rule stipulates that only factor with eigenvalue is greater or equal to 1 and above are considered meaningful for interpretation. Accumulative percentage of variance explained being greater than 50% is the criteria used in determining the number of factors. On the basis of the criteria, three factors were extracted.

Table 2. Principal component analysis

Item	Item name	Communality	Factor (Component)	Eigenvalue	Per cent of variance	Cumulative per cent
1	Experience	0.758	1	2.432	27.020	27.020
2	Age	0.714	2	1.548	17.200	44.220
3	Income	0.545	3	1.055	11.722	55.942
4	Portfolio	0.630				
5	Average Return	0.554				
6	Tolerance	0.461				
7	Expectation	0.321				
8	Information	0.597				
9	Types	0.453				

The three factors, collectively, accounted for a satisfactory 55.942% of the variance. Communality values in between 1.0 and 0 indicate partial overlapping between the items and the factors in what they measure. Furthermore, the communality column, provides further evidence of the overall significance, albeit, moderate, of the solution.

The underlying rationale for the Scree test is based on the fact that within a set of items, a limited number of factors are measured

more precisely than the others. In reference to the eigenvalues, we would expect three factors to be extracted because they have eigenvalues greater than 1. The Cattell scree test plots the components as the X axis and the corresponding eigenvalues as the Y-axis. As one moves to the right, toward later components, the eigenvalues drop. When the drop ceases and the curve makes an elbow toward less steep decline, Cattell's scree test says to drop all further components after the one starting the elbow. This rule is sometimes criticized for being amenable to researcher-controlled "fudging". That is, as picking the "elbow" can be subjective because the curve has multiple elbows or is a smooth curve, we may be tempted to set the cut-off at the number of factors desired by our research agenda. By graphing the eigenvalues, we found that the smaller factors form a straight line sloping downward. The dominant factors will fall above the line. Figure 1 demonstrates a three-factor solution is obtained.



Figure 1. *Scree plot*

In order to achieve a meaning factor loading, the principal component matrix rotated by orthogonal transformation by varimax with Kaiser normalization. After the rotation, there are no negative loadings on any consequence on either factor A, factor B, or factor C. We found three factors affecting the behavior of small investors on derivatives markets in Hong Kong as follows: factor A might be interpreted as personal background which include investment experience in financial markets (experience), age group (age) and average monthly income (income); factor B as return performance which include the percentage of derivatives products to the total amount in small investors' investment portfolio (portfolio), average return on investment in derivative products

(average return), personal level of tolerance for investment risk(tolerance)andprobability that Hang Seng Index willincrease in value during tomorrow (expectation); factor C as reference groupwhich includewhich includeoverall past performance of the market seen from a historical perspective, recommendations, advice, and forecasts from professional investors, information from the company as a basis for a fundamental analysis, information from newspapers/ TV/ magazines, information from the Internet, own intuition of future performance, discussion with personal friends, information from colleagues at work (information) andsmall investors invest different types of derivatives most frequency (types).The specific name given to each factor is designed to reflect an item or notion that conceptually relates to the rest of the items under a particular factor (see table 3).

Table 3. *Varimax-rotated principal component loadings*

Item	Factor			Item name	Factor
	A	B	C		
1	0.867			Experience	A
2	0.838			Age	A
3	0.688			Income	A
4		0.792		Portfolio	B
5		0.711		Average Return	B
6		0.664		Tolerance	B
7		0.558		Expectation	B
8			0.765	Information	C
9			0.664	Types	C

Notes: Factor names are A: Personal Background; B: Return Performance; C: Reference Group.

The reliability test is reported in Table 4. At this point only initial of internal reliability of the expected factors was performed in the form of Cronbach’s coefficient α . For the purposes of this study, the cut-off value adopted was 0.5 (Nunnally, 1978) and the acceptable benchmark level of corrected item-total correlation was set above 0.3. Following the decision relating to the internal reliability, the factors were re-specified. This was undertaken to further reduce the number of factors. The internal reliability of the first structure was tested and the decision results provide evidence as to the weakness of the structure since two factors (factor A and B) exceeded the adopted criteria. It is found that factor A contains three items and relates to “personal background”; factor B is made up of four items and refers to “return performance”. Factor C comprises two items and deal with “reference group”. The derived scales appear to possess moderate to weak internal consistency. So, we eliminated factor C (see Table 4).

Table 4. *Internal consistency and related decisions of first structure*

Factors and items	Corrected item-total correlation	Cronbach's coefficient α value	Decision
Factor A (Personal Background)			
Experience	0.6202	0.7160	Retained
Age	0.5605		
Income	0.4820		
Factor B (Return performance)			
Portfolio	0.4438	0.5459	Retained
Average Return	0.4168		
Tolerance	0.3677		
Expectation	0.3037		
Factor C (Reference group)			
Information	0.0498	0.0920	Eliminated
Types	0.0498		

To examine possible differences in the perceived importance of three factors, our analyses indicate that out of four criteria (i.e., rotated principal component loadings, scree test, KMO and Bartlett's test of Sphericity, reliability test) examined, only two factors (personal background, return performance) are significant (see table 5).

Table 5. *Internal consistency of final revised structure*

Items	Number of item	Corrected item-total correlation	Cronbach's coefficient α value
Factor A (Personal Background)			
Experience	3	0.6202	0.7160
Age		0.5605	
Income		0.4820	
Factor B (Return performance)			
Portfolio	4	0.4438	0.5459
Average Return		0.4168	
Tolerance		0.3677	
Expectation		0.3037	

Based on these results, we can derive the following ascending order of importance (reference group is the least important and personal background is the most important):

1. Factor C: Reference group
2. Factor B: Return performance
3. Factor A: Personal background

We create ranking orders of the threedeterminants that are common for all investment decision and respectively for all small investors. To get the determinants ranking orders for each small investor, we should follow ascending order of importance.

The determinantsorder the pure investment decision: [Reference Group, Return Performance, Personal Background] with the following ranking: $R_i = [1, 2, 3]$.

Table 6. The set all possible rank orders for $N=3$, along with their correlation with the “canonical” order 123

		Rank Orders					
		1	2	3	4	5	6
Small investor	P	Q	R	S	T	U	
	1	1	2	2	3	3	
	2	3	1	3	1	2	
	3	2	3	1	2	1	
τ	+1	+0.33	+0.33	-0.33	-0.33	-1	

This ranking is different for every small investor. As an illustration, table 6 shows the entire $N! = 3 \times 2 \times 1 = 6$ possible rank orders for a set of $N = 3$ determinants along with its value of τ with the “canonical order” (i.e., 123). As a result, each small investor has different level of investment decision. We find the Kendall rank correlation coefficients for small investor using initially easy make investment decision ranking order as the standard, and later we will do the same using small investor do not make investment decision or small investor has great difficulty making investment decision ranking order as the standard.

Choice of small investors: Q, T, U

Small investor Q: [Reference Group, Personal Background, Return performance] with the ranking: $\mathcal{R}_2 = [1, 3, 2]$.

We are comparing two ordered sets. We should look at the number of different pairs between two sets which allow us to get to something which is called the “symmetric difference distance” between these two sets.

$$\tau = 1 - \frac{2 \times [d_s(\mathcal{P}_1, \mathcal{P}_2)]}{N(N-1)}$$

The symmetric difference distance between two sets of ordered pairs \mathcal{P}_1 and \mathcal{P}_2 is denoted $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2)$. N is number of ranked determinants, in our case $N = 3$. Kendall coefficient of correlation is obtained by normalizing the symmetric difference such that it will take values between -1 and +1 with -1 corresponding to the largest possible distance (equal to -1, obtained when one order is the exact reverse of the other order) and +1 corresponding to the smallest possible distance (equal to +1, obtained when both orders are identical).

The Kendall coefficient of correlation of determinants ranking for the small investor Q and the pure investment decision is +0.33:

$$\mathcal{P}_1 = \{[1, 2], [1, 3], [2, 3]\}.$$

$$\mathcal{P}_2 = \{[1, 3], [1, 2], [3, 2]\}.$$

The set of pairs which are in only one set of ordered pairs is $\{[2, 3], [3, 2]\}$. So, the value of $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_2) = 2$. That means that the value of the Kendall rank correlation coefficient between two orders of investment decision is:

$$\tau = 1 - \frac{2 \times 2}{3 \times 2} = +0.33$$

Small investor U: [Personal Background, Return performance, Reference Group] with the ranking: $\mathcal{P}_3 = [3, 2, 1]$.

$$\mathcal{P}_1 = \{[1, 2], [1, 3], [2, 3]\}.$$

$$\mathcal{P}_3 = \{[3, 2], [3, 1], [2, 1]\}.$$

The set of pairs which are in only one set of ordered pairs is $\{[1, 2], [2, 1], [1, 3], [3, 1], [2, 3], [3, 2]\}$. So, the value of $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_3) = 6$. That means that the value of the Kendall rank correlation coefficient between two orders of determinants is:

$$\tau = 1 - \frac{2 \times 6}{3 \times 2} = -1$$

Small investor T: [Personal Background, Reference Group, Return performance] with the ranking: $\mathcal{P}_4 = [3, 1, 2]$.

$$\mathcal{P}_1 = \{[1, 2], [1, 3], [2, 3]\}.$$

$$\mathcal{P}_4 = \{[3, 1], [3, 2], [1, 2]\}.$$

The set of pairs which are in only one set of ordered pairs is $\{[1, 3], [3, 1], [2, 3], [3, 2]\}$. So, the value of $d_{\Delta}(\mathcal{P}_1, \mathcal{P}_4) = 4$. That means that the value of the Kendall rank correlation coefficient between two orders of determinants is:

$$\tau = 1 - \frac{2 \times 4}{3 \times 2} = -0.33$$

Because the determinants ranking order of small investor do not make investment decision is extremely opposite to the determinants ranking order of small investor makes investment decision easily. The Kendall rank correlation coefficient between them is $\tau = -1$. Respectively for the above discussed small investors, the Kendall rank correlation coefficients with the no investment decision order would be: +1 for small investor U, +0.33 for small investor T and -0.33 for small investor Q.

We can conclude that small investor Q is the closest to make investment decision easily setting priority and small investor U is the farthest from make investment decision easily among them. Small investor T is relatively great difficulty making investment decision.

