**Mortgage Concentration Risk in a Small Depository Institution**

**TEACHING NOTE**

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**Critical Incident Overview**

This critical incident involves a small depository institution and interest rate risk. Because the duration of liabilities and assets in these institutions differ, with assets having longer duration than liabilities, profitability is squeezed when interest rates rise. A number of factors come into play, some of which are beyond the DI’s control. The critical incident describes the discussion of the asset-liability management committee as to whether more long term mortgages, of longer duration, should be made to maintain its profitability and capital ratio. While these mortgages are better for profitability in the current environment, an increase in interest rates, a likely scenario given current economic conditions, would affect the institution’s financial position. Students are asked to weight the advantages and disadvantages of this policy change.

**Application**

This critical incident is appropriate for courses in macroeconomics, finance, depository institution management, or money and banking.

**Research Methods**

This critical incident was written based on information and primary data secured from a credit union. The names of the individuals, the credit union, and its location have been disguised to preserve anonymity.

**Learning Objectives**

Upon completion of this critical incident, the student should be able to:

1. Explain how and when interest rate risk affects depository institutions;
2. Estimate the impact of policies that may put an institution at risk during periods of fluctuating interest rates;
3. Evaluate the advantages and disadvantages of changing the financial institution’s policy regarding limits on real estate loans.

**Questions**

After reading this case, the instructor can stimulate student interest and learning by asking them to discuss the following questions in a class discussion.

1. Explain why interest rates were so high in the early 1980s and so low during 2008-13. (LO 1, “when”)

2. Explain why regulators might be concerned with NSC CU and other depository institutions during the low interest rate environment of 2008-13. (LO 1, “how”)

3. Why was Professor Tallon more concerned with the limit on the mortgages with maturities > 15 years than with mortgages ≤ 15 years? (LO 2)

4. Why did NSC CU want to change its mortgage limits in its internal ALM policy? Explain the basic trade-off. (LO 2)

5. Use the November 2012 data to calculate how much NSC CU can increase its mortgage lending for mortgages with maturities > 15 years, and for mortgages with maturities ≤ 15 years. (LO 2)

6. Make a recommendation to the board regarding this policy change. Defend your answer. (LO 3)

**Answers to Questions**

1. Explain why interest rates were so high in the early 1980s and so low during 2008-13.

Interest rates were high, with the 3-month T-bill exceeding 15% in 1981. One reason was due to the Fisher Effect, that states: the nominal interest rate = the real interest rate + the expected rate of inflation. As inflation increased to double-digit levels during the late 1970s and early 1980s, the expected rate of inflation increased, which in turn cause the nominal interest rates to increase. For example, if expected inflation was 12%, nominal interest rates would be high as well.

The second reason was that the Federal Reserve tightened monetary policy during 1979-80 and again during 1981-82. Students could use FRED (Federal Reserve Economic Data) to find information on inflation and interest rates over the past 30 years and verify these trends for themselves.

Interest rates were low following 2008-09 financial crisis in part due to weak loan demand. But the most important reason was the Federal Reserve’s extremely stimulative monetary policy. When interest rates are near zero, the only way to move is up.

2. Explain why regulators might be concerned with NSC CU and other depository institutions during the low interest rate environment of 2008-13.

Stimulative monetary policy lowered interest rates to historical lows. Short-term interest rates fell to near zero and longer-term rates also fell tremendously. For example, 30-year mortgage rates fell into the 3% range. Once unemployment fell to 6.5% or inflation started to hit consistently over the 2% target, interest rates would surely start to increase back toward a more “normal’ range. How fast and how high rates would rise was unknown.

Historically, depository institutions such as NSC CU typically needed to increase rates on deposits to retain them. While newly originated loans would be made at the new higher rates, existing loans with lower rates stay on their balance sheets for some time, since many have maturities of much longer than one year. Hence, profitability of depository institutions such as NSC CU will typically be squeezed.

Rising interest rates would affect all depository institutions, and could be widely felt. Such effects may not be trivial. The Savings and Loan crisis of the 1980s ultimately led to a $150 billion bailout (Mishkin, 2013, page 300).

