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## Work Pants Finance: The Miners Go To B-School<sup>1</sup>

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In August 2007, Matt Miner arrived at Duke University's Fuqua School of Business with his wife Charity and their two young children. His career goal was to transition from corporate finance to general management, and he reckoned an MBA was the ticket. The Miners had no debt and some savings and investments when they arrived at business school.

The Miners spent summer 2008 in Kansas City, with Matt working in marketing for Deere & Co., the iconic green and yellow tractors manufacturer. In the fall of that year, Matt signed his offer letter and joined Deere's rotational executive development program. When school wrapped up in May of 2009, the Miners had added a third child to their family – and about \$225,000 in total debt to their balance sheet!

Now it was September 2010, and the Miners were on a week's vacation at Kure Beach, North Carolina. On the deck of their rented beach house, Matt gazed over the Atlantic Ocean. He closed the book he was reading with his right hand and took a sip from the beverage held in his left. There was no denying it: Dave Ramsey's *The Total Money Makeover*<sup>2</sup> caught his attention – and rubbed him the wrong way. “Who is this guy to tell me how to manage my money?” Matt asked himself. On the other hand, he wondered, “Who wouldn't like ditching debt, paying cash, and building wealth in a hurry?”

Who indeed? From discussions with his wife, Charity, Matt knew that she favored a conservative financial plan with an aggressive debt payoff schedule.

Fifteen months had passed since graduation. Fifteen months since Beach Week 2009. Matt had worked hard in his first year of post-b-school employment, and he'd earned twice his pre-business school annual pay – \$150,000. Matt wondered: Where had all that money gone? And what was he going to do about his huge school debt? Could Ramsey, a bald guy from Tennessee, help? Running fingers through his own thinning hair, he supposed it was possible.

Matt grabbed a legal pad and wrote at the top: **Debt-free in five years.** Then he began to collect his thoughts and some data. There were no sacred cows. Every budget category was up for review as he and Charity started their debt freedom and financial independence journey.

Matt and Charity devised a roadmap to move forward. First, they constructed their 2010 family budget (see Exhibit 1). Matt then estimated his family's net worth, including debt owing (see Exhibit 2). Finally, he listed pieces of information about his 2011 expected budget and net worth that he knew with some certainty.

Matt's task now was to work through what his 2011 budget might look like given he and Charity's goals to get their family from their 2010 net worth to a 2011 net worth that was consistent with the dream of becoming debt-free in five years while investing enough to earn the employer match through Deere's 401(k).

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<sup>1</sup> This case was prepared by Matt Miner, MBA CFP®, under the supervision of Shane Dikolli at the Darden School of Business, University of Virginia. We are grateful to Alexis Aubry for his helpful feedback on an earlier draft.

<sup>2</sup> <https://www.ramseysolutions.com/store/books/the-total-money-makeover-by-dave-ramsey>

**Exhibit 1:  
Annual Miner Family Budget as of September 2010**

	<i>Annual Amounts (\$)</i>	<i>Monthly Amounts (\$)</i>
Gross Earned Income	150,000	12,500
Social Security Tax	6,622	552
Medicare Tax	2,175	181
Federal Income Tax after Deductions	18,000	1,500
Illinois State Income Tax	5,000	417
<b>Total Taxes, including payroll taxes</b>	<b>31,797</b>	<b>2,650</b>
Income available after taxes	118,203	9,850
Charitable Giving	15,000	1,250
<b>Income available after taxes and charitable giving</b>	<b>103,203</b>	<b>8,600</b>
Employee Retirement Contributions (6% of gross pay receives 10% company match) and Health Savings Account Contributions (4% of gross pay)	15,000	1,250
Student Loan Minimum Payments	18,000	1,500
<b>Money Available for Lifestyle and Accelerated Debt Repayment</b>	<b>70,203</b>	<b>5,850</b>
Mortgage Principal and Interest	16,000	1,333
Property Taxes & Homeowners Insurance	4,000	333
Housing Maintenance and Repairs	3,000	250
Utilities	3,600	300
Meals at home	8,400	700
Meals out	2,700	225
Credit card payments	7,200	600
Car Note for Odyssey	5,400	450
All other car expenses - gasoline, maintenance, registration, insurance	6,000	500
Entertainment and Vacations	3,500	292
Personal spending - clothing, hobbies	4,000	333
Miscellaneous / who knows?	6,403	534
Total Income Remaining after taxes & retirement saving	0	0