Conclusion

The primary objective is to investigate the factors, investing characteristics and decision making processes that affect Hong Kong's small investors who participate in derivatives markets. Using factor analysis, we identify three factors that capture the behavior of small investors in the Hong Kong derivatives markets. The factors are reference group, return performance and personal background. The factor of reference group includes information and different types of financial derivatives; the factor of return performance includes portfolio, average income, tolerance and expectation; the factor of personal background includes experience, age and income. In order to examine possible differences in the perceived importance of three factors, our analysis indicate that out of four criteria (including rotated minimum residual solution, scree test, KMO and Bartlett's test of Sphericity, and reliability test) examined, only two factors (i.e., personal background, return performance) stand out to be significant. Accordingly, it can be concluded that the behavior of small investors in the Hong Kong derivatives markets have uniform views as to the ascending order of importance of reference group, return performance and personal background (reference group is the least important and personal background is the most important).

To get the determinants ranking orders for small investor in easy make investment decision, we should follow ascending order of importance. This ranking is different for every small investor. As a result, each small investor has different ranking of factors. We

have reported evidence from three small investors (Q, T, U) that the determinants ranking order of small investor do not make investment decision is extremely opposite to the determinants ranking order of small investor makes investment decision easily. The Kendall rank correlation coefficient between them is $\tau = -1$. Respectively for the above discussed small investors, the Kendall rank correlation coefficients with the no investment decision order would be: +1 for small investor U, +0.33 for small investor T and -0.33 for small investor Q. We can conclude that small investor Q is the closest to make investment decision easily setting priority and small investor U is the farthest from make investment decision easily among them. Small investor T is relatively not easy to make investment decision. This implies that financial advisors can approach the customers (small investors) with Kendall rank correlation coefficients greater than zero. These customers with Kendall rank correlation coefficients greater than zero are relatively easy to make investment decision in the Hong Kong derivatives markets. Based on these findings, more research should be conducted in the future to examine the behavior of small investors in other financial markets.

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8. Foreign-Invested Enterprises in China: Development and Sustainability

Introduction

According to the statistics of news release of foreign investment from ministry of commerce People's Republic of China, from January to July 2015, newly approved foreign-invested enterprises amounted to 14,409, up by 8.8% year on year. However, the factor of making profit by taking advantage of the foreign investment utilization system, market and preferential policies will gradually fade away. Before 1998, there were many benefits for Chinese enterprises to use foreign investment, such as change of operating mechanisms, greater autonomy in income distribution and pricing, raising capital, and making profit by taking advantage of existing traditional systems and administrative consumption and investment. In particular, the differential in preferential policies was able to generate huge profit margins. However, these factors will gradually fade away and some have already disappeared. Today, the foreign-invested enterprises in the manufacturing sector may decrease. Market competition and technological upgrading in China have reduced the possibilities for making money by taking advantage of the system difference and market space. As a result, newly arrived foreign-invested enterprises find it difficult to capture a market share and make profits. In the manufacture sector, the local industries are already in severe competition and there is no room for foreign-invested enterprises to invest massively in these industries. Furthermore, the manufacturing industry has gradually become aware of seeking development

potential from the capital markets at home and abroad. Many foreign-invested enterprises of manufacturing industries in China moved to India, Thailand, Vietnam and Bangladesh. The service industry is the main development area for foreign-invested enterprises, but the scale is limited. If foreign investment goes into the service industry massively, great changes and market competition will take place in this sector in the coming future. Small and medium size foreign investments will face strategic adjustment.

Banking regulation of Basel III changes in “capital” definitions, adequacy requirements and new liquidity requirements. Banks will be difficult to lead money for enterprises. The development of peer to peer (P2P) lending perform will be targeted for the foreign-invested enterprises’ new financing channel in China and the world. Also, foreign-invested enterprises can use the concept of creating shared value (CSV) as reference to sustain their business in China. The objective of this study was to illustrate the development and sustainability for foreign-invested enterprises in China.

The paper is organized as follows. Section 2 reviews the literatures. Section 3 explain the methodology of the present study. Section 4 describes foreign-invested enterprises and law in China. Section 5 illustratethe foreign-invested enterprises development and sustainability in China. Section 6 provide the conclusion.

Literature review

He *et al.*, (2015) identify three performance contributors to marketing seeking foreign direct investment (FDI): the host country’s favorable formal institutions towards FDI, the subsidiaries’ operational experience and absorptive capacity in the host country, and the ownership structure of the subsidiary. Their findings support the hypotheses that market-seeking orientation becomes more profitable for foreign subsidiaries in China when the host country provides a more favorable institutional framework towards FDI; the subsidiary has a longer history of FDI operation in the host country that leads to stronger absorptive capacity; and the subsidiary is organized in a wholly owned manner. Zhang & Wei (2015) reveal that the expansion of retail transnational corporations (TNCs) has been influenced by the gradual liberalization policies ofthe Chinese government. Spatially, they expanded in two directions: from the eastern costal region to the central and western hinterland, and along China’s urban hierarchy from larger cities to smaller cities. While home economies greatly influenced their initial strategies, foreign hypermarket retailers are

constantly adjusting to better embed in the Chinese market and to more effectively resolve the structural paradox. Tian et al. (2015) find that positive foreign direct investment (FDI) technology spillovers take place through tangible rather than intangible assets, domestically sold rather than exported products, traditional rather than new products, and employment of unskilled rather than skilled workers in joint ventures. In contrast, negative FDI technology spillovers take place through exported products and employment of skilled workers in wholly foreign owned enterprises. The findings suggest that developing countries should encourage multinational corporations (MNCs) to enter their markets in the form of joint ventures rather than wholly foreign owned enterprises. Liao & Zhang (2014) reveal that strict green standards should be introduced as a requirement for Chinese overseas direct investment (ODI), especially ODI by Chinese state-owned enterprises (SOEs). Achieving green growth at home is not just in China's own interests but is also a significant contribution to society as a whole. As the future largest economy in the world, China needs to go beyond traditional notions of the 'national interest' that (as observed in many countries) regard fewer reductions in emissions as a sort of national interest while simultaneously expecting other countries to raise the levels of their emission reductions. Green growth through deep emissions cuts actually represents an enormous opportunity and could ultimately become a source of economic growth. Yuen (2014) shows that anti-trust enforcement has been inseparable from motives and dynamics other than ensuring free competition. It is fueled by a deep-rooted technonationalistic sentiment to link science and technology development to national well-being, to protect national security, and to nurture domestic technology firms into some of the world's best. Anti-trust measures are among a range of regulatory – or even interventionist – measures to pressure foreign firms to cut prices and make them contribute more tangibly to the Chinese economy from China's perspective, such that domestic firms can benefit. Xu & Yeh (2013) find that FDI in Guangdong tends to favor cities closer to Hong Kong, with lower wage rates, better market potential and more preferential policies, and to follow the agglomeration of FDI from the same origin. The diverse home-based characteristics have resulted into the varied pathways of spatial redistribution of FDI. Cheng & Shi (2012) conclude that the enforcement of the New Income Tax Law in 2008 consolidated two separate systems and fundamentally changed China's tax regime. The new law eliminated the differences in the income tax rates between domestic enterprises and foreign invested enterprises, and unified

the tax rate for all enterprises operating in China. The effects on existing foreign investors are substantial, although a five-year transition period has been given. Before the end of the transition period, the incumbents need to reexamine their tax plans to optimize the current preferential tax treatments and change their investment strategies to meet the new challenges after 2012. Lam (2008) report that foreign multinational corporations need to invest in social capital that facilitates the transfer of knowledge of comprehensive corporate responsible practices from the headquarters to their Chinese subsidiaries, and to encourage their Chinese subsidiaries to be more actively engaged with external business partners that support corporate social responsibility. Poon et al. (2005) find that Shanghai has strengthened its power to attract foreign investments and improved the quality of these investments by putting more emphasis on the development of modern manufacturing industries, modern servicing industries and new high-tech industries. The inferior economic development level and lower standards of living in regions greatly restrict the expansion of their market size and, make it difficult for them to attract foreign investors. They are Hainan and Guangxi from the eastern; Sichuan, Guizhou, Yunnan, Gansu and Xinjiang and from the western area; and Inner Mongolia from the central area. However, since these poor regions are characterized by a vast land area, rich mineral and forests resources and a sparse population, their marginal returns to investment are relatively higher than those of the regions in the developed eastern area. Young & Lan (1997) shows that the extent of technology transfer is fairly limited but at the level expected given China's developing country status and technological capacities. Given the size and growth of the market, however, substantial opportunities exist for increased technology transfer with appropriate policy changes. The potential for utilizing FDI as an instrument of technological development in a Chinese context is greater than theory would suggest. Hu (1995) shows that the international transfer of advantages by a firm is a necessary condition for successful international operations. Because of the difference between advantages relative to home competitors and advantages relative to foreign competitors, the source of the advantage transferred abroad need not be something unique to the firm. Rather, it can be a factor or characteristic shared by the industry or nation, or it can also be a non-distinctive asset or skill. Non-transferability, in turn, stems from immobility due to geographical specificity and tacit knowledge. Transfer is neither automatic nor easy and often requires investment in complementary assets. Transferability also affects and is affected

by the choice of the mode of operation and the choice of target country.

Methodology

We attended the seminars “Enterprises Development: A Challenge for Sustainability” organized by the Department of Business Administration and a seminar “Financial Risk Management & Banking Regulation of Basel III”, organized by the Department of Economics and Finance at Hong Kong Shue Yan University in 2015. Author sorted out the seminars’ information to write this paper. In order to verify the creating shared value (CSV) concept we apply four case studies (Intel, Triciclos, National Australia Bank and General) provided by FSG research. We can evaluate that the company’s strategy can be considered as a case of shared valued creation. We also consider the basic conditions developed by Porter & Kramer (2011) as well as determining if one of the three approaches of creating shared value has been applied.

Foreign-invested enterprises and law in China

Because of the open door policy was carried out in 1979, China’s economy had been turned to upside down but in a correct way to develop business. First of all, four special economic zone set up to attract overseas investments. A plenty of special policies were made to attract foreign direct investment (FDI) all over the world. Nowadays, China market is still growing and become a world factory. China government not only focuses on any specific projects but also hope to build up her economic infrastructures all over the nation. According to the statistics of news release of foreign investment from ministry of commerce People’s Republic of China, from January to July 2015, newly approved foreign-invested enterprises amounted to 14,409, up by 8.8% year on year; and the actual use of foreign investment reached USD 76.63 billion, up by 7.9% year on year. In July 2015, newly approved foreign-invested enterprises amounted to 2,495, up by 9.6% year on year; and the actual use of foreign investment reached USD 8.22 billion, up by 5.2% year on year. From January to August in 2015, the top three nations and regions with investment in China (as per the actual input of foreign capital) are as follows: Hong Kong (USD 62.85 billion), Singapore (USD3.98 billion), Taiwan Province (USD 3.14 billion). Chinese governments still try her best to attract FDI from overseas. The forms of investment providing to investors include:

Chinese-foreign joint equity venture

Limited Liability Company formed between foreign companies, enterprises and other economic organizations or individuals, and Chinese companies, enterprises or other economic organizations. The parties to the venture shall jointly invest in the venture, jointly manage the venture, and share the profits, risks and losses of the venture according to the share they hold in the registered capital of the venture.

