

LTCM Handout

The definitions below were taken from hypertext finance [Glossary](http://www.duke.edu/~charvey/Classes/wpg/bfglosa.htm) at <http://www.duke.edu/~charvey/Classes/wpg/bfglosa.htm>

Definitions Short (& related terms) and Long (& related terms)

Short sale

Selling a security that the seller does not own but is committed to repurchasing eventually. It is used to **capitalize** on an expected decline in the security's price.

Short selling

Establishing a market position by selling a security one does not own in anticipation of the price of that security falling.

Short position

Occurs when a person sells **stocks** he or she does not yet own. **Shares** must be **borrowed**, before the sale, to make "good **delivery**" to the **buyer**. Eventually, the shares must be bought back to close out the transaction. This technique is used when an **investor** believes the stock price will **drop**.

Short hedge

The sale of **futures contracts** to eliminate or lessen the possible decline in value of an approximately equal amount of the actual **financial instrument** or **physical commodity**.

Long hedge

The purchase of a **futures contract** in anticipation of actual purchases in the **cash market**. Used by processors or exporters as protection against an advance in the cash price. Related: **hedge**, **short hedge**

Long position

Owning or holding **options** (i.e., the number of **contracts** bought exceeds the number of contracts sold). For **equities**, a long position occurs when an individual owns **securities**. An owner of 1,000 **shares** of **stock** is said to be "Long the stock."

Example of agency conflict: The consortium of 14 institutions, which bailed LTCM was jointly interested in maximization of LTCM liquidation value. But it was in the best interest of each participating institution to use their knowledge of LTCM positions to profit from this knowledge. Below we discuss "how to". We show how each institution can make its profits **higher**, at the expense of making LTCM liquidation value **lower**.

1. Gold.

Rumor: LTCM needed to cover a short position of 100 tonnes of gold.

Market reaction: Japan: immediate rise in gold price. [we have drawn supply-demand diagram & shown the change of relevant market expectations by shifting demand curve out (to the right). As a result of this shift, equilibrium price of gold increases. Thus, LTCM expense on covering its short position increases as well, lowering LTCM liquidation value.]

2. French government Bonds. If LTCM is long \$10 billion of French Government bonds

- A. **“First, the head of Goldman Sachs Jon Corzine instructs his traders to he can instruct one of his traders quietly to sell short French Government bonds, in anticipation of the great unwinding.”**
- B. A. is a bet on market panic. **So the Goldman trader will leak the news to his favourite reporter.**

Market reaction: Those bonds will slide. [similar to 1, one can draw supply-demand diagram & demonstrate that market expectations of increased supply of French government bonds makes investors to attempts to get rid of the bonds that they hold (resulting in unfavorable for the LTCM shift of supply). Simultaneously, information of LTCM coming sale of its bonds, investors may postpone buying the bonds in anticipation of price drop (the result is unfavorable for the LTCM shift of demand).]

It follows from 1 and 2 that the value of LTCM portfolio was negatively affected by the agency conflict of consortium members.

Please, note that question 1.3 should be understood as: Comment why the author has chosen this specific periodical.

On Question 1.3. You should research where Michael Lewis usually submits his writings (for example, use Lexus-Nexus) You have to check whether he is a regular author of South China Morning Post. You should reason why he published his work in South China Morning Post rather than in more regarded financial publication.

JWM partners: profit evaluation

This material is relevant for Question 2 of the LTCM case study

JWM profit comes from two sources

1. Management fee of 2 percent of assets annually
2. Performance fee of 20 percent of profits

Consider two scenarios:

- A. Meriwether does nothing to attract more capital. Then, JWM capital would stay at \$350 million to \$400 million (i.e., the capital they were able to raise). JWM declared the target returns of about 15%– 20%
- B. Meriwether promises to use more conservative practices, (leverage ratio of about 10:1 instead of 30:1 in LTCM, and target return of 15%). Assume that the promise of adopting more conservative strategy allows JWM to reach the target capital level of \$1000 million.

Next, let us evaluate the upper bound of profit (i.e. maximum expected profit) for the case A by assuming capital of \$400 and letting the favorable return equal to 20% (this is an upper bound of the promised return).