**Exhibit 2:  
Miner Family Net Worth, September 30, 2010**

<b>Item</b>	<b>Assets</b>	<b>Debt</b>
	\$	\$
Primary Residence	220,000	204,600
2007 Honda Odyssey Van	19,000	16,000
1999 Toyota 4Runner	8,000	-
Checking Account	3,000	-
Savings Account	8,000	-
Combined IRAs	45,000	-
John Deere 401(k)	25,000	-
Health Savings Account	5,000	-
Credit Card Used to Furnish Home	-	24,000
Total of all Student Loans	-	185,000
<b>Total</b>	<b>333,000</b>	<b>429,600</b>
Miner Family Net Worth	<b>(96,600)</b>	

**Exhibit 3:**  
**Items to Consider for Miner Family Budget and Net Worth, Q4 2010 and Calendar 2011**

1. In January 2011, the Miners anticipated a move for Deere to an area with a comparable cost of living. They are willing to be flexible in their housing requirements. They believe they can rent a home for the same monthly amount as their current mortgage payment, eliminate the property taxes and maintenance expenses of homeownership, *and* lower annual utility expenses by \$1000 per year. They are willing to accept this lower level of housing expense until they can fully repay their debt (Assume: \$4000 annual property tax savings, \$3000 annual home-maintenance savings, \$1000 annual utilities cost savings = \$8000 annual savings each period). Assume the Miners sell their current house for the value in their net worth statement, and the difference between the selling price and the outstanding mortgage covers the transaction costs.
2. The Miners will earn relocation benefits greater than their direct moving costs, subject to a marginal tax rate of 30%. They anticipate a pre-tax relocation bonus of \$20,000 in January 2011 & January 2013. They can use this money for home improvement and furnishings, for anything else, or for debt repayment (Assume:  $\$20,000 * 70\% = \$14,000$  after-tax income in 2011 & 2013).
3. The Miners are willing and able to sell their 2007 Honda Odyssey van for the figure on the September 2010 balance sheet. They will replace it with a 2004 Honda Odyssey van with a price of \$8,000. They will complete this transaction on 12/31/2010 and make no adjustments to the book value of the 2007 Odyssey van between September and December. They will fund this purchase with the equity from the sale of the 2007 van and supplement it, if necessary, from their savings account. They will not acquire any new automotive debt (Assume: \$3,000 equity in 2007 van. Add \$5,000 from the savings account, reducing the savings account balance from \$8,000 to \$3,000 in 2010. Beginning in January 2011, assume \$5,400 annual savings each period by eliminating car note).
4. From a priority standpoint, the Miners want to pay off their credit card first. Though the credit card will accrue \$0 interest in 2010, beginning in 2011, it will accrue 20% interest on any unpaid balance. The Miners do not plan to reduce their checking or savings accounts to repay the credit card. Instead, they are focused on freeing up dollars in their ongoing family budget to accelerate repayment on the credit card.
5. After they repay the credit card debt, the Miners will direct all excess cash flows to repay student loans.
6. The student loans carry an annual interest rate of 5.5%.
7. To simplify calculations, apply the appropriate loan interest rate to the beginning balance of the credit card and student loan each year in which those debts incur interest expense.
8. Beginning in 2011, the Miners are willing to reduce their eating out budget to \$1,500 per year, and they believe with enough care, they can free up another \$3,000 per year from the miscellaneous category. (Assume annual savings from eating out \$1,200 and annual savings from greater attention to miscellaneous expenses of \$3,000).
9. Other assumptions
  - a. Consider the same accounts as in the current balance sheet, with no new accounts added.
  - b. Carry the replacement van at \$8,000 on the 2011 balance sheet.

