Method of Valuation of Financial Factors Influencing the Implementation of Liquidity Risk for Leasing Companies

A.A.Ajupov

Kazan Federal University, Institute of Management, Economics and Finance, Kazan, 420103, Russia
Email address: masha_86_24@mail.ru.

Mishina M.S.

Kazan Federal University, Institute of Management, Economics and Finance, Kazan, 420103, Russia

Ivanov M.E.

Kazan Federal University, Institute of Management, Economics and Finance, Kazan, 420103, Russia

Abstract

Today liquidity risk is the least known and formalized. Leasing companies are exposed to liquidity risk, no less than the banks and other financial and credit institutions. In this paper we describe the financial risk factors that affect the liquidity of the leasing company, and propose alternatives for calculating each of the risk factors on the basis of the analysis of financial statements. Produced mathematical models influencing change of liquidity risk of leasing company and as a consequence of the financial results. Presents a graphical representation and reasoning occurring transformations.

Keywords: *risk, liquidity, risk-factors, risk-engineering,leasing company*

1. Introduction

The companies transferred in leasing a goods based on short-term borrowings, and expect cash flow from its operations as revenue of lease payments. For this reason, there is a risk of liquidity loss due to possible inconsistencies between the maturities of their assets and liabilities, that imply that the incoming cash flows from the assets will not meet the outflows of cash to pay debts.

The proposed method allows us to evaluate the liquidity risk, based on the analysis of financial statements and cash flows, taking into account the risk factors that might alter the liquidity of leasing companies and influencing final financial result.

Factors may be either financial and not financial. In our paper we will offer its own interpretation of the financial assessment of the risk factors affecting the level of liquidity risk.

2. Liquidity Risk and Financial Risk-Factors

The most significant for any of leasing company is credit risk. Its realization will in terms of evaluating the financial statements originally manifested as deterioration in the quality of accounts receivable, which will result in decrease revenue.

As the crisis of 2008 has shown, when times massive defaults come on and leasing portfolio gradually depreciate, the company operates a defensive reaction, which is expressed in a tightening approaches to the assessment and improvement of the lessee's risk management system. These measures lead to a reduction in the leasing portfolio. It follows that after a while, we should observe a reduction of the investment cash flow, which reflects the development of leasing activity

Credit risk as the probability of non-payment by the lessee may be represented as follows (Fig. 1).
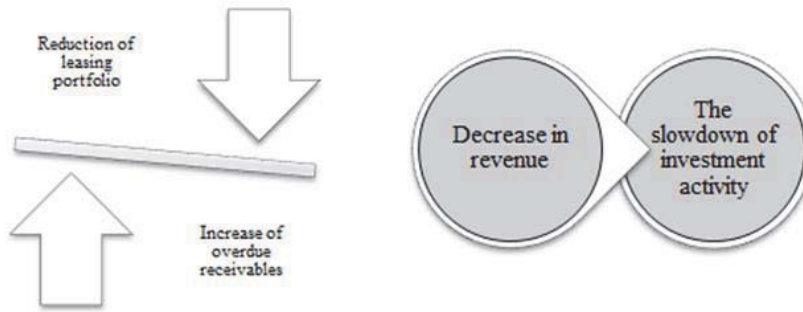
Fig. 1. Key indicators of credit risk in leasing activity

Overall, we have identified four indicators, which may indicate the manifestation of credit risk in the organization. However, in our view, having as input only the official statements, the credit risk of leasing company is characterized, above all, indicator of overdue accounts receivable, as well as decrease in revenues. These two indicators of credit risk, in our opinion, most accurately reflect its essence. Reduction of leasing portfolio as a result of slowdown of investment activity - this is the side effects.

Thus, as a measure credit risk (CrR), we propose to use the indicator asset impairment, multiplied by the the frequency of decrease in revenue for a given period of time (month, quarter, year).

$$CrR = p * \frac{\sum_{i=0}^{\infty} x_i}{\sum_{i=0}^{\infty} y_i},\qquad(1)$$

where CrR - credit risk; p – frequency of lower revenues; xi – overdue receivables for the i-time; yi – the company's assets or management leasing portfolio for the i-time.

As an index of yi can be used as well a managerial leasing portfolio as balance sheet assets of the leasing company.

The first option reflects the current degree of impairment of the leasing portfolio, and being in management accounting. The second option, which we will use, reflects the degree of impairment of assets as a whole. It should be noted that the most significant will be the first way to calculate, but due to the fact that leasing portfolio managerial "is blurred" in the balance sheet and relate only overdue receivables to total receivables have been used is not quite correctwe think that each of the analyzed us absolutely leasing companies engaged only in leasing, and its assets are fully formed through leasing operations.

As for the frequency of lower revenues it is calculated using the following formula (2).

$$p = \frac{m}{n},\qquad(2)$$

where m - amount of facts of lower revenues; n - the amount of all observed periods.