Max Profit (A) = $400 \times 0.02 + 400 \times 0.2 \times 0.2 = \24 million

Further, we evaluate the lower bound of profit (i.e. minimum of expected profit) for the case B by assuming capital of \$1000 and unfavorable return of only 5% (this is far below than the promised return).

Min Profit (B) = $1000 \times 0.02 + 0.2 \times 0.05 \times 1000 = \30 million

Compare **Max Profit (A)** and **Min Profit (B)** to infer that JWM profit in scenario B is higher than in scenario A. Thus, it is clearly profitable for John Meriwether to be conservative: this improves his profits!

Thus, from profit maximization viewpoint, Meriwether should change his mind.

Lastly, we check if Meriwether expectations about the profits materialized. Yes, he was able to raise his target amount of capital -- 1 billion dollars. Thus, his profits increased as a result of his change of mind. It is unimportant for us (and for his public appearances) what he really thinks privately. But he clearly benefited of his changed stance.

Analysis of the Fed bailout

This material is relevant for Question 1 of the LTCM case study.

We base our analysis on three facts.

I. Consortium: member preferences and conditions of the offer to LTCM

The conditions of **the consortium** of 14 financial institutions (KO, p. 654) were:

- A. In exchange for a promise of up to \$3.6 billion in cash injections, consortium will own 90% of LTCM profits AND
- B. Consortium will have ability to control over all important decisions of the LTCM fund management.

Members of consortium openly expressed their dissatisfaction by the bailout:

“During last week’s congressional hearing on hedge funds, some congressmen questioned why the Buffett bid -- formally submitted by Mr. Buffett’s Berkshire Hathaway Inc. -- wasn’t accepted, and yesterday Travelers Group Chairman Sanford I. Weill said he would have preferred if the Buffett bid had prevailed. Travelers was one of the 14 firms involved in the bailout.”

II. Buffett’s offer

The conditions of **Buffett’s** offer (actually, an offer from 3 institutions) were:

Buffett offers **to buy the fund for \$250 million**. In addition, his offer specifies that

- A. In exchange for a promise of up to \$3.75 billion in cash injections, Buffet will own 95% of profit of LTCM liquidation
- B. Buffett will have ability to control over all important decisions of the LTCM fund management

From Financial Times Information, L’Agefi Suisse, October 19, 1998, “IS THERE THE PERSPECTIVE OF A HAZARDOUS MORAL SITUATION? (HASARD MORAL EN PERSPECTIVE?)”

“Berkshire Hattaway (belonging to Warren Buffet), American International Group and Goldman Sachs had made a \$ 250 million offer to take-over LTCM, plus a commitment to inject \$ 3.75 billion of capital. However, the offer was rejected.”

III. LTCM partners preferences

The partners strictly preferred the conditions of consortium (they actually rejected the Buffett’s offer).

From I, II and III we have:

I. Expected returns on capital from lending to LTCM were considered by the consortium members to be below market returns.

(This follows from the dissatisfaction of consortium members by their participation in the bailout.)

II. Buffett expected high return on capital from his offer to LTCM.

If LTCM liquidation value does not depend on which scenario occurs, I or II, Buffett’s expected return on his capital is lower than of consortium, because the maximum funds that Buffett promised to inject into LTCM are higher than the corresponding figure for the consortium.

LTCM partner incentives for the fund management are weaker in II than I, because their compensation is lower, i.e., $5% < 10%$. (apply agency argument – LTCM partners have less incentives to work hard when they own a lower share of liquidation value).

Therefore, all else equal, we expect that LTCM liquidation value is lower at II, which makes the inference lower Buffett’s expected return on his capital than of return on capital injected into LTCM for consortium.

Required return on capital for Buffett and the consortium are equal. We have shown that Buffett is satisfied by his expected return (**I**), and members of consortium are dissatisfied (**II**), from which we know that Buffett expects a **higher return** on investment than members of consortium do.

We have to reconcile Buffett's interest in LTCM and the lack of such interest in the case of consortium. From the aforementioned analysis, this could occur only if LTCM liquidation value is **higher with Buffett than with consortium**, or

$$Y > X,$$

where

Y - LTCM liquidation value if Buffett's offer is accepted,

X - LTCM liquidation value if consortium takes over. Let

Z be required cash injection, which we assume to be the same in both scenarios.