- c. 1999 Toyota 4Runner depreciates by \$1,000 annually.
- d. No salary changes from 2010 to 2011.
- e. Employee contributions of \$9,000 to Matt's 401(k) in 2011.
- f. Employer contributions of \$15,000 to Matt's 401(k) in 2011, made on 12/31/2011 (Note: these *contributions* do not grow by the investment growth rate, whereas the beginning balance does grow by the investment growth rate).
- g. 401(k) investment growth of 8% in 2011, applied to the beginning 401(k) account balance.
- h. Annual contributions of \$6,000 per year to Matt's Health Savings Account, and that this money is accumulated and not spent, and grows by 0% per year. Matt makes no additional contributions to the Health Savings Account in the remaining three months of 2010.
- i. The checking account and savings account remain at the same level they attained when the Miners sold their 2007 van and bought their 2004 van (Note: the van purchase lowers the savings account balance by \$5,000 in 2010)
- j. The Combined IRAs grow at 8% per year, compounded annually, with no new contributions
- k. No new debts.

**Exhibit 4:  
Debt Amortization Table, without proposed budgetary changes**

**Credit Card**

<b>Calendar Year</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Credit Card Interest Rate by Year	0%	20%	20%	20%	20%	20%
	\$	\$	\$	\$	\$	\$
Beginning Debt	24,000	16,800	12,960	8,352	2,822	-
Annual Interest	-	3,360	2,592	1,670	564	-
Scheduled Payments	7,200	7,200	7,200	7,200	3,387	-
<b>Ending Debt</b>	<b>16,800</b>	<b>12,960</b>	<b>8,352</b>	<b>2,822</b>	<b>-</b>	<b>-</b>

**All Student Loans**

<b>Calendar Year</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Student Loan Interest Rate by Year	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
	\$	\$	\$	\$	\$	\$
Beginning Debt	185,000	177,175	168,920	160,210	151,022	141,328
Annual Interest, Calculated as 5.5% on beginning debt balance	10,175	9,745	9,291	8,812	8,306	7,773
Scheduled Payments	18,000	18,000	18,000	18,000	18,000	18,000
<b>Ending Debt</b>	<b>177,175</b>	<b>168,920</b>	<b>160,210</b>	<b>151,022</b>	<b>141,328</b>	<b>131,101</b>

## Work Pants Finance – Teaching Notes

### Introduction

This case is motivated by management accounting student anecdotes over many years, where the students claim to learn critical financial concepts in the course, yet they do not fully apply their learning to their personal lives. It also introduces a brief connection of management accounting to behavioral economics, specifically the literature on behavioral nudging via meaningful metrics that capture obscure information.

The case is based on the real-life experiences of Matt Miner, who completed his MBA at Duke University's Fuqua School of Business in 2009. After completing his degree, Matt realized that he and his growing family needed to better prepare financially for life post-MBA. This realization prompted him to pursue a program of household savings that would allow his family to be debt-free within five years.

The case provides a short narrative along with exhibits containing quantitative information and assumptions. Students can work with the information and assumptions to address the question of whether the family could be debt-free within five years, even in the face of significant debt accumulated in the pursuit of Miner's MBA degree. Matt Miner is the protagonist in the case and is contemplating significant household budgetary changes at the end of the third calendar quarter of 2010.

### Intended Audience

The case is intended for an MBA managerial accounting elective course in topics related to planning or decision-facilitating uses of accounting information. While the protagonist is an MBA candidate, the content is relatable to students who take out loans to complete their academic studies. For an undergraduate who may be taking a managerial accounting elective, the case could provide insights into the personal finances of budding MBAs. However, the content, of course, is most relevant to MBA candidates, who are likely to find the case engaging because it speaks directly to financial issues that they face in their personal lives.

### Use of the Case

I use the case in a Strategic Cost Management elective course. I design the course around three modules that represent the three key themes of Strategic Cost Management<sup>3</sup>: Strategic Position Analysis, Cost Driver Analysis, and Value Chain Analysis. A feature of the case is that three components of the case align with the themes of Strategic Cost Management:

1. Strategic Position Analysis – an instructor can ask students to prepare a Net Worth Statement after applying budgetary changes.
2. Cost Driver Analysis – an instructor can ask students to prepare a schedule of personal household spending changes to identify savings that the Miner family can apply to accelerate debt repayments.