Both indicators are reduced to unified point scale estimate (Table 1).

Table 1. Expert assessment of indicators of credit risk reduction to unified point scale

Frequency decrease in revenue	Score
>50%	1
40-50%	0.8
30-40%	0.6
20-30%	0.4
10-20%	0.2
0-10%	0.05
Asset impairment	Score
>25%	1
20-25%	0.8
15-20%	0.6
10-15%	0.4
5-10%	0.2
0-5%	0.05

The ranges of indicators and their corresponding scores are based on the following assumptions:

ISSN 2039-2117 (online)
ISSN 2039-9340 (print)

Mediterranean Journal of Social Sciences
MCSER Publishing, Rome-Italy

Vol 5 No 24
November 2014

1. If the frequency of lower revenues is more than 50% of study period, it becomes critical to the company, and therefore the weighting score is the maximum (1).
2. Further periods of lower revenues are divided into predetermined amount of ranges, each of which is given the score.
3. Likewise is constructed evaluation of the level of impairment assets.

Critical to the leasing company, we believe impairment of assets more than 25%.

Portfolio risk, in our view, tightly is associated with credit risk, as its detrimental effect is reduced eventually to receive large losses as a result of excessive concentration on any segment of the massive non-payment by the lessee.

Portfolio risk includes:

– high concentration for one lessee (a group of lessees) or for one of the creditor;
– high concentration for one sector of economy, with representatives of which were concluded the greatest number of leasing contracts;
– high concentration of one region in which the largest number of lessees (in value terms).

We propose to carry out assessment of portfolio risk using the following algorithm, based on the available data:

1. Because portfolio risk is closely related with the credit, then about the quality the portfolio management will indicate the degree of impairment. We know the current concentration on branch and the region at any given period, and the leasing company disclose the total overdue debt on the balance sheet. In this case, as a measure of the potential loss of portfolio risk can be used following formula (3).

$$PotL = \frac{ID}{TA} * SC * \frac{SC}{TA}, \qquad (3)$$

where PotL – potential losses; ID - impaired debt; TA - total assets; SC - sum of concentrations (by industry, region, on one of the lessee).

Then we must calculate their share in total assets for each of the analyzed period.

$$PotL, \% = \frac{PotL}{TA}, \qquad (4)$$

Next, expect itself portfolio risk, which represent as a percentage of weighted average impaired debt on specific industry, region, product, lessee.

$$PoR = \frac{\sum PotL * PotL\%}{\sum PotL}, \qquad (5)$$

As a result, is chosen parameter whose value is the maximum (if this is a region is taken portfolio risk in the region, if the industry, by the industry), and include it in the calculation of premium for liquidity risk.

$$PoR = max(PoR_{reg}, PoR_{bran}, PoR_{prod}), \qquad (6)$$

The next risk influencing violation liquidity risk is the balance risk. Evaluation of the balance risk is most conveniently done using an estimate of the coefficient method.

For the calculation of the balance risk are invited to use the current ratio, as it is, in our view the most accurate for assessing the balance risk because it is based on the balance of current assets and liabilities.

A reflection of the balance risk from a statistical perspective is to reduce the frequency of the current liquidity ratio. However, the frequency only indicates some actual trend of deterioration. In addition, the method for estimating the coefficient implies certain restrictions (limits). Thus, in the global financial environment it is assumed that the current liquidity ratio must not fall below 1.5.

Thus, in the coefficient calculation of frequency reduction of current liquidity will only include values that satisfy the following conditions:

the current value must be less than the established standard;
the current value must be less than the previous value.

Therefore, we propose to calculate the balance sheet risk as the weighted average rate of change of the current ratio to the balance of the cash at the end of the reporting period

$$BR = \frac{\sum xy}{\sum x}, \qquad (7)$$

where x – cash balance at the end of the reporting period;

y – change of the current ratio, calculated by the next formula:

$$\begin{cases} CR_t < CR_n \\ CR_t < CR_{t-1} \end{cases} \Rightarrow \left| \frac{CR_t - CR_{t-1}}{CR_{t-1}} \right|, \qquad (8)$$

где CRt – current ratio of the reporting period; CRn – normative value of the current ratio; CRt-1– current ratio for the previous period.

Since the condition is already included in the calculation only negative changes ($CR_t < CR_{t-1}$), then the resulting change in the calculation of the balance risk take in modulus.

Another important kind of risk inherent in leasing activity, is a currency risk arising from the currency transactions. Currency transactions appear as at the conclusion of the currency lease agreements and currency loans upon receipt and signing of supply contracts with foreign partners. Currency risk management in many leasing companies is reduced to the so-called natural hedge, or, in other words, the establishment of payments under lease contracts associated with foreign currency loans in the currency of the loan. This method really allows us to transfer the primary foreign currency risk to the lessee. However, several features of accounting and reporting, as well as the established order of taxation exchange differences arising during the revaluation of assets and liabilities denominated in foreign currency are not allow to fully avoid the negative effects of sharp movements in exchange rates.