$Y > X$ can be explained by more severe agency conflict with 14 versus 3 participants. .

We estimated the lowest difference in LTCM liquidation values under Buffett and consortium to be \$65.7 million (when $X = \$5$ billion). Technical derivation is optional material (see below).

III. Expected profit of LTCM partners is higher in the case of consortium than in the case of Buffett's offer.

Since the starved for cash LTCM fund was getting more favorable conditions on its short-term cash needs from Buffett (\$3.75 billion > \$3.6 billion), but still preferred Fed's bailout we infer that in LTCM partners' expectations:

\$0.25 billion + 5% of LTCM liquidation value < 10% of LTCM liquidation value

\$0.25 billion < 5% of LTCM liquidation value

\$5 billion < LTCM liquidation value

From III we infer that LTCM partners estimate of their fund liquidation value was at least **\$5 billion, i.e.**, the lower bound of expected LTCM liquidation value is \$5 billion.

Let

r^{cons} denote expected return on consortium capital invested in LTCM bailout. We estimated that minimum r^{cons} is 25% (see below).

From above,

1. Expected value of the LTCM fund is positive. Moreover, it exceeds \$5 billion.
2. Notice that Fed's bailout is simply a LOAN of the consortium to LTCM partners. In expectation, this loan is fully secured (or collateralized), because LTCM partners expect that fund's liquidation value exceeds \$5 billion, which is well above the maximum loan on which the consortium agreed (\$3.6 billion).

Technical derivations below are optional

Let $X = \$5$ billion and $Z = \$3.6$ billion. By equating consortium's profit $0.9 \times X - Z$ to $(1 + r^{\text{cons}})Z$ we have minimum $r^{\text{cons}} = 25\%$

Buffett's profit is $0.95xY=(1+r^{\text{buffett}})(0.25+Z)>(1+r^{\text{cons}})(0.25+Z)=$
 $(1+r^{\text{cons}})Z+(1+r^{\text{cons}})x0.25>.9xX+0.25+r^{\text{cons}}x0.25$

$0.95xY-0.9xX=0.95x(Y-X)+0.25>0.25+r^{\text{cons}}x0.25$, or
 $(Y-X)>(0.25x0.25)/0.95=0.0657$, where we use $r^{\text{cons}}=25\%$ (this minimum corresponds to
 maximum cash injection of **3.6** and **X=5**)

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In reality, Z was about \$1 billion (actually, a bit less than \$1 bln) Thus, consortium actual
 return was HUGE: r^{cons} was about 350%

The following questions are important to evaluate Fed choice and its consequences for
 stability, efficiency and competitiveness of financial markets, and for incentives of
 financial industry major players (banks and non-banks).

Effects of Fed bailout on GCM

Stability of financial system: Short run – positive effect

Long run – possible negative effects due to the increase of moral hazard

Efficiency: ambiguous effect, but it is possible that the outcome with consortium is
 socially preferable due to market competition effects.

Competitiveness: Clearly, is higher with Fed intervention, which may lead to favorable
 efficiency modifications.

Incentives: ambiguous Moral hazard (incentives for excessive risk taking) likely
 increases with Fed bailout, but Fed argued that markets can police themselves (and really
 consortium institutions were “punished” by investors for excessive risk taking by decline
 in their stock values.

Clearly beneficial short-run effects of Fed's bailout in the complex post-crisis time
 provide considerable justification for Fed's actions, but **this inference is only tentative**.

A Reminder: This material is relevant LTCM case study.

Definition Agency problem (or agency conflict or Principal-Agent Problem) is **conflict
 of incentives** of relevant market participants (players). The conflict occurs when the
 actions that maximize player joint profit and the actions that maximize the private profit
 of each specific player **differ**.

In Michael Lewis words: “However, the interests of the group differ from the interests of
 the individual firms. The group is a kind of cartel of financial information. The forces
 pulling it apart are the forces that pull apart any cartel. Those who cheat can get rich
 quick. And those who don't cheat run the risk of being cleaned out by those who do.”

We live in the age of free agency, when the interests of the firm and
 the interests of its traders are not identical. (from Michael Lewis, 1998)