- 3.1 Investment Characteristics
- Characteristics of private equity investments:
  - ✓ Illiquidity
  - ✓ Long-term commitments required
  - ✓ Higher risk than seasoned public equity investment
  - ✓ High expected IRR required
  - Limited information
- Studies have indicated that:
  - ✓ Minority interest discount: 20%~30%
  - ✓ Marketability discount: 28%~36%
- 3.2 Roles in Portfolio
- Correlations of public and private equity returns may be expected to be positive. (expose to the same economic and industry conditions, but not extremely high.)
- Asset allocation: 5% or less

1. discuss the issues that must be addressed in formulating a private equity investment strategy;

- Ability to achieve sufficient diversification. → private equity fund of funds → second layer fee is needed
- Liquidity of the position→a limited secondary market→highly discounted price
- Provision for capital commitment (5 years)  $\rightarrow$  credit line
- Appropriate diversification strategy→across industry sectors, by stage of company development, and by location

## Commo di ti es Investments

## 1. Introduction

• A commodity is a tangible asset that is typically relatively homogeneous in nature. Historically, commodity-linked businesses have been the major players in the cash and futures commodity markets. In some markets,

commodity trading advisors (CTAs, registered advisors to managed futures funds) are another active group.

• Commodity futures → physical delivery or cash settled

m. compare indirect and direct commodity investment;

- Direct commodity investment entails cash market purchase of physical commodities- agricultural products, metals, and crude oil- or exposure to changes in spot market values via derivatives, such as futures.
- Physically holding the commodities incurs carrying costs and storage costs. Thus, investors preferred to use derivatives or indirect commodity investment.
- Indirect commodity investment involves the acquisition of indirect claims, such as equity in companies specializing in commodity production.(most investors used)
- Equity instruments in commodity-linked companies- does not provide effective exposure to commodity price change. (companies hedge a major portion of their commodity risk)

## 2. Benchmarks and Historical Performance

## 2.1 Benchmarks

- These commodity benchmarks including:
  - ✓ RJ/CRB
  - ✓ GSCI
  - ✓ DJ-AIGCI
  - ✓ S&PCI
- The DJ-AIGCI, the RH/CRB, the GSCI, and the S&PCI provide returns comparable to passive long positions in listed futures contracts. All of these indices are considered investable.
- The commodity indices also differ in the relative emphasis placed on various commodities and the procedure used to determine the weightings in the index.
  - RJ/CRB: groups commodities into 4 sectors and gives unequal fixed weights to a sector to reflect its perceived relative importance.
    RJ/CRB is based on arithmetic averaging of the monthly component returns.
  - ✓ GSCI: uses world-production weightings. (5-year moving average

world production.) GSCI is an arithmetic measure of the performance of actively traded commodity futures contracts.

- Recent performance (2000~2004): All commodity indices outperformed U.S. and world equities but not bonds. The generally low correlations among commodities and traditional asset classes is consistent with the evidence for the longer period (1990~2004).
- n. explain the three components of return for a commodity futures contract and the effect that an upward- or downward-sloping term structure of futures prices will have on roll yield;
- The returns of commodity futures have 3 components: the spot return, the collateral return, and the roll return.
  - ✓ Spot return (price return): is calculated as the change in the spot price of the underlying commodity over the specified time period. The change in spot prices should be reflected in the change in the price of the futures price with the shortest time to maturity over the time period. Most of the shocks with respect to physical commodities tend to be events that reduce the current supply and cause prices to rise; thus physical commodities have positive event risk.
  - ✓ Collateral return (collateral yield): comes from the assumption that the full value of the underlying futures contract is invested to earn the risk-free interest rate- that is an investor long a futures contract posts 100% margin in the T-bills.
  - ✓ Roll return (roll yield): arises from rolling long futures positions forward through time.
- Contango vs. Backwardation :
  - ✓ Contango: An upward-sloping forward curve indicates that forward prices for delivery more distant in time (longer maturities) are higher than shorter-term forward prices. (lease rate is less than the risk-free rate)
  - ✓ Backwardation: An downward-sloping forward curve. (lease rate is more than the risk-free rate)
- When the futures markets are in backwardation, a positive return will

be earned from a simple buy-and -hold strategy. Because in backwardation the spot price is greater than the futures price(S>F; contago: S<F), the futures price must increase in value. All else being equal, an increase in a commodity's convenience yield should lead to futures market conditions offering higher roll returns.

(1) Contract Maturity	(2) Futures Price as of May 200X	(3) Futures Price as of April 200X	(4) Change in Spot Price	(5)=(2)-(3)-(4) Roll Retrn
June 200X	40.58	39.10	0.40	1.08
Sept 200X	39.67	38.70	0.40	0.57
Dec. 200X	38.45	37.65	0.40	0.40

Exhibit 16 Calculation of Roll Return (in US\$)

(backwardation: high convenience yield )

- Over the 1990~2004 period, an overall positive relationship between the mean monthly roll return and intramonth spot price volatility in the GSCI Energy and Industrial Metals subindices.
- Backwardation: An downward-sloping forward curve.

Forward price

Time (maturities)

• Contango: An upward-sloping forward curve

