

Appendix C

An Example of Off-Balance Sheet Transactions

There are numerous off-balance sheet transactions and investment strategies with a broad range of risk and return objectives. To illustrate the extremely high risk, but also the enormous profit opportunities associated with investments in contingent assets and claims, the following example refers to a very prominent off-balance sheet investment strategy used by banks, hedge funds¹ and other financial institutions, being called “short-selling strategy”.

Financial institutions engaging in short-selling do not want to hedge against risk, but to take risk deliberately and to profit from market volatility. The term “short-selling” is a bit misleading since the short-selling strategy involves both a selling-position (short-positions) and a buying-position (long-positions). The aim of opening a short-position, being also labelled as *baisse* speculation, is to profit from future dropping asset prices. By way of contrast, the aim of opening a long-position, being labelled as *hausse* speculation, or to bull the market, is to profit from future rising asset prices.

The short-selling strategy involves the sale of an asset *A* (short-position) such as bonds, equities or foreign exchange, the vendor does not own, implying that asset *A* which is to be sold has to be borrowed firstly by another market participant with the promise of delivering it back at maturity date in the future at a given price. After having borrowed asset *A* at a given interest rate, the vendor sells asset *A* and receives funds which are used to buy another asset *B* (long-position) which is expected to raise in price, or which simply serves to earn a secure return to minimize potential losses, or to increase profits from the short-position. At maturity date when the investor has to deliver back asset *A*, the investor sells asset *B* and uses the funds to repurchase asset *A* in the market to deliver it back to the lender. The net earnings from the short-selling transaction are the selling price of asset *A* less the buying price of asset *A*, less borrowing costs for borrowing asset *A*, plus the selling price of asset *B* less the buying price of asset *B*, plus interest earnings from asset *B*. Neglecting asset *A*'s borrowing costs and asset *B*'s interest earnings, the

¹There is no standard definition of hedge funds, but they can be described as pooled investment vehicles which are organized privately, administered by professional investment managers, not generally available to the public, and resident offshore for tax and regulatory purposes. Their legal status allows them, in contrast to mutual and pension funds, to engage in short-term, risky and leverage-based investment strategies. For an overview of hedge funds, see Eichengreen and Mathieson (1998), pp. 42-54, The President's Working Group on Financial Markets (1999), pp. 23-27, and de Brouwer (2001), pp. 18-31.

short-selling strategy generates profits if (1) the short-position asset A drops in price, if (2) the long-position asset B rises in price, or if (3) both situations coincide. Losses emerge if (1) the short-position asset A rises in price, if (2) the long-position asset B falls in price, or if (3) both situations coincide.

To illustrate the short-selling strategy by a concrete example², consider a hedge fund manager expecting a devaluation of the Thai bath in the next three months which is currently 30 bath per US-\$. Suppose that bath can be borrowed in the three-month swap market at an annual interest rate of 10% which have to be repaid in three months at the current exchange rate of 30 bath per US-\$. It is assumed that the hedge fund manager borrows 30 billion bath in the swap market for three months, i.e. total borrowing costs in bath amount to $30 \cdot 10^9 \text{ bath} \cdot (10\%/4) = 750,000,000 \text{ bath}$. Afterwards, the hedge fund manager sells the 30 billion bath in the spot foreign-exchange market at 30 bath per US-\$ and receives 1 billion US-\$ and creates thereby a short-position of 1 billion US-\$. In order to minimize losses, or to earn further profits, the hedge fund manager opens a long-position by buying a three-month US security with an annualized interest rate of 6% and with a fixed nominal value, i.e. total returns in three months from holding the US security amount to $1 \cdot 10^9 \text{ US-} \cdot (6\%/4) = 15,000,000 \text{ US-}$.

To illustrate both the risk and the profit opportunities, consider two different scenarios in three months at maturity date. Scenario 1 is characterized by an actual devaluation of the bath from 30 bath per US-\$ to 40 bath per US-\$, i.e. at maturity date the official exchange rate is 40 bath per US-\$. Scenario 2 is characterized by a revaluation of the bath, e.g. to regain credibility of international investors, from 30 bath per US-\$ to 20 bath per US-\$, i.e. at maturity date the official exchange rate is 20 bath per US-\$.

According to *scenario 1*, the hedge fund manager is going to sell at maturity date the US-security and receives 1 billion US-\$ which are used to buy bath, but now at an exchange rate of 40 bath per US-; that is, the manager receives 40 billion bath, where 30 billion bath are used to repay the debt and 10 billion bath are profits resulting from the bath's devaluation. The hedge fund manager's total earnings measured in US-\$ consist of (1) the capital gain resulting from the bath devaluation which amounts to $10 \cdot 10^9 \text{ bath} \cdot 0.025 \text{ US-}/\text{bath} = 250,000,000 \text{ US-}$, (2) less bath borrowing costs which amount to $750,000,000 \text{ bath} \cdot 0.025 \text{ US-}/\text{bath} = 18,750,000 \text{ US-}$, (3) plus interest earnings from the US security which amount to $15,000,000 \text{ US-}$, resulting in total profits of $246,250,000 \text{ US-}$.

According to *scenario 2*, the hedge fund manager also sells at maturity date the US-security and receives 1 billion US-\$ which are used to buy bath, but now at an exchange rate of 20 bath per US-; that is, the manager receives only 20 billion bath, but has to repay 30 billion. Accordingly, the manager incurs a loss from the revaluation because she has to buy additionally 10 billion bath to repay debt. The hedge fund manager's total earnings measured in US-\$ consist of (1) the capital loss resulting from the bath devaluation which amounts to $10 \cdot 10^9 \text{ bath} \cdot 0.05 \text{ US-}/\text{bath} = 500,000,000 \text{ US-}$, (2) less bath borrowing costs which amount to $750,000,000 \text{ bath} \cdot 0.05 \text{ US-}/\text{bath} = 37,500,000 \text{ US-}$, (3) plus interest earnings from the US security which amount to $15,000,000 \text{ US-}$, resulting in a total loss of $-522,500,000 \text{ US-}$ which can lead very quickly to bankruptcy since hedge funds generally work with low capital due to the fact that funds theoretically do not need any capital of their own to engage in short-selling transactions.

²This example is a modified version of de Brouwer (2001), p. 24.

Summing up, off-balance sheet transactions are subject to extremely high risk which generally cannot be observed by market participants and financial market regulators owing to two reasons. Firstly, off-balance sheet transactions are not reflected in on-balance sheet positions according to standard accounting rules, implying that there is no possibility to assess solvency and liquidity risk via changes in on-balance sheet positions. Regarding the short-selling example, the hedge fund's balance sheet does not contain an asset and a corresponding liability because the 30 billion bath are borrowed and immediately sold, though the fund is subject to a huge exposure. Secondly, companies engaging in off-balance sheet transactions generally do not reveal information about their off-balance sheet exposures, and usually publish only their on-balance sheet leverage. Accordingly, the lacking overview of risk associated with off-balance sheet transactions has the potential to adversely affect the stability of the entire financial system, as e.g. the LTCM debacle in the U.S. in 1999 which threatened the stability of the entire U.S. banking system, and which could be resolved only by massive lender of last resort interventions by the Federal Reserve.