Chinese-foreign joint contractual venture

Formed by contract between foreign enterprises, other economic organizations or individuals and the Chinese enterprises or other economic organizations. Terms, distribution of profits, share of risks and losses, investment return, and mode of management of the parties to the venture as well as the division of residual property when the cooperation terminates shall be specified in the joint venture contract.

Wholly foreign-owned enterprise

Solely funded by foreign companies, other economic organizations or individuals. Profits of the enterprise belong to the foreign investors.

Foreign invested joint stock limited company

Incorporated entity whose capital is divided into shares of equal value and whose shareholders assume liabilities to the company according to the number of shares purchased and at least 25% of whose registered capital is purchased and held by foreign shareholders. The company assumes liability for the debt of the company with all its properties. It may be set up by means of initiation or fund-raising.

Foreign invested financial institution

Branch funded by foreign financial institutions inside China to conduct financial business and solely foreign funded financial institution or Chinese-foreign joint equity financial institution with Chinese legal person status (incorporated entity) inside China.

Compensation trade

Foreign investors will be responsible for providing equipment and technology and commit to purchase a certain amount of exported products from the Chinese side. The money for importing the equipment and technologies provided can be paid back by stages. Money borrowed to import the equipment and technologies can be paid back in the form of other products in addition to the products produced with the imported equipment and technologies upon agreement from the parties concerned.

Processing and assembling

For processing with supplied materials and according to supplied samples and assembling with supplied components, the foreign parties are responsible for providing technology, equipment, components and raw and accompanying materials and import the processed or assembled products. The Chinese parties will collect processing or assembling fees. When the equipment is sold to the Chinese parties, the money for purchasing the equipment will be paid by the processing fees in stages.

International leasing

A special way to raise funds, to be specific, obtaining the right to use foreign advanced equipment by payment of rent. Rent is paid according to the lease agreement. When the lease term expires the enterprise may purchase the leased equipment. The foreign parties or lessor may also provide technical services, raw materials, fuels, components, and so on.

Build-Operate-Transfer

In a typical Build-Operate-Transfer (BOT) project, a government signs a contract with a project company sponsored by a private sector foreign investor. The project company is responsible for fund raising and building of infrastructure projects. The project company owns, operates and maintains the facilities, recovers the investment and obtains reasonable profits through collecting utilization fees or service fees during the contract period. When the term of the contract expires the ownership of the facilities will be transferred to the government free of charge. BOT is mainly used to develop toll roads, power generation plants, railways, wastewater processing facilities, subways (urban railways) and other infrastructure. Feng et al. (2015) investigate the impact of government guarantees on toll charge, road quality and road capacity by taking perspective of the private investor. The main results are: (1) Minimum traffic guarantee increases toll charge while decreasing road quality. Under a low guarantee level, minimum traffic guarantee has no impact on road capacity. However, it improves road capacity when a high guarantee level is performed. (2) Under minimum revenue guarantee, if the guarantee level is sufficiently high, the optimal toll charge will be sufficiently large, but road quality and road capacity will approach zero. (3) Price compensation guarantee decreases toll charge and increases both road quality and road capacity. This paper further investigates the impact of government guarantees when the contract is auctioned. They find that auction reduces the impact of government guarantees on toll charge while failing to affect the impact of government guarantees on road quality and capacity.

Transfer-Operate-Transfer

The undertaking unit, i.e. the Chinese party, transfers a project that has been finished and is in operation, such as a toll road or power station, to a foreign company to operate. The foreign operator will pay for the transfer in a single up-front payment based on its calculation of the cash flow of the project during the term of the concession. The foreign operator is entitled to collect reasonable service fees, utilization fees and other fees from the users of the facility during the operational period. After the operational period expires, the foreign operator will transfer the project back to the Chinese party. Meng et al. paper (2011) introduces the application of Transfer-Operate-Transfer (TOT) systems to urban water supply projects in China through evolution review and case studies. Four case studies have been carried out in different regions such as Shenyang, Shanghai, Shenzhen, and Lanzhou that show typical examples of TOT projects with both successes and failures. Their study attempts to look at the key to TOT project success from a balanced point of view. This means that, focusing on the local government's strategy, attention is also given to the investor's concern and public welfare. Following this principle, critical success factors (CSFs) for TOT projects are identified from well-developed case studies. The eight CSFs identified include project profitability, asset quality, fair risk allocation, competitive tendering, internal coordination within government, employment of professional advisers, corporate governance, and government supervision.

Purchase of shares

Acts of purchasing shares issued by Chinese companies and listed overseas, as well as stocks issued to overseas investors and listed inside China through stock exchanges in Shenzhen and Shanghai or overseas stock exchanges by foreign investors and individuals, incorporated entities and other organizations in Hong Kong Special Administrative Region, Macao Special Administrative Region and Taiwan province, and by Chinese citizens having permanent overseas residence and other investors.

Transfer to enterprise property right

Act of selling or purchasing the property rights of the state owned enterprises according to laws. Foreign incorporated entities, individuals or other organizations are entitled to the right of purchasing the property rights of the state owned enterprises according to competent regulations. Once the enterprises are purchased, they will be entitled to the preferential policies extended to foreign funded enterprises. Owing to above opportunities, whereto of China's utilization of foreign funds.

Experts with the China State Information Center forecast that utilization of foreign funds in China will be shown in the following four trends in coming several years. The country's capital market will become the main area for the utilization of foreign funds by the country. In addition to the present foreign direct investment and loans, there will be some new forms for the country long and medium term investment from other countries such as purchase, merger, investment fund and securities fund.

Foreign-invested enterprises need to face the law in China. Chinese legal system is codified, but US and UK legal systems are uncodified. Any foreign-invested enterprises must pay attention to this issue otherwise a great trouble is ahead. We see Chinese company law, revised customs law, complaint from enterprise and one administrative law regarding process industry and import/export goods. China's company law was drafted in 1983 and promulgated in 12/1993 with major amendments in 12/1999. In general, the current company law has the following ten major problems that might assist a person or a company to know more data before deciding to operate or not.

Limitation of legal capital

The company law provides that the registered capital of a joint stock company is the total paid-in stock capital registered with the registration organ. Compared with the authorized capital system prevailing in the British and American law systems, the current paid-in capital system lacks the necessary elasticity and intensifies the conflict among subjective qualifications during the setting-up stage, especially when the joint stock company issued stocks or developed abroad. This is the most outstanding problem. On the one hand, the laws of places where stocks are issued and listed require Chinese joint stock companies to obtain the legal subject qualifications and that the company should in its articles of association and business license provide legal and effective regulations and authorization of the stocks to be issued. On the other hand, it is impossible for Chinese registration organ to register the stocks that are yet to be raised and will not allow the stock to be issued to enter into the articles of association and business licenses nor allow the articles of association to enter elastic capital limitation articles. This has cast into doubt the legality of Chinese joint stock companies to make initial public offering (IPO) abroad and put the excessive right share option system, which prevails on the international capital market but is not confirmed by Chinese laws, in an embarrassing position.

The limit of capital for foreign investors is too rigid

The laws provides that the proportion of investment in other limited liability companies, joint stock companies, except in investment companies and holding companies, as provided by the State Council should not exceed 50% of the net assets of the investors. Such rigid restriction is no reasonable at all. It is nothing but an obstacle to the development of companies and to the development of grouping by companies. There are no such cases in other countries and regions. Taiwan, which once had such provision, has already discarded it. Such provision has forced many companies to expand their account value of assets by appreciation of land appraisal, absorbing non-operating assets and bad assets and increasing intangible assets evaluation in order to meet the operation demand.

One-man company

The company law and provisions concerning industry and commerce provide that only state enterprises and wholly foreign owned companies may set up a one-man company and so may their son and grand-son companies. No other companies are allowed to set up such companies. Such provision has obviously restricted the development of enterprise grouping and most companies are not equally treated. It does not only go against the development trend of the company law of various countries but also seriously deviates from the actual conditions of China's legal system of companies.

There is no company personality denial system

At a time when it is widespread to form modern company groups and associated enterprises, the unveiling principle and "deep stone" rules originated in Britain and the US have been extensively accepted. By the system, if shareholders of a company or associated enterprises have done something harmful to the interests of other shareholders or debtors of the company or associated enterprises, the court may, according to the request of the parties concerned, deny the legal status of the company and order the shareholders in default to undertake unlimited responsibilities. As China has not provided for such a system, when foreign-invested enterprises have committed transfer pricing behavior aimed at evading taxes or committed associated trading aimed at harming the interests of small shareholder and even when company groups have committed deceptive bankruptcy aimed at evading debts, the victims are unable to seek effective legal protection.

Conflict between the power and position of the president and general manager

The company law provides that president of a company is the legal representative and the power of execution of the company's

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behavior lies with the general manager, thus putting into conflict the powers and position of the president and general manager. Such conflict, in practice, will entail many disputes. This is especially outstanding with security fund management companies. This includes whether or not the president can directly undertake the company's behavior when the company or the articles of association have no provision for it, whether the general manager may sign foreign contracts according to the provisions of company law or the articles of association when the president has not granted the authorization, or how to define each other's powers in the situation where there is conflict or dispute between the president and general manager. This is closely associated with the power disputes between the president and general manager in practice and the non-provision in the company law and other regulations. Such disputes cannot be settled and will become worse.

The fund-raising establishment system is weakened when the planned fund-raising system imposes much restriction

The company law has provided that the establishment of a joint stock company may adopt the method of promotion and prospectus to set up joint stock companies. As China still implements the planned fund raising system and examination system, the fund raising of a company has to be confined to a prescribed amount and has to undergo examination and approval. This has restricted the role of the rules provided in the company law.

Is it the company or promoter that make the IPO?

There is bound to be conflict with the qualification of the subject and on the other hand, the company has to operate and sign contracts, issue shares and file applications in the name of the company. The mixing of company offering and offering by promoters means the mixing of the company's behavior with the behavior of the promoter, thus resulting in the confusion of the nature of the behavior and in the investment verification and accounting books.

There are contradictions with bearer's shares

The company law provides that the bearer's share has no real meaning as China's stock trading has in fact adopted the method of paperless trading, but the stocks are not bearer's. These two concepts are not compatible.

Failure to provide the quorum at the shareholder's meeting

This is a loophole. With the economic development, it is inevitable for a company's equity to be diversified. In China, there are frequent acquisitions shares of listed companies and the shareholders controlling the shares are not restricted in their

behavior. In such context, the quorum of a shareholder's meeting will become the focus of disputes. In many companies the current shareholder's meeting is controlled by a few people, or more usually by one big shareholder, and small shareholders have to be manipulated by big shareholders. The company law should standardize such behavior.