Currency risks may also arise if the leasing company had issued loans to other organizations in the currency, or the company has currency deposits, while the funds are received by it in rubles. Then the leasing company may use various methods to minimize currency risks from insurance to futures contracts.

Implementation of currency risk in this case will be received losses that in the financial statements may be seen in other operating income and expenses. In this case, the resulting loss of currency transactions is estimated as negative delta between revenues and expenses for the period related to foreign currency transactions.

$$CuL = CuI - CuE, \qquad (9)$$

where CuL - currency losses; CuI - currency income (positive currency revaluation); CuE - currency expenses (negative currency revaluation).

Currency loss negatively affects the operations, resulting in additional and usually unplanned removal of money from circulation. Therefore, in our opinion, the currency risk in this case should be calculated as the average value of the period

$$CuR = \frac{\sum_{i=1}^{\infty} x_i w_i}{\sum_{i=1}^{\infty} x_i}, \qquad (10)$$

where x_i - is the net operating cash flow for the period of i-time; w_i - the ratio of currency loss to net operating cash flow for the i-time period.

In calculating the interest rate risk, we offer to follow recommendations of IFRS: so, under IFRS as indicators of the implementation of interest rate risk, the following indicators:

• EBITDA / debt service costs;
• EBITDA / interest expense.

In this case, we propose to consider it as the product of three weighted averages.

$$IntR = \frac{\sum_{i=1}^{\infty} c_i a_i}{\sum_{i=1}^{\infty} c_i} * \frac{\sum_{i=1}^{\infty} |E|_i |b|_i}{\sum_{i=1}^{\infty} |E|_i} * \frac{\sum_{i=1}^{\infty} |E|_i |d|_i}{\sum_{i=1}^{\infty} |E|_i}, \qquad (11)$$

where C – cost price for the i-period; a – the indicator is calculated by the following formula:

$$a_i = \frac{|IntI_i - IntL_i|}{c_i}, \qquad (12)$$

where IntI – interest income for the i-period; IntL – interest expense for the i-period; E (EBIT) - profit before tax, interest income and expense; d – score of 100%, if EBIT< 0 for the i-period.

b - the indicator is calculated by the following formula:

$$b_i = \frac{IntL_i}{E_i}; IntL_i > E_i \Rightarrow b_i = 100\%, \qquad (13)$$

While if interest expenses exceed the value EBIT, then b = 100%.

In calculating the may be a situation when one of the calculated indices is equal to zero, and then according to the formula of our interest rate risk is zero. As in the case of currency risk, we believe that the interest rate risk for these companies a little, and then its value is taken as 0.01%.

Thus, when calculating the interest risk are taken by us the following conditions:

– availability interest loss automatically implies a presence of interest risk, which manifests itself in the event that the interest expenses exceed the interest income, ie delta between them will be negative;
– if EBIT is less than zero, ie, has a negative value, the presence of interest expense will increase loss, ie in this period, the maximum interest rate risk;
– if the interest expenses exceed the value EBIT, it also means that there is interest rate risk.

The next risk factor related to the group financial risks - is the risk of impossibility attract bank funding. In constructing the cash flow model is often the case, when to serve its Leasing company will seek additional funding from the owners or producing cash infusion. The reasons for additional funding can serve a variety of factors, but one fact remains unchanged: the company a deficit of liquidity, which had to be closed. On this basis, we believe that the substitution of bank financing in cash from the owners may be subject to implementation risk of being unable of attracting bank funding.

In our model, additional injections of cash flows to the leasing company are reflected in the financial cash flow under the article "Capital flows associated with the Inflow / Outflow of funds" and "Change in retained net earnings / accumulated deficit is not reflected in the movement of capital".

Then the calculation of the risk impossibility to attract bank funding we offer is as follows:

1. Calculate the total sum additional non-bank financing for the items "Capital flows associated with the Inflow / Outflow of funds" and "Change in undistributed net earnings / accumulated deficit is not reflected in the movement of capital" for each period under analysis.

$$ANBF = OC_{cap} + OC_{ncap} \qquad (14)$$

where ANBF - additional non-bank financing; OCcap - owner cash in capital; OCncap - owner cash not reflected in the movement of capital.