3. Why was Professor Tallon more concerned with the limit on the mortgages with maturities > 15 years than with mortgages ≤ 15 years?

Mortgages with maturities > 15 years have an average life span of just over 8 years. This is a relatively long time to essentially finance these loans by issuing deposits, which are short-term in nature. The average duration of about 4.5 years for the mortgages with maturities ≤ 15 years is considerably shorter, but still carries some interest risk. Jon felt that he did some good by limiting 7% of NSC CU’s assets in long-term assets. In contrast, the typical Savings and Loan institution had a vast majority of assets in long-term mortgages.

4. Why did NSC CU want to change its mortgage limits in its internal ALM policy? Explain the basic trade-off.

NSC CU wanted to change its mortgage limits in its internal ALM policy to be able to keep more mortgage loans on its balance sheet. Table 1 shows that total auto loans for NSC CU have decreased by about $1.4 million over the 11 months, while the returns on investments, particularly short-term, were near zero. In addition to fee revenue, NSC CU felt that it needed more revenue from the somewhat higher yielding mortgage loans to maintain a healthy net-worth ratio. NSC CU did not want to stop growing and turn away deposits. It had already discouraged deposit growth in recent years by lowering deposit rates some. As long as it is growing some, then NSC CU needed to earn a positive income to maintain its net-worth ratio.

The trade-off is that by making more real estate loans, its interest rate risk increases. Making more loans of longer duration increases the mismatch in maturities of assets and liabilities, because depository institution liabilities tend to be relatively short-term.

5. Use the November 2012 data to calculate how much NSC CU can increase its mortgage lending for mortgages with maturities > 15 years, and for mortgages with maturities ≤ 15 years.

NSC CU could increase its mortgage lending for mortgages with maturities > 15 years: Its new limit = 7% of $136.39 million, or $9.55 million. With its current amount at $7.47 million, it could increase these mortgages by $2.08 million.

NSC CU could increase its mortgage lending for mortgages with maturities ≤ 15 years: Its new limit would be 35% of $136.39 million, or $47.74 million. With its current amount at $36.10 million, it could increase these mortgages by $11.64 million.

6. Make a recommendation to the board regarding this policy change. Defend your answer.

This is certainly a normative answer. NSC CU was dealing with a trade-off between higher net income and interest rate risk. Compared to the Savings and Loan Crisis of the 1980’s, the risk of this situation may seem prudent.

Duration analysis could be used to arrive at an approximate impact of interest rate risk. Have students calculate the average duration of the assets listed in the table, which they should find to be 3.30 years. A weighted average can be quickly calculated in a spreadsheet. Then, for example, if interest rates increase by 1 percentage point, the average value of the assets would be expected to fall by 3.3%. Liabilities have shorter durations, so assuming that liabilities have an average duration of 1 year, a similar calculation would result in a fall in liabilities about 1%.

Initially, NSC CU had assets of $136 million and a capital-asset ratio of 9.1%; this means liabilities were roughly $123.6 million. A 3.3% decrease in assets would result in a $4.5 million decline, with ending assets of about $131.5 million. A 1% decrease in liabilities would result in a $1.24 drop, or ending liabilities of $122.76 million. Net worth would fall from $12.4 million to $8.74 million, and the net worth ratio would fall from a healthy 9.1% to 6.6%. Capital-asset ratios below 7% call for corrective action by the National Credit Union Administration (NCUA).

Depository institutions could try to either shorten the duration of their assets or to lengthen the duration of their liabilities. Encouraging savers to move into longer term certificates of deposit, however, would require offering higher rates on these accounts, which would reduce net income.

Students could experiment with various interest rate changes in a spread sheet to compare how different magnitudes of changes would affect asset and liability values and net worth. They could combine these results with their estimates of the likelihood of such changes happening, and use that information to defend their recommendation.

**Epilogue**

The NSC CU Board of Directors voted in favor of the policy change. To date, interest rates remain low.

**References**

FRED (Federal Reserve Economic Data). [www.research.stlouisfed.org./fred2/](http://www.research.stlouisfed.org./fred2/)

Mishkin, Frederick S. (2013). *The Economics of Money, Banking, and Financial Markets.* Tenth edition. Boston: Pearson