Lack of a company legal proceeding system

The company law over stresses the administrative responsibilities and criminal responsibilities to the neglect of civil responsibilities. There is the lack of provisions about the right of action. This has seriously affected the operability of a company and raised the cost of implementing the law. Under the current legal system, the courts cannot accept most disputes with companies. In fact, companies are unable to take legal action against shareholders controlling the shares and there are no derivative legal action systems, thus leaving the rights of the parties concerned unprotected.

In China, the most complicated issue is customs regulations. All customs branches in China are controlled by Beijing General Customs Department. At initial, their goal was to avoid customs officers had chance to get corruption but it became a monster and caused a lot of troubles to investors. The previous Customs Law took effect on 1 July, 1987 and it was revised which had been enforced in 1 January, 2001. The reasons are: the smuggling situation is very grim, smuggling was not given severe enough penalties within the frame of the power and legal responsibility of the customs under the previous Customs Law; the procedure of law enforcement was neither perfect nor transparent enough and could not fully cope with the demands of China's entry into world trade organization (WTO); with the rising level of customs management by information technology and the deep-going reform of custom passage operation, a series of new problems needed to be clarified in legislation; many new problems cropped up in the fast developing processing trade and bonded business which required standardization in legislation; as the contradictions of strict supervision and control and fast customs passage operation became increasingly outstanding, it was essential to practice effective classified management and guarantee systems; tariff collection measures were not strong enough and stronger measures were compelled by the law; restrictions on the power of customs personnel in law enforcement were not effective enough and it was necessary to take measures to improve and enhance supervision and restrictions etc.

The revised law has added supplementary rules to, and improved and solved the following problems: Basically it solves the legislation problems affecting customs in hitting smuggling. For example, the installation of anti-smuggling police and establishment of their legal status; the institution of a new anti-smuggling system and clarifying the division of responsibilities; the customs are vested with greater power to fight smuggling; more severe penalties are meted out against smuggling and other illegal acts. The establishment of a new customs supervision and control system following the reform to cope with demands of development of its work and the reform of custom passage operation. For example, making definite the legal effect of custom declaration in the form of electronic data practiced under the reform of the custom passage operation, establishment of the system of custom administrative ruling, customs affairs guarantee system and Customs Law enforcement of trade control. Improve the imperfect supervision and control system of the previous Customs Law. For example, supplementary rules are added to customs supervision and control system in the previous law, including the law enforcement procedure, management of processing trade, tariff collection and management, and legal responsibility of tariff delivery. They are further improved, readjusted and more detailed. The revised law creates conditions in legislation relating to China's accession to the WTO, in following its rules and other international customs and conventions and for China's Customs Law to dovetail with international convention.

In China, many foreign-invested enterprises invest in processing business especially in the Canton province and Shanghai area. How a foreign-invested enterprise should obtain proof for processing business in China? In the following message, we know the detailed procedures in processing business. On the other hand, you can see the troublesome of China's administrative law that make a barrier to reject FDI at certain extent. According to the official, to apply to engage in processing business, initially, the following documents and materials should be provided by the foreign-invested enterprise.

- i. A written application report plus an application form for engaging in processing trade with corporate seal produced by the related foreign-invested enterprise.
- ii. For the initial application, an approval certificate and the business license of the applying foreign-invested enterprise.
- iii. For the initial application, the contract and articles of association of the applying foreign-invested enterprise.
- iv. For initial application, capital assessment report of the applying

foreign-invested enterprise.

- v. For the initial application, business opening certificate of the applying foreign-invested enterprise.
- vi. Certificate of annual check of the foreign-invested enterprise (valid for one year).
- vii. Certificate of production capacity of the applying foreign-invested enterprise issued by the foreign trade and economic cooperation department of the county or above government of the place where the foreign-invested enterprise registered valid for one year.
- viii. Import and export contract signed by the foreign-invested enterprise with the overseas business (original).
- ix. Other certifying documents and materials deemed by the examination and approval department necessary.

The related examination and approval department will issued an approval certificate of processing trade, stamp the special seal of examination and approval of processing trade, fill in the detailed list for application for imported materials for reference and detailed list of exported finished products and the consumption of corresponding imported materials for reference, and stamp the special seal of examination and approval of processing trade after it finds the applicant is qualified. In addition, the related foreign-invested enterprise has also to pay attention to the following matters:

- i. Where the imported materials processed belong to the category of waste and old metals or articles, an approval document for the imported materials issued by the State Environment Protection Bureau should be provided according to the related rules.
- ii. Where the imported materials processed or the finished products for export belong to the category of chemicals easy to be made into poison and chemicals capable of being used for both military and civil purposes, and approval documents for the import of materials or export of finished products issued by the related department should be provided in accordance with the related rules.
- iii. Where the processed products are of a restricted type or the enterprises belong to category C, the examination and approval department shall specify such characters as “Shizhuan” in the column of remarks on the approval certificate of processing trade business.
- iv. Enterprises under category D are not allowed to conduct processing trade. No permit shall be granted to enterprises conducting processing trade where the imported materials

- belong to the prohibited type.
- v. The period allowed for the export of finished products specified in the approval certificate of processing trade will be determined, in principle, in line with the validity of the enterprise's export contract but that should not exceed one year normally. The period allowed for the export of such finished products as sugar, cotton, vegetable oils, wool and natural rubber is normally within 6 months.
 - vi. In conducting processing trade where the imported raw materials are those whose import under processing trade needs to be balanced, such as cotton, sugar, vegetable oils, wool, natural rubber, crude oil, and refined oils, the processing trade examination and approval department at the place where the enterprise conducting the processing trade should be responsible for the examination and approval. For common projects, the examination and approval right will be delegated to city-level departments in charge of foreign trade and economic co-operation.
 - vii. If it is necessary to prolong the period allowed for the export of finished products due to objective reasons, the enterprise should report to the original examination and approval department for approval within the specified period allowed for the export of finished products. The period should not be extended more than two times and be less than 6 months for each examination.
 - viii. Where it is necessary to change some of the items due to objective reasons, an application should be submitted to the original examination and approval organ within the specified period on the approval certificate of processing trade for approval.

The development and sustainability of foreign-invested enterprises in China

Banks would react to banking regulation of Basel III in China. The traditional loans are very costly in capital. The short-term loans increased liquidity cost because of uncertain cash inflow from borrowers. Financial trading increased liquidity cost because it involves cash inflows and outflows. Deposit taking increased liquidity cost in taking whole funds. The possible strategies for banks will transfer all costly business to non-bank institutions (money lenders, fund houses, securities firms, etc.). Banks select clients involving less capital and liquidity costs (such as retail clients). Banks focus more fee-based activities, develop innovative products by-pass capital and liquidity requirements. Banks also

restrict lending and treat lending as a marketing tool. Foreign-invested enterprises will be difficult to get the traditional loans. In order to face the change of financing in China and the world, foreign-invested enterprises have comprehensively adjusted their financing strategies in China and the world towards peer to peer (P2P) perform. Basel III (2013 - 2018) is a global, voluntary regulatory framework on bank capital adequacy, stress testing and market liquidity risk. Banks increased capital requirements on risky assets and exposures to absorb possible-unexpected loss. It included more equity required (at least 4.5%); capital conservation buffer (2.5%); countercyclical buffer (at most 2.5%); additional capital for globally systemically important banks (at most 2.5%); leverage ratio requirement (at least 3% of total asset). Basel III also tightened liquidity requirements to assure stable funding for bank. It included penalizing wholesale funds (liquidity coverage ratio is greater than or equal to 100%); mitigating maturity mismatch (net stable funding ratio is greater than or equal to 100%). China Banking Regulatory Commission revealed that since January 1, 2013, China implemented the Capital Rules for Commercial Banks (Provisional), therefore the original Rules on Capital Adequacy Ratio (CAR) was abolished. The new Capital Rules adopted the tougher measurement methods including newly added capital requirement for operational risks, stricter definition of eligible capital instruments, readjustment of risk weightings, and removal of calculation thresholds for market risks, etc. Banks need to provide capital surcharge on globally systemically important banks (GSIBs) in November 2014 (see Table 1). Agricultural Bank of China, Bank of China, and Industrial & Commercial Bank of China (ICBC) need to provide 1% capital surcharge on globally systemically important banks.

Table 1. *Capital surcharge on GSIBs (Globally systemically important banks) in Nov 2014*

Capital surcharge	Name of bank	Name of bank
4 (2.5%)	HSBC	
	JP Morgan Chase	
3 (2%)	Barclays	Citigroup
	BNP Paribas	Deutsche Bank
2 (1.5%)	Bank of America	Mitsubishi UFJ FG
	Credit Suisse	Morgan Stanley
1 (1%)	Goldman Sachs	Royal Bank of Scotland
	Agricultural bank of China	Nordea
	Bank of china	Santander
	Bank of New York Mellon	Societe Generale
	BBVA	Standard Chartered
	Group BPCE	State Street
	Group Credit Agricole	Sumitomo Mitsui FG
	ICBC	UBS
	ING bank	Unicredit Group
	Mizuho FG	

Source: “Financial Risk Management & Banking Regulation of Basel III”, by Dr. Michael C S Wong, Seminar at Hong Kong Shue Yan University, 14 October 2015, p.8.

A colloquial term for peer to peer (P2P) lending in China is grey market, not to be confused with grey markets for goods or an underground economy. Off line peer-to-peer lending between family and friends is a popular practice and has been around in the country for centuries. In recent years a very large number of micro loan companies have emerged to serve the 40 million small and medium-sized enterprises (SMEs), many of which receive inadequate financing from state-owned banks, creating an entire industry that runs alongside big banks. As the Internet and e-commerce took off in the country in the 2000s, many P2P lenders sprung into existence with various target customers and business models. The most prominent among them are Credit Ease (founded in 2006 and headquartered in Beijing, Credit Ease is a national leader in wealth management, credit management, microfinance investment, and microcredit loan origination and servicing.), Lufax (full name Shanghai Lujiazui International Financial Asset Exchange Co., Ltd., is an online Internet finance marketplace in China headquartered in Lujiazui, Shanghai. Founded in 2011, it is an associate of China Ping An Group), Tuandai, China Rapid Finance (operates on the Orchard platform for marketplace lenders. Its target group of borrowers in the Tencent deal was emerging middle-class mobile activated. This refers to young people primarily under 30 who have mobile access, but no credit access.) and Dian Rong. CreditEase runs a huge offline network with branches in major Chinese cities, and the latter has links to T.-Y. Hon, (2018). *Monetarism and Behavioral Finance ...*

Lending Club in the U.S. and concentrates on the online market. The first peer to peer lending (P2PL) in Hong Kong is WeLab Holdings, which has backing from American venture capital firm Sequoia Capital (Sequoia Capital was founded in 1972 in Silicon Valley and is a leading global venture capital firm. Sequoia Capital focuses on early-stage investments and has invested in Apple, Cisco, Oracle, Yahoo, Google and many other successful companies.) and Li Ka-Shing's TOM Group. The development of peer to peer lending will be targeted for the foreign-invested enterprises' new financing channel.