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<sup>3</sup> Hanlon, M.L., R.P. Magee, G.M. Pfeiffer and T.R. Dyckman (2020) "Financial and Managerial Accounting for Decision-Makers" Cambridge Publishers. p.643.

3. Value Chain Analysis – This case does not directly contain examples of the elements of the value chain. Still, the spending behavior of household members, the suppliers to the household, and lenders to the family are analogous to different elements of the value chain.

The case could also be used as a standalone case for learning about strategic cost management later in a managerial accounting elective. Given the wide range of possibilities for assignment questions (see below), the case could be discussed in a 75 to 90-minute session or extended over two 75 minute sessions.

Because my course is on Strategic Cost Management, I use the case as a platform for launching the course. I typically teach 85-minute class sessions, and in the first-class session, I spend up to 20 minutes introducing the course and expectations. This timing leaves just 60 to 65 minutes to discuss the case, so I typically only assign the first three suggested questions before class (see below). I describe below a teaching plan for a 65-minute session.

Before the class, an instructor can ask the students to read the case, access a spreadsheet template (based on Exhibits 1, 2, and 4 of the case) that the instructor uploads to the class learning platform, and address the assigned questions. To the extent that students have had experience preparing a personal budget, they should not need any additional background reading. If they have had no experience preparing a personal budget, they can sign up for Matt Miner’s free short e-book titled “MBA Money,” which contains a set of ideas for personal financial planning. The e-book signup is available at <https://www.workpantsfinance.com/resources>. An instructor can also assign optional pre-class work. For example, Matt Miner hosts a podcast series, and an example 30 minute episode is available here: <https://www.workpantsfinance.com/podcast/passion-compassion-and-the-importance-of-grit-shane-dikolli-of-the-university-of-virginias-darden-school-of-business.life>.

## Learning Objectives

The key learning objectives of the case are to learn and understand conversationally about:

1. The three key themes underpinning the concept of strategic cost management (strategic position analysis, cost driver analysis, and value chain analysis).
2. Tools for structuring an analysis about the personal finances of a student who has taken out loans to support their academic studies.
3. Ideas for better managing personal costs and how those ideas may be translatable to a business setting.
4. Psychological nudges that can influence the behavior of accounting information decision-makers.

## Possible Assignment Questions

This case has been designed with a rich set of questions to allow the instructor to use the case in various settings. An instructor can use the case in an introductory class for 60 to 65 minutes and assign questions 1 to 3 below before the class session. The instructor can also supply the students with spreadsheet templates to reduce data entry tasks, which allows the students to focus more on the content of the case. The complete set of questions are as follows:



1. Use the information provided to show annual budget savings and extra income for the Miners during 2011 to 2015 that the Miner family could use for accelerated debt repayment.
2. Using the assumptions in Exhibit 3, prepare a new debt amortization schedule based on the budgetary changes proposed in the case. Do the Miners achieve debt freedom by the end of 2015?
3. Create a December 31, 2011 balance sheet for the Miners, based on the September 2010 balance sheet and using the assumptions in Exhibit 3.
4. One aspect of accelerating debt repayment is the savings in interest expense over the repayment period. In the original, non-accelerated amortization schedule provided with the case, the Miners incur \$8,187 of credit card interest charges, \$54,101 of student loan interest expense through 2015, and, though it's not shown, they would incur an additional \$41,082 in interest expense through 2025 before the debt balance reaches \$0. This totals \$103,370 in interest expense. Calculate the interest expense:
  - a. for both credit card and student loan debts in the accelerated-repayment scenario.
  - b. savings from adopting the accelerated repayment schedule.
5. Researcher Rick Larrick proposes “better measures of obscure information” as a way to nudge decision-makers towards more effective and efficient decisions.<sup>4</sup> For example, to help consumers grapple with concepts like fuel economy in cars, Larrick recommends displaying gallons consumed per 100 miles traveled rather than miles per gallon. Here’s why: It is unintuitive to consumers that increased fuel efficiency from 10 to 20 miles per gallon saves 5 gallons of fuel per 100 miles driven, whereas an increase from 20 to 50 miles per gallon saves only 3 gallons of fuel per 100 miles driven. Larrick’s recommendation may help consumers choose more efficient cars. What if interest expense was expressed in ways that were more relevant to borrowers? We propose four possibilities.