2. Accept the condition that 50% of "infused" in the company amounts are based on the fact that leasing companies have any difficulty getting bank loans.

$$ANBF_{cor} = 50\% * ANBF, \qquad (15)$$

3. Next, we correlate additional funding to the net financing cash flows for each period of time. Sign of the net financial cash flow in this case does not matter, because we define the sensitivity of the net financial cash flow to cash flow from property owners.

$$S_{ANBFcor} = \frac{ANBF_{cor}}{|NFCF|}, \qquad (16)$$

where $S_{ANBFcor}$ - sensitivity of net financial cash flow to funds from the owners; NFCF - net financial cash flow.

Since the we do not really know whether is due entering of cash from the owners of difficulties with bank financing, then this indicator will always be limited to 50% abroad. In other words, we think that with the probability 50% was due to the infusion of additional problems with bank financing.

4. Additional funding from the owners should be directed to cover investment and operating expenses. This means that the risk of impossibility of attracting funding will be determined as the probable share of being unable to fund operating and investing activities. The sensitivity of net financial cash flow to the owners of the means in this case is a weighting factor to cover the net operating cash flow and investment.

$$\begin{cases} Z = |(NICF_i + NOCF_i)| * S_{ANBFcor}, (NICF + NOCF) < 0 \\ Z = 0 \end{cases} \qquad (17)$$

where Z – cover the cost of operating and investing activities at the expense of the owners; NICF – net investment cash flow for the i-period; NOCF - net operating cash flow for the i-period.

The sum of net investment and operating cash flow for the i-th period should be less than zero, because otherwise, additional funding was presumably caused by the need to repay loans.

5. In fact risk impossibility of attracting funding is calculated as a weighted average of the sum of net investment and net operating cash flow, adjusted by a factor $S_{ANBFcor}$ in analyzed period.

$$RIAF = \frac{\sum Z}{\sum |(NICF_i + NOCF_i)|}, (NICF_i + NOCF_i) < 0, \qquad (18)$$

In other words, the same percentage of funding from the owners of operating and investing activities for the whole period of time, we believe as a possible absence funding percentage of cash from banks. This percentage in the event of termination of "infusion" from will also be a measure of the possible occurrence of a liquidity deficit.

3. Conclusions

In this article we tried to complete and expand the scientific results in the field of financial theory and risk-management for such economic categories as "liquidity" and "liquidity risk" by identifying risk-factors affecting on the change in the financial statements (balance sheet, income statement, statement of cash flows).

As we have identified, liquidity risk is a complicated structural risk changing under the influence of variety of conditions and factors, and its role in general system of financial risk management, and in the risk management system of leasing companies, today, in our opinion, undervalued . As a result, we can see deficit or excess surplus funds.

Thus, we have proposed risk assessment model and method of calculation of the liquidity risk premium allows you to comprehensively assess the impact of the most significant factors on the level of risk and cash flows of leasing companies. In addition, when calculating the premium for liquidity risk leasing companies can use their own methodology for assessing specific factors (eg, credit), which makes the procedure versatile enough for practical use.

References

Balabanov. I.T. Financial analysis and planning of the business entity: tutotial. Moscow, Finance and statistics, 2002, 208 p.

Bernstein L.A. Financial Statement Analysis: Theory, Practice and Interpretation. Moscow, Finance and statistics, 2003, 624 p.

Blank I.A. Financial Risk Management. NIKA-Center, 2005, 600 p.

Demchenko M.O. Portfolio risk management leasing // Financial and risk management in a leasing company. 2009. № 2.

Encyclopedia of financial risk management / Ed. A.A Lobanov and A.V. Chugunova. 2nd ed. M .: Harvard Business Review, 2005, p. 337-358.

International Framework for Liquidity Risk Measurement, Standards and Monitoring (consultative document) // Basel Committee on Banking Supervision, 2009.

Kosarev A.S. Statement of interest rate risk management processes at the enterprises of the non-financial sector in the volatility of financial markets // Financial Risk Management. 2010. №1.

Kronseder С. Managing Liquidity Risk. Credit Suisse First Boston. 2003.

Piskun P.N. Features leasing transactions financed in foreign currency // Financial and risk management in a leasing company. 2009. №2.

Melnik M. Analysis of financial and economic activities. M .: FORUM: INFRA-M, 2008, 192 p.

Rogov M.A. Risk Management. M .: Finance and statistics, 2001, 118 p.

Shapkin A.S. Economic and financial risks. Assessment, management, investment portfolio. 5th ed. M .: Publishing and Trading Corporation "Darya & Co.", 2006, p. 232-238.

Vishnjakov Y.D. The general theory of risk: studies. allowance for stud. higher. textbook. institutions. 2nd ed., Rev. M.: Publishing Center ""Academy", 2008, 368 p.

Ajupov A. Definitions of concepts scope and interaction of risk-engineering on the financial market. Life Science Journal 2014; 11(6s): 337-340.

Khismatullin B.R., Kharisova F.I. Insurance as a Way for Reducing the Market Risks Level. World Applied Sciences Journal 31 (6): 1188-1190, 2014.