In order to fit the economic condition in China, foreign-invested enterprises have comprehensively adjusted their development strategies in China towards diversified investment and all-round competition. Main contents include to restructure their investment in manufacturing industry and make China "a factory catering to the world's demand". China's market became more difficult than before and many products have become oversupplied. However, there is still space for investment in some raw materials and spares and fittings projects. In fact, some foreign-invested enterprises are not satisfied with the performance of their investment projects in China. They are adjusting and rectifying the existing projects and would increase purchases rather than invest in already oversupplied projects. Some foreign-invested enterprises have even shifted their production to China. More than that, foreign-invested enterprises are also busy constructing spares and fittings production and purchasing networks in China. Foreign-invested enterprises find that the Chinese market bears many unique characteristics, and Chinese consumers have unique consumption demands. Without the aid of research and development (R&D) centers, manufacturing sector projects would lack competitiveness. Also, foreign-invested enterprises have demanded entry into China's knowledge-intensive service market. With the opening of the service sector, enterprises are very likely to shift their operation and management functions to China, and the country is very likely to become a management and operations center of enterprises in the North Asian area, or even in the Asian and Pacific region. Most projects foreign investors launch in China are either sole foreign capital firms or joint ventures with Chinese partners. This kind of investment must go through land use, construction of factory building and installation of equipment procedures, which take a long time to complete. But, on the other hand, the shelf life of products in information age is very short and the speed of replacement is very fast. Then the problem of investment risks occur and some foreign investors resort to the method of purchasing and annexing, now prevailing

abroad. Foreign-invested enterprises looked for state-owned enterprises as their co-operation partners. However, many foreign-invested enterprises have shown great interest in privately owned enterprises. It is because they find the private enterprises are subject to standard management and have advanced technology and equipment, and the most satisfactory fact is that they follow the market-oriented operation mechanism, which is the step with that of the multinationals.

Brand name is the key factor for enterprise survival. It represents the commercial integrity. Foreign-invested enterprises can use the concept of creating shared value (CSV) as reference to sustain their business in China. Hart & Milstein (2003) revealed that firms are challenged to minimize waste from current operations (pollution prevention), while simultaneously reorienting their competency portfolios toward more sustainable technologies and skill sets (clean technology). Firms are also challenged to engage in extensive interaction and dialogue with external stakeholders, regarding both current offerings (product stewardship) as well as how they might develop economically sound solutions to social and environmental problems for the future (sustainability vision). Sustainable development is defined in line with the Brundtland Commission as, “development which meets the needs of current generations without compromising the ability of future generations to meet their own needs.”⁵ A concept of creating shared value (CSV) developed by Porter & Kramer (2011). They note “the concept of shared value blurs the line between for-profit and non-profit organization. New kinds of hybrid enterprises are rapidly appearing”. They argue for CSV which “involves creating economic value in a way that also creates value for society by addressing its needs and challenges”. Foreign-invested enterprises can use the concept of creating shared value to sustain their business in China. Creating shared value is the practice of creating economic value in a way that also creates value for society by addressing its needs and challenges. There are three ways to create shared value: by reconceiving products and markets, by redefining productivity in the value chain, and by enabling local cluster development. Shared value is not corporate social responsibility or philanthropy-creating shared value is at the core of the business strategy. Spitzack & Chapman (2012) explain that CSV strategies is an emerging field in the intersection of development studies, strategy, stakeholder theory, innovation and

⁵See Report of the World Commission on Environment and Development: Our Common Future Available at : [\[Retrieved from\]](#).

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measurable triple-bottom-line (people, planet, profit) results. As with any emerging field the current challenge lies in generating empirical observations to confirm, contradict and refine the new theory. FSG research⁶ let us know many success cases in the world as follows;

Case 1:

Intel invests more than \$100 million a year in education, and they have trained 10 million teachers around the world. For example, they are working with the government of Portugal to transform the country's primary education system with 1:1 technology integration. The project combines age-appropriate technology and content with the training, support, and Internet connectivity students need to develop 21st century skills. Since 2008, they helped deliver broadband Internet access to all schools in the country, and equip all students in grades 1 to 4 (more than 750,000 students) with a locally produced computer that uses the Intel-powered classmate PC design. Since launching this project, they have seen students PISA (Programme for International Student Assessment) scores rise by 20 percent. And this created \$2.5 billion of additional revenue for Portugal. This way to create shared value by enabling local cluster development.

Case 2:

Founded in 2009, Triciclos is a private company and certified B Corporation that is working to reduce waste in Chile through recycling. It recycles all recyclable materials, selling some for a profit and seeking opportunities to establish new markets for materials that cannot currently be recycled profitably. By 2013, Triciclos had established 47 recycling collection centers and had recycled over 2 million kilograms of material, equivalent to over 5 million kilowatts of electricity, over 20,000 trees, nearly 750,000 liters of petroleum, over 3.5 million liters of water, and nearly 9 tons of carbon dioxide. The company is also considering how to measure changes in consumer behavior as a result of its education efforts. In 2012, Triciclos accumulated US\$ 1.4 million in revenue, generating a profit of 8% of sales and a 30% return on capital. This way to create shared value by reconceiving products and markets.

Case 3:

National Australia Bank (NAB), one of the four largest banks in Australia, responded to the financial crisis in exactly this way. The bank created NAB Care, a program to provide financial hardship advisory and loan repayment options for struggling customers.

⁶ FSG research is available at:[[Retrieved from](#)].

NAB's head of collections engaged a mental health nonprofit organization called Life Line to train all NAB Care employees to recognize and manage financial hardship among customers. The bank also changed its employee performance evaluations to incentivize and reward staff for proactively managing its customers' financial health. As of 2013, NAB Care had helped over 100,000 vulnerable customers, resulting in a 20 percent reduction in loan defaults. NAB Care has been so successful that 40 percent of the bank's clients voluntarily seek advice before a collections event, saving NAB \$7.2 million in costs. This way to create shared value by redefining productivity in the value chain.

Case 4:

Executives at General Electric began looking across its portfolio of industrial and consumer businesses, eyeing ways to apply new technology to reduce energy consumption. They were prompted by corporate customers voicing concerns about rising electrical and fuel costs, and by governments pushing for curbs on carbon emissions. The result was G.E.'s "ecomagination" program, a business plan as well as a marketing campaign. In recent years, the company has invested heavily in technology to lower its products' energy consumption, and the use of water and other resources in manufacturing. To date, more than 100 G.E. products have qualified, from jet engines to water filtration equipment to light bulbs. In 2010, such products generated sales of \$18 billion, up from \$10 billion in 2005, when the program began (Lohr, 2011). This way to create shared value by reconceiving products and markets.

Conclusion

The objective of this study was to illustrate the development and sustainability for foreign-invested enterprises in China. Tertiary industry become the focus of foreign investment. It opened common trades such as tourism, internal trade and living service and opened such key sectors as finance, insurance and telecommunications. Foreign-invested enterprises feel that the number of processing zones is small and the preferential policies are too limited, and the customs have too much supervision over the trading within the zones. The newly introduced policy cannot totally address the problems troubling the processing trade as seen from the current operational model and production procedures of foreign-invested enterprises. Owing to the rapid development of processing trade, together with the other special operations of "large volume import and export", "bonded plant transfer", "wide

spread” problems such as smuggling, tax evasion and tax cheating have occurred.

Banks would react to banking regulation of Basel III. The traditional loans are very costly in capital. The development of peer to peer (P2P) lending perform will be targeted for the foreign-invested enterprises’ new financing channel in China and the world. However, financial risk is transferred from banks to other less-regulated institutions (i.e., insurance companies, securities firms, private equity firms, hedge funds, corporations, peer to peer lending perform). This risk might not be diversified or properly managed. Brand name is the key factor for enterprise survival. It represents the commercial integrity. Foreign-invested enterprises can use the concept of creating shared value (CSV) as reference to sustain their business in China. We apply four case studies (Intel, Triciclos, National Australia Bank and General) provided by FSG research to explain this concept. The limitation is that the case study analysis is based on documentary materials; for further investigation it might be useful to develop in-depth interviews with key figures involved in the implementation of business models. Further research should strive to extend the analysis to all the business models that are being developed with the aim of creating shared value.

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9. Sourcing in China

Introduction

“One Belt, One Road” created to open new routes for commercial exchange between China and Europe. That will help China redefine the rules of international direct investment in its favor (TIME, 2015). If you go to supermarkets, you can find that many articles, especially large and small home electrical appliances, garments, small machine tools, foods, telecom items and more, are made in China but the manufacturers’ name are western companies such as General Electric, Phillips and many overseas and China telecommunication industry giants such as Alcatel, Siemens, Sony, Samsung, Zhong Xing, Ju Long, Hwa Wai, Da Tang are facing a severe battle of cutting down the cost in their network establishment in order to win market share. Network establishment refers to the telecommunication parts and finished goods such as cables, fiber and radio base station (RBS). In order to win, they have applied modern logistics and management theories: for instance, Just In Time (JIT), Vendor Management Inventory (VMI), localization, outsourcing, decentralization and so on. Products localization – parts, semi-finished goods or finished goods – is a main step to move their (foreign-invested enterprises) targeted supplying base to China. Many multinational companies source from China for parts, semi-finished goods and finished goods. The following are their general plans:

i. To close overseas (e.g. Europe, U.S.) factories but to re-open in China – cost savings.

- ii. To keep some last manufacturing steps to make sure global quality standard – brand management.
- iii. To sell certain percentage of their finished goods in China – and the rest will be shipped to their overseas targeted markets – earn profit globally.

They have changed their strategic plan to build their plants in China to make what they need to fit overseas and local markets. The objective of this study is to examine a Europe Company in the telecommunication industry that had set up a localization project headed by a global sourcing director. Dean (2007) predicted that the earth will have only two manufacturing bases in future – India and China. The two countries have many similar strengths: for example, huge populations, low labor costs and huge land supplies.

The paper is organized as follows. Section 2 reviews the literatures. Section 3 examines localization process in China. Section 4 describes the reactions from foreign-invested enterprises. Section 5 provide the conclusion.

