Business finance written assignment

Finance

Q1. Define an “ efficient market” and the three forms of market efficiency. Explain how each of the forms differs from a perfect market. Define arbitrage and explain what kind of information is needed for you to obtain arbitrage in each of the forms of market efficiency. (5 points) Q2. Please compare the advantages and disadvantages of the following investment rules: Net Present Value (NPV), Payback Period, Discounted Payback Period, Average Accounting Return, Internal Rate of Return (IRR) and Profitability Index (PI). You can start by considering the following questions for each investment rule: Does it use cash flows or accounting earnings? Does it consider all cash flows or not? Does it apply a proper discount rate? Whether the acceptance criteria are clear and reasonable? In what situation it can be applied? What kind of weakness does it have?) (5 points) Question 1 An efficient market is advocated by a hypothesis that under free movement of information, the true value of securities are fairly priced, which immediately and accurately reflect all information available to investors.

By the assumptions that rational investors evaluate the price by ascertained future cash flows, and are able to learn and react quickly to new information once delivered, investors do not expect to achieve returns in excess of average market returns. The three forms of market efficiency are weak, semi-strong, and strong. Different degree of information is reflected by price in different forms. Under weak form, the prices reflect all past publicly available information, like historical prices movements. Under semi-strong form, the prices reflect all publicly available information, like financial statements and news reports.

Under strong form, the prices reflect all public and private information. Generally, because of quick reflection of information in price and quick response of investors to the market, it is impossible for investors to obtain or use new information to find undervalued stocks. To illustrate, in weak form, using past prices for technical analysis is useless to predict future trend as past information is irrelevant to the future. In semi-strong form, using fundamental analysis is not useful as the prices are immediately adjusted once the information widely circulated in the market.

In strong form, finding undervalued stocks is not consistent as all information is well known. Thus, no investors can earn excess return by trading the information or selling the stocks with too high expected returns. A perfect market is where no arbitrage opportunities occur (i. e. Law of One Price) because complete information is shared among all investors. Compared with efficient market, no distinction in degree of information is reflected in price here. Arbitrage means the practice of buying and selling equivalent goods in different markets to take advantage of a price difference.

An arbitrage opportunity occurs if making a profit without taking any risk. An efficient market does not necessarily mean investors cannot yield excess return. Instead, an arbitrage opportunity does exist if they ask for appropriate information quickly. If a market achieves strong form efficiency given that it is mature enough, no investor can yield any excess return in long run. Thus, no more information is needed. On the other hand, private and latest public information are needed to obtain arbitrage in semi-strong and weak form efficiency respectively. (395 words) Question 2 Use of cash flows and discount rate

All investment rules are determined by estimated cash flows but only NPV, IRR and PI consider all cash flows throughout the project's life. Except payback period, the cash flows are discounted by proper discount rate under each rule. A positive NPV expects the project adding value to firm and shareholders' wealth. All discounted expected future cash flows are taken into consideration compared with the initial cost. The discount rate estimates the risk level and the return and thus it is appropriate. Thus, NPV is the best because it accounts for time value ofmoneyand risk of cash flows.

IRR is the return that set NPV to zero. Similarly, the calculation is based on cash flows and discount rate (i. e. same benefit as NPV). It provides a simple tool without estimating all details but intuitively appealing to know. If IRR is high enough, the time spent on estimating a required cost of capital is avoidable. PI measures benefit per unit cost based on time value of money to estimate an additional value to firm. Two versions of PI provide same decision and both are easy to understand and communicate. For calculating PI, NPV calculation is used and thus PI's advantage is same as NPV's.

Payback period is the amount of time for future cash flows taken to recover the initial investment. It is a scanning tool for uncertain cash flows. However, it ignores cost of capital and time value of money since only cash flows for that current period are concerned. Also, not all cash flows are considered as cash flows beyond payback period are ignored. Similar to payback period, the only difference is discounted payback period better considers discount rate (i. e. time value of money). Therefore, payback period on a discounted basis will be longer. Clearness and reasonableness of acceptance criteria

NPV, IRR and PI can provide clear and reasonable criteria while only NPV can be applied to all situations. The NPV rule is to accept a stand-alone project with positive NPV or a mutually exclusive project with the highest NPV. As NPV is estimated absolutely, the rule can still be applied despite of different scale of projects. The IRR rule is to accept a stand-alone project with IRR greater than cost of capital or a mutually exclusive project with the highest IRR. However, IRR rule is consistent with NPV rule only if all negative cash flows precede positive cash flows. In other words, the conflict is due to non-conventional ash flows and change in signs more than once. Thus, non-existent or multiple IRR(s) may cause uncertainty in decision making. IRR is unreliable when mutually exclusive projects are different in scale, risk and time horizon. PI is closely related to NPV, generally leading to identical decisions. PI helps evaluate and identify the optimal combination under resource constraint, especially for limited budget. The project with the highest PI should be chosen first. Nevertheless, it ignores the size factor and thus leads to incorrect decisions among mutually exclusive projects.

Moreover, PI cannot be applied during multiple resource constraints. The rule of (discounted) payback period is to accept the project if it is less than a pre-specified length of time. It is easily understood and simply used because of clear acceptance criteria. However, an arbitrary cutoff point is required for determination. It is subjective since ignoring the impact of cash flows after payback period favors short –term projects and biases against long –term projects. Conclusion NPV is the most commonly used investment criteria and true at any time. If any conflicts exist among the investment rules, NPV rule should prevail. 605 words) Reference 1. Hong Kong Institute of Investors

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