Each \$10,000 savings in interest expense could buy:

- One clean water well in Africa
- Three weeks of four-bedroom ocean-front living on the North Carolina Outer Banks
- Seven round-trip tickets to London or Paris
- Five-hundred lovely meals

Questions:

- a. About how many clean water wells in Africa will the Miner family’s student loan expense cost if they amortize the loans through 2025, the original schedule?
- b. If the Miners adopt the accelerated repayment schedule, how many clean water wells could they buy with the savings? How many weeks at the beach?

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<sup>4</sup> A helpful background video on the topic of nudging and better measures of obscure information is available at <https://www.youtube.com/watch?v=8stE7VdVTRA>

- c. What other borrowing-cost metrics do you recommend as relevant to student-loan borrowers?
6. Create annual balance sheets with net worth calculations for the Miners for the years 2012 - 2015. Assume:
- All the same accounts as on the current balance sheet, with no new accounts added
  - Each car depreciates by \$1000 per year from its 2011 value
  - No salary changes for all years
  - Annual Employee contributions of \$9000 per year to Matt's 401(k)
  - Annual Employer contributions of \$15,000 per year to Matt's 401(k)
  - The 401(k) grows at a rate of 8% per year, applied to the year's beginning 401(k) balance, compounded annually.
  - Annual contributions of \$6000 per year to Matt's Health Savings Account, and that this money is accumulated and not spent, and grows by 0% per year.
  - The checking account and savings account remain the same as the 2011 balance sheet values through 2015.
  - The Combined IRAs grow at 8% per year, applied to the year's beginning Combined IRA balance, and compounded annually. Assume no new contributions through 2015.
  - The balances of the 1/1/201X Credit Card and Student Loan balances for each Balance Sheet equal the prior year's ending balances from the Revised Amortization Schedule.
  - No new debts

Questions:

- a. What is the Miner family's net worth at the end of 2015, assuming they spent any available cash surplus in 2015 on a family vacation after achieving \$0 debt?
- b. Is this amount higher or lower than you would expect for an MBA six years after graduation?
- c. Are these budgetary sacrifices in the early days after business school worth it to achieve greater control in the future? Why or why not?

## Responses to Possible Assignment Questions

1. *How much is the annual budget savings and extra income for the Miners during years 2011 – 2015 that could be used for accelerated debt repayment?*

Exhibit TN-1 provides a worksheet showing the amount of additional income and savings from relocations and household budget changes. Applying the assumptions from Exhibit 3 of the case, the bottom line shows that Miners save \$31,600, \$24,800, \$38,800, \$20,988, and \$17,600 in the five years from 2011 to 2015, respectively.

2. *Using the assumptions in Exhibit 3, prepare a new debt amortization schedule based on the budgetary changes proposed in the case. Can the Miners achieve debt freedom by the end of 2015?*

Exhibit TN-2 provides a Pro-Forma Amortization Schedule based on the new financial plan. This schedule incorporates the Miners' annual budget savings and extra income from 2011 to 2015 (i.e., the calculations from the first requirement). Two panels are required. The first panel shows the reduction in credit card debt. The second panel shows the decrease in all student loans. An important

assumption in this analysis is that the Miner family pays down the credit card debt first, which is much more expensive than the student loan debt. After applying the interest charges to the new annual debt balances, the amortization schedule shows that by the end of 2015, the Miner family will have a surplus yearly cash flow of \$4,039.

3. *Create a December 31, 2011 balance sheet for the Miners, based on the September 2010 balance sheet and using the assumptions in Exhibit 3.*

To prepare the 2011 balance sheet for the Miners, two steps are necessary. First, students must apply the savings