Literature review

Cantwell & Zhang (2013) show that foreign-owned multinational corporations' recent propensity for open network structures has enabled subsidiaries in China to develop technological capabilities by searching diversified inter-organizational knowledge sources beyond the geographically local context to compensate for internal limitations and deficiencies of their host environment. Xu (2011) found that China's trade and foreign direct investment (FDI) policies lead to different forms of internationalization: ordinary exports, processing exports, majority FDI, and minority FDI. Both exporting and FDI stimulate process innovation; ordinary exports, processing exports, and FDI have strong, weak, and no effects on stimulating product innovation, respectively. Exporting firms source technologies both internally through R&D and externally from foreign and domestic sources. FDI firms have a lower tendency of internal of technology development and domestic technology sourcing, but much higher tendency of foreign technology sourcing than exporting firms. Towers & Song (2010) revealed that there has been an increasing trend of retailers sourcing their garments from China. This growing trend has been further influenced by the removal of national and regional tariff and trade quota restrictions, such as the multi fiber agreements in 2005 that have opened up the global textile and apparel market. The challenges in the near future can be explored based on some reasonable assumptions: (1) challenges with high

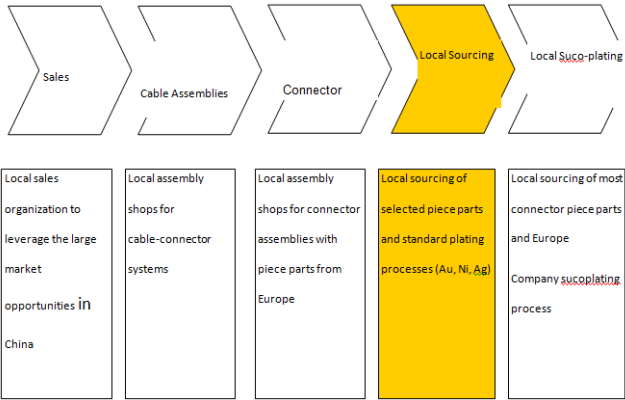
grades (highly challenging) are disadvantages for sourcing from China, some of which may still exist in the near future, although others may develop and improve; (2) challenges with low grades (low challenging) are advantages for sourcing from China. Fang *et al.* (2010) found that sourcing in China is becoming both cost- and strategy-driven. Companies purely chasing the cheapest production would most probably consider leaving China, whereas companies with a long-term strategic intent and a high level of business ethic and corporate social responsibility practices will retain all or most of their sourcing activities on the Chinese soil despite the rising costs. Sartor (2006) attempt to underline the country-specific factors linked to the creation of an International Purchasing Office (IPO) in China. They have seen that the IPO can carry out numerous activities: quality control, transfer of know-how and technology, the search for new supplier and negotiations with them, managerial/ organization/ administrative tasks, the management of the different transport modalities, and the management of contacts with logistics carriers. Wilkinson *et al.* (2005) found that human resource (HR) barrier to partnership sourcing is corruption. While many firms were aware that under table deals were going on, exposing and proving their existence in order to be take disciplinary action was commonly reported as extremely difficult.

Localization process in China

In 1979, the army strongman Mr. Deng Xiao Ping announced that China had to open to the World after getting the absolute power and he also decided to set four Economic Special Zones (ESZ) along the southern seacoast mainly in Canton province. His idea was to utilize these four ESZ as the windows to absorb foreign investments and to let partial populations become rich to improve their living environment. In 1986, the State Council, the highest governing body of China, issued the Regulations on Encouraging Foreign Investment (namely the “Twenty Provisions”), to grant preferential policy to foreign investors investing in advanced technological and export-oriented industrial projects. Due to these regulations, foreign investment input their money in the secondary industry started to grow to a large proportion of the total. In 1992, China set to open financial, insurance and commercial sectors to foreign investors on a trial basis. In the southeastern and coastal regions, foreign trade is a very important sector in providing employment opportunities. The manufacturing industry is the priority for foreign direct investment (FDI) in China. Furthermore, foreign investment in capital and technology intensive enterprises is also on the rise. For example, Shanghai GM, Chongqing BP

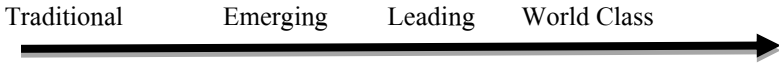
Chemicals and Ericsson group had contributed to the upgrading of the technology and structures of China’s related industries. In October 2001, Ericsson opened a branch factory in Chongqing (see Appendix) in Sichuan province. A Europe Company was the global first tier supplier of Ericsson, their China person-in-charge announced to increase their local source amount in China up to RMB 10.00 billion per annum they had set up a localization project headed by a global sourcing director. The Europe Company is a leading global supplier of components and systems for electrical and optical connectivity in communications, industrial and transportation markets. The Europe Company opened a contractual harness shop for cable assembly in Shenzhen and a whole owned foreign-invested enterprise in Shanghai to serve their buyers. Besides, they decided to build a plating line in Shanghai as well due to some formulas cannot disclose to third party. They should find some spare parts suppliers in China to make goods locally in order to reduce inventory level and to make cost down to offset the price reduction pressure from the giants in telecommunication market. The following diagram is their localization project.

As part of the market entry strategy localization would lead to a local supply base for turned parts in China.



First and foremost, there should have push and pull reason which mainly due to business depression. Sales and orders reflected adverse business conditions. Europe Company can see that sales were very weak in Americas and are growing in Asia. They need a clear target to go. Corporate purchasing focuses on five strategic goals: 1. achieve cost savings; 2. reduce stocks of purchased materials and goods; 3. drive localization for connector piece parts in China; 4. roll-out e-procurement application; 5.

enhance group-wide procurement network. The management of seven key dimensions drive successfully the transformation to strategic procurement.



Assessment of leadership practices in procurement	Management of seven key dimension of strategic procurement			
	1. Strategy	2. Organization	4. Supply base management	5. Day-to-day purchasing
	3. Strategic sourcing process		6. Performance management	7. Information management

Afterward, the Europe Company targeted vendors, initial visiting, analysis, schedule and so on. Europe Company found a Taiwanese implant that has state of the art Computerized Numerical Control (CNC) and Came machines for body parts. Europe Company think that standard plating can be subcontracted in China. But sourcing of parts at a large scope would require a decision upon an own sucoplating operation.

- i. Plating operations for Silver (Ag), Nichel (Ni) and Gold (Au) seem to be available in China.
- ii. Piece parts sourced in China might be plated locally.
- iii. Many piece parts would require Europe Company sucoplating.
- iv. Sucoplating is a clear core competence of Europe Company.
- v. Subcontracting of sucoplating in China would be no strategic option.
- vi. Europe Company would have to decide upon an own sucoplating operation in China.
- vii. Otherwise localization would lead to significant logistic costs.

Localization of piece parts has to support local content as well as local pricing requirements.

- i. The project team agreed to set the target sourcing prices for piece parts at a level of about 60% to 70% of the European prices.
- ii. The price level would be established through request of quotations with a limited number of pre-qualified

- suppliers.
- iii. Main cost drivers of a relatively capital intensive piece part production may not necessarily benefit China.
- iv. Raw materials may be locally sourced but at global commodity price level.
- v. Europe Company's high quality standards require state of the art Computerized Numerical Control (CNC) machines with global prices.
- vi. Semi-automated machines may take advantage of low labor costs.
- vii. Suppliers would have to invest in additional state of the art equipment at international prices.
- viii. Costs for labor and shop floor space are very low.
- ix. Utility costs are still high.

The localization would cover the following phases and would take two to three years. Europe Company need to identify and select potential supplier firstly; second, Europe Company visits pre-selected supplier and assess technology; third, Europe Company place sample order and approve quality of piece parts; fourth, Europe Company establish commercial supplier relationship; fifth, Europe Company kick off series production; finally, Europe Company carry out second sourcing wave. Like anything else in life, the first phrase is the hardest. Europe Company choose just one or two components for sourcing. These parts should be carefully selected according to the following criteria:

- i. Pick a part where a price reduction would have major impact.
- ii. Pick a part that is mature and has been in production for some time.
- iii. Pick a part that is now being successfully produced by a domestic suppliers.

Europe Company need to submit the drawings and estimated annual usage and quality concerns to the Chinese factory. Also, Europe Company need to submit multiple samples, if possible, so that each of the Chinese factories under consideration can work with a sample.

Reactions from foreign-invested enterprises

China has become the procurement base for many multinational giants. All of them also set up their factories to make what they want. The main benefit is to low their cost to increase their market penetration. Furthermore, we discuss why foreign-invested enterprises want to buy from overseas – low cost, market

competition, and speed are the main factors to decide a company can survive. In order to fit the new economic conditions in China, multinationals have comprehensively adjusted their development strategies in China towards diversified investment and all-round competition. Main contents include to restructure their investment in manufacturing industry and make China “a factory catering to the world’s demand”. China’s market became more difficult than before and many products have become oversupplied. However, there is still space for investment in some raw materials and spares and fittings projects. In fact, some multinationals are not satisfied with the performance of their investment projects in China. They are adjusting and rectifying the existing projects, have slowed the investment in ordinary manufacturing project, and would increase purchases rather than invest in already oversupplied projects. Some multinationals have even shifted their production to China. Toshiba Company of Japan had begun to produce digital and wide-screen color TV sets in China through the joint venture of Dalian Toshiba Television Co., Ltd. More than that, multinationals are also busy constructing spares and fittings production and purchasing networks in China. As globalization of the world’s economy accelerates, together with China’s World Trade Organization entry, many multinationals have taken China as an important production, processing and source base. To open research and development centers in China and make China a regional R&D center. A lot of multinationals find that the Chinese market bears many unique characteristics, and Chinese consumers have unique consumption demands. Without the aid of R&D centers, manufacturing sector projects would lack competitiveness. To energetically invest in the knowledge-intensive service sector and make China their operations and management center. Multinationals have demanded entry into China’s knowledge-intensive service market. With the opening of the service sector, multinationals are very likely to shift their operation and management functions to China, and the country is very likely to become a management and operations center of multinationals in the North Asian area, or even in the Asian and Pacific region. To adjust the way of investment and start purchasing and annexing local Chinese enterprises. Most projects foreign investors launch in China were either sole foreign capital firms or joint ventures with Chinese partners. This kind of investment must go through land use, construction of factory building and installation of equipment procedures, which take a long time to complete. But, on the other hand, the shelf life of products in information age is very short and the speed of replacement is very fast. Then the

problem of investment risks occur and some foreign investors resort to the method of purchasing and annexing, now prevailing abroad. Many foreign-invested enterprises have shown great interest in privately owned enterprises. It is because they find the private enterprises are subject to standard management and have advanced technology and equipment, and the most satisfactory fact is that they follow the market-oriented operation mechanism, which is the step with that of the multinationals. To increase the investment in high-tech industries. Multinationals are paying increasing attention to the development of high and new technology and have made them a main means to sharpen their competitive edge. All signs indicate that multinationals have begun their third round of investment in China as well as a new round of economic co-operation. The country's new round of economic growth will present a platform for multinationals to vie with each other. To participate in China's new round of economic growth is "in fact" to join in the competition of multinationals in China. Localization of human resources is the most fundamental needs currently. A former chairman in Alcatel China Ltd. used to say: "once a Chinese employee had been found to be competent in doing the same job would be told to leave" and he went back to France later. Every foreign employee in Alcatel in China has a task – to train Chinese employee who seem capable of replacing him/her. Motorola had committed to increase its Chinese employee to 10,000, raise the proportion of local managers to 80%, and provide 27,000 training programs for local employees every year in which 170 courses oriented at localization would be offered. In a word, localization of human resources including appointment of Chinese chief executive officers (CEO) has become a secret weapon for multinationals that want to succeed in the China market.

Conclusion

Sourcing in China is worth but how to maintain good relation with suppliers and different governmental departments is an "arts". How do we make the first step in China? We need to have detailed planning, cautious progress, and retreat all investments immediately if something cannot control. The factor of making profit by taking advantage of the foreign investment utilization system, market and preferential policies will gradually fade away. Before 1998, there were many benefits for Chinese enterprises to use foreign investment, such as change of operating mechanisms, greater autonomy in income distribution and pricing, raising capital, and making profit by taking advantage of existing

traditional systems and administrative consumption and investment. In particular, the differential in preferential policies was able to generate huge profit margins. These factors would gradually fade away and some have already disappeared. The foreign investment in the manufacturing sector may decrease. Market competition and technological upgrading in China have reduced the possibilities for making money by taking advantage of the system difference and market space. As a result, newly arrived foreign investors find it difficult to capture a market share and make profits. In the manufacture sector, the local industries are already in severe competition and there is no room for foreign investors to invest massively in these industries. Furthermore, the manufacturing industry has gradually become aware of seeking development potential from the capital markets at home and abroad. The foreign investment in the form of intellectual property is limited and domestic enterprises prefer to raise capital on the capital market. Whether or not to enter the domestic and international capital market for financing has already become a vital factor to affect the development of enterprises. Chinese enterprises do not need foreign direct investment, equipment investment or even import of technology. The service industry is the main area for foreign investment, but the scale is also limited. Accordingly, profitability will drop quickly and thus the investors will be cautious before going ahead. Small and medium size foreign investments will face strategic adjustment. Foreign-invested enterprises set factory in China hope to save costs, give good service to customers, focus on China market, and follow their main customer to build factory to provide just in time (JIT) service. For instance, a Europe Company (a leading global supplier of components and systems for electrical and optical connectivity in communications, industrial and transportation markets)set their factory in Shanghai due to Ericsson compelled them to make it and Europe Company would lose business if they denied following.

Foreign-invested enterprises got their expectation to certain extent but not 100%. It is because they faced a plenty of issues in processing their investment in China at the initial especially to deal with governmental officers. Moreover, they had been asked for some unexpected requests from somebody which costed a lot of times and money. Foreign-invested enterprises think that the cost was reduced and profit increased but not up to their forecast. Foreign-invested enterprises spent a lot of time to train China workers but the outcome was not so outstanding. A lot of local regulations, a plenty of requests from local government after they set up factory such as donation to improve green belt in that area.

They would give sometimes but not every time. They know the local regulations are illegal if compare to central government law but they will not question in order to avoid any problems in future. Everybody knows it is a big problem because customs regulations are huge, complicated and, they do not know who have authority to give approval.

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10. An Overview Online Securities Trading Service in Hong Kong

Introduction

The number of do-it-yourself online investors has grown at a remarkable rate since the first electronic brokerage opened its virtual doors in 1995. Today, there are over 50 online brokerages where you can open an account in US. The US market is highly competitive. The online securities trading is dominated by four brokersⁱ. To maintain high growth, large on-line brokers like TD Ameritrade, Options House, E*Trade and Scot trade are seeking to export online trading expertise and branding prowess gleaned at US to foreign lands. In 1999, the Hong Kong stock market was very fragmented, with more than 600 brokers conducting about 100,000 trades a day. Stock Exchange of Hong Kong Limited (SEHKⁱⁱ) surveysⁱⁱⁱ indicate that the principal business for these brokers were the provision of agency service to their customers and thus commission earned from the equity brokerage was their major source of income. The online trading business was in infancy in Hong Kong in 1999. A dimension evolved when the SEHK introduced the third generation of the Automatic Order Matching & Execution System (AMS/3) by the end of 2000. This would provide a straight through trading platform that allowed investors to place orders anywhere and anytime through channels like the Mobile and Internet. Trade on the main board and growth enterprise market were effected through the Automatic Order Matching and Execution System (AMS) which displayed real price information and automatically matches buy or sell orders on a

price/time basis. The present system, AMS/3.8, which was rolled out on 5 December 2011. AMS/3.8 system upgrade aims to achieve an initial capacity of 30,000 orders per second (scalable to 150,000 orders per second if necessary), as well as an average order processing latency of 9 milliseconds, to deliver significant advancement in the capacity and performance of the securities market infrastructure. The objective of this study is to examine the online securities trading service in Hong Kong.

This paper is organized as follows. Section 2 reviews the related literature, followed by Section 3 examines online securities trading in Hong Kong and the last section contains the conclusion.

Literature review

Feng *et al.*, (2014) found that when a securities broker's online trading system has appropriate Web site quality, users' perceived usefulness increases. When Web site quality meets the users' needs, users are more likely to feel at ease while operating the system. When users attain perceptions of usefulness about a system, they will have positive attitudes towards using it. Users will be more likely to accept an online trading system if they feel the system is easy to operate. If the users have positive attitudes towards using the system, they will be more inclined to use the system. The paradigm shift in the securities market brought by technological advancements seems to be well-received by investors. It has been estimated that around 40 million people in the United States utilize computers in trading stocks and other financial instruments because of their efficiency. Another country that illustrates the warm investor reception for the use of the Internet for stock trading is Korea (Mandocdoc, 2013). Rossignoli *et al.* (2013) argue that the Italian market has experienced the explosion of online trading, and bank branches are no longer unique or preferential channels that customers use to perform transactions. They thus can identify which business models are emerging and consolidating, the role of technology (e.g. Web 2.0), and a typology of in- and outsourcing models that suit the emerging needs of banks. Srivastava (2011) find that there are several leading companies involved in online stock trading in India. ICICI Direct, Sharekhan, An and Rathi, Geojit securities, Indiabulls, Religare, Kotak Securities, Motilal Oswal Securities, Reliance money, India Infoline.com Securities limited, and IDBI Paisabuilder are the major players in online Indian stock trading. Ministry of Communications and Information Technology, is of the opinion that the utility and relevance of digital commerce can be well understood by the fact that out of approximately 60 million internet users in India, nearly

one third of this number are doing financial transactions over internet. Montazemi *et al.*, (2008) show that the market structure of embedded interpersonal ties enables participants to take advantage of information asymmetry for profit taking. As a result, imposition of solely electronic trading systems on the present fixed-income market structure is at odds with the present interfirm market norms and business processes enacted for large transactions among market makers and institutional investors. Teo *et al.*, (2004) conclude that nearly 80% of the Internet stock trading respondents in Singapore preferred using the Internet to trade over conventional means of trading. Stock brokerages could offer security and a premium service guarantee to encourage adoption. For instance, where the security breach is not the fault of clients, brokerages could reimburse clients for losses incurred, or at least, cap the amount that clients are liable for. In fact, this has already been practiced by some brokerages, since image and trust are of vital importance to stock trading in general and to Internet stock trading in particular. Yang & Fang (2004) indicate that primary service quality dimensions leading to online customer satisfaction, with the exception of ease of use, are closely related to traditional services while key factors leading to dissatisfaction are tied to information systems quality. In addition, major drivers of satisfaction and dissatisfaction are identified at the sub-dimensional level. Konana *et al.*, (2000) find that debate abounds as to whether e-brokerages have increased market efficiency and enhanced the social welfare. E-brokerages provide convenience, encourage increased investor participation, and lead to lower upfront costs. In the long run, they will likely reflect the market's increased efficiency as well. But in the short run, a number of questions remain unanswered—about transparency, investors' misplaced trust, poorly aligned investing incentives and irrational investing behavior. Cohen (2000) reveal that DLJ-Donaldson, Lufkin and Jenrette, one of the major online brokers in the U.S. – has a joint venture with the group led by Sumitomo Bank in Japan, including both Sumitomo and Daiwa group companies. This bank is still in the throes of regrouping and integrating the Daiwa securities companies. The poorly chosen name, DLJ direct SFG, will certainly be replaced with something else once Sumitomo and Daiwa figure out how to work together. Klein *et al.*, (2000) find that many people are no longer willing to pay the premium that is embedded in full-service commissions but are not yet ready to pay separately for investment advice. Pricing for these investors should be based on their levels of assets or on "implicit" revenues, deriving from charges that are typically invisible to the consumer.

(Implicit revenues come from sources such as interest rate spreads, in which an institution lends at a higher rate than it pays on its deposits; mutual-fund trailers, the fees that funds pay to brokers, based on the assets the brokers place with them; sales of proprietary products; and referral fees.) Alternatively, investors could pay a monthly or annual fee for investment advice as well as a limited number of trades. Firms that succeeded in portraying their investment advice as a professional service could even charge their customers by the hour.

Online securities trading in Hong Kong

We examined brokers in the US and Korea who were the first movers in North America and Asia and have launched their online securities trading since early 1995 and 1997. The Hong Kong market had been prepared for the launch of online services since end 2000. The observations and experience of US and Korea markets may give valuable guidance to the Hong Kong market. A study^{iv} initiated by SEHK in late 1998 on ‘the development of on-line service on the Internet platform’ was conducted by Professor Henry Birdseye Weil, a senior lecturer at Massachusetts Institute of Technology Sloan School of Management. The study recommended that ‘by proactively embracing and exploiting Internet technology’, SEHK would lead the development of a virtual stock market and would position itself as one of the major stock exchanges. There were four prime benefits that induce customers to go online^v according to Karen Buck, managing director of T.D. Waterhouse in Hong Kong: empowerment to let customer have control, convenience to place order, brokers’ cost savings and high speed of order execution. With the AMS/2 stage, two key benefits are not yet available. They are speed of execution and the reduction of commission charge resulting from brokers’ cost savings. However, a dimension would be evolved with the introduction of the AMS/3 automated execution system, and with the deregulation of the 0.25% minimum brokerage commission in April 2002. The US was the first mover in online trading back in early 1995. In Asia, Korea was the first mover and started two years later. Hong Kong market was ready for the launch of online services by end of 2000. Brokers in Hong Kong might be beneficial from the experience of US and Korea markets (see Table 1).

Table 1. US and Korea online securities trading experience

	First Start	Growth Last year	Market Share	# of Internet Brokers	Top Brokers	Commission Decreased By
US	95 [*]	32% ¹	40% ³	160	6 / 80%	70% ⁵
Korea	97 [*]	410% ²	60% ⁴	29	5 / 65%	85% ⁶

(1) Online accounts 98^{*} - 99^{*} (4) Total trading volume mid 00^{*}
(2) % of online accounts 98^{*} - 99^{*} (5) 96^{*} - 98^{*}
(3) NYSE & NASDAQ order flow mid 00^{*} (6) 98^{*} - 99^{*}

Source: Compiled by Hon & Hon (2001, p.15) from materials of Securities & Futures Commission seminars regarding Internet Trading 2000 .

There were a number of brokers providing Internet trading services to customers. Only a few large players with substantial capital, expertise in management and IT investment were dominant in the markets. Successful online trading was heavily dependent on maintaining cutting edge technology. The development of such technology was complex and time-consuming but economies of scale were large. An analysis of major players in US is given below (see Table 2):

Table 2. Major players in US in 2000

	Schwab	E*Trade	TD Waterhouse	Fidelity	Ameri Trade	Datek
Trades per day	293,318	214,573	182,336	156,583	129,709	121,261
Marker Share	21.4%	15.7%	13.3%	11.4%	9.5%	8.8%

Source: Hon & Hon (2001, p.16) from US Bancorp Piper Jaffray Inc 1st Quarter 2000

Online trading facilitates cost savings among large brokers as substantial manual work in the back office was reduced. This provided rooms for reduction in commission charges to execute transactions which eventually benefits customers. In addition, commission charges to customers in US market were liberalized. The minimum commission rule in Korea had been abolished since 1999. Online brokers in US and Korea have had commission ‘price wars’ to gain market share, but, as weaker brokers exited or were forced to merge with others, commissions had stabilized. A comparison of commission charges for six largest brokers in the US is given below (see Table 3):

Table 3. A comparison of commission charges for six largest brokers in the US in 2000

As of Mar 00 [*]	Schwab	E*Trade	Fidelity	Ameri Trade	DLJ	TD Waterhouse
Commission to trade 800 shares	\$29.95	\$14.95	\$25	\$8	\$20	\$12

Source: Hon & Hon (2001, p.17) from E*TRADE Guide to Online Investing

Ody (2011) find that Fidelity and TD Ameritrade^{vi} were number one in in rankings of 14 top discounters in 2011. From commissions to customer service to whether customers can purchase stocks overseas was of supreme importance in determining who ends up on top. One of the lessons rank-and-file investors seem to have drawn from the brutal 2007-09 bear market was that professionals can lose money just as easily as they can. A corollary was that keeping costs down is crucial. As a results, many had decided to take investing into their own hands.

The Hong Kong stock market was very fragmented, with more than 600 SEHK brokers conducting about 100,000 trades a day in 1999. No one seemed to have a commanding market share, and no one had really established a net presence of any significance. Two formal surveys conducted by Securities and Futures Commission (SFC) on Hong Kong online trading^{vii} as of September 1999 and April 2000 were released. We reviewed the online market situations, by reference to the key findings from the surveys together with some market news from several local newspapers, business journals and discussions with market analysts up to December 2000 (see Table 4).

Table 4. Online market situations in Hong Kong

	First Start	Growth Last year	Market Share	# of Internet Brokers	Top Brokers	Commission Decreased by
Hong Kong	98'	480%	1.3%	28	4 / 83%	----

Source: Hon & Hon (2001, page 18) SFC survey on Hong Kong online trading as of 30 April 2000

Today, the Hong Kong stock market is mature. Stock (Securities products) included equities (i.e. shares of listed companies), warrants, Callable Bull Bear Contracts (CBBCs), Exchange Traded Funds (ETFs), Real Estate Investment Trusts (REITs), bonds and other cash market products listed or traded on Hong Kong Exchange (HKEx). Hong Kong Exchange (2015a) report that the uptrend for online stock traders continued in 2014. Online stock traders accounted for 73% of all stock traders in 2014 (up from 69% in 2011), the highest in record. Among online stock traders, the proportion who traded online all the time continued to increase — 75% in 2014, up further from 73% in 2011. A typical online stock trader was 44 years old, with tertiary or above education, a monthly personal income of about HK\$22,500 and a monthly household income of HK\$45,000. Online stock traders tended to have younger individuals and individuals of higher education level and higher work status, a higher monthly personal

income and household income. As a whole, online stock traders contributed the majority of total stock trading value (78%). In 2013/14, 247 Stock Exchange Participants (EPs) (57% of all responding EPs) reported (HKEx, 2015b) themselves as online brokers, compared to 250 EPs or 55% of responding EPs in 2012/13. The implied value of retail online trading increased by 19% in 2013/14, compared to the 5% increase in the total market turnover. Retail online trading accounted for 38% of total retail investor trading (compared to 39% in 2012/13) and 9% in total market turnover (compared to 8% in 2012/13). The upward trend in the contribution of retail online trading to total turnover value of online brokers continued, reaching 29% in 2013/14. International standards of anti-money laundering^{viii} and counter-terrorist financing are set by the Financial Action Task Force (FATF). As a member of the FATF, Hong Kong implements recommendations promulgated by this inter-government body to combat money laundering and terrorist financing. In Hong Kong, legislation dealing with money laundering and terrorist financing includes: the Anti-Money Laundering and Counter-Terrorist Financing (Financial Institutions) Ordinance (AMLO), the Drug Trafficking (Recovery of Proceeds) Ordinance (DTROP), the Organized and Serious Crimes Ordinance (OSCO) and the United Nations (Anti-Terrorism Measures) Ordinance (UNATMO). The AMLO, which came into effect on 1 April 2012, imposes on financial institutions requirements regarding customer due diligence and record-keeping whereas the DTROP, OSCO and UNATMO require reporting of suspicious transactions regarding money laundering or terrorist financing. People residing in Hong Kong are free to seek out and to take advantage of financial services and products made available over the Internet^{ix}. However, the provision of such services and products may fall within the SFC's purview and hence trigger regulatory concern. The SFC will not seek to regulate activities that are conducted from outside Hong Kong and over the Internet, provided that such activities are not targeted at persons residing in Hong Kong and are not detrimental to the interests of the Hong Kong investing public or to the market integrity of Hong Kong (Securities and Futures Commission, 2013). If investors want to look for the cheapest broker^x in Hong Kong to buy Hong Kong stocks, the going rate from local firms is about 0.15-0.3% with a minimum of HK\$80-100. However, the lowest advertised rate is the local division of US group Interactive Brokers^{xi}, at 0.088% with a minimum of HK\$18, while Standard Chartered charges 0.2% online and 0.3% by phone with no minimum. On-line trading is mature industry and is expected to be less-profitable in Hong Kong.

The reasons are the stage at saturation of penetration for personal computers and Internet Usage, the mature of market infrastructure, the dominant players (such as BOCI Securities, DBS Vickers, HSBC, KGI Securities, Phillip Securities Hong Kong), the commission reregulation, the technological sophistication (i.e. AMS/3.8) of the region and the client opening procedures (especially anti money laundering) cannot satisfy both U.S. Securities Exchange Commission and Hong Kong Securities and Futures Commission regulators. We expect that some online brokerages will close their business in Hong Kong.

Conclusion

The objective of this study is to examine the online securities trading service in Hong Kong. Demand, market acceptance for services and products are at the stage of saturation of penetration. The market for online securities services is mature in Hong Kong. International standards of anti-money laundering and counter-terrorist financing are set by the Financial Action Task Force. The client opening procedures (especially anti money laundering) cannot satisfy both U.S. Securities Exchange Commission and Hong Kong Securities and Futures Commission regulators. Some online brokerage companies will close their business in Hong Kong. However, system integrity in areas of security, reliability, capacity and contingency remains the highest concerns to the regulators and customers. To enhance the investor protection, issues under the clarification of client agreements, prominent warning message to customers and client priority should also be properly addressed. The limitation is that the study is based on documentary materials; for further investigation it might be useful to develop in-depth interviews with key figures involved in the implementation of business models.

Notes

ⁱ For details, please visit Best Online Stock Trading Brokers for 2015 at: <http://www.thesimpledollar.com/best-online-stock-trading-brokers/>

ⁱⁱ Under the reform, The Stock Exchange of Hong Kong Limited (SEHK), Hong Kong Futures Exchange Limited (HKFE) demutualized and together with Hong Kong Securities Clearing Company Limited (HKSCC), merged under a single holding company, HKEx. This was achieved by the approval of the Schemes of Arrangements of SEHK and HKFE at their respective general meetings on 27 September 1999, and which were then approved by the Court on 11 October 1999. The merger of the three institutions took operational effect on 6 March 2000, and HKEx listed itself on SEHK by introduction on 27 June 2000.

ⁱⁱⁱ SEHK members' transaction surveys (1995 –1999), SEHK Library, (30 September).

- ^{iv} Henry Birdseye Weil (1998). Conclusions and Recommendations for Hong Kong, SEHK Reports : Internet Investment Services, November 1-24
- ^v Lachlan Colquhoun (2000). Online Trading, Hong Kong Securities Journal, Vol 1 Issue 2 Third Quarter, 5–9.

^{vi} On January 24, 2006, Ameritrade Holding Corporation acquired TD Waterhouse USA from TD Bank Financial Group. Following the acquisition, it renamed itself TD Ameritrade. TD Ameritrade is one of the largest online brokerages.

^{vii} Key findings (2000), Survey on the use of online facilities for trading purposes by dealers, as at 30 September 1999 and 30 April 2000, SFC Survey

^{viii} See Anti-money laundering & counter-terrorist financing in Hong Kong Securities and Futures Commission website.

^{ix} Reference: Guidance Note on Internet Regulation

^x For details, please visit the International Investor at:

<http://the-international-investor.com/comparison-tables/hong-kong-international-stock-brokers>

^{xi} Interactive Brokers is a US-based firm with registered offices in a number of other countries, including the UK and Hong Kong, and is one of two genuinely global retail brokerages along with Saxo Bank. The firm offers extremely low-cost Direct Market Access to a number of international exchanges in Asia, Europe and North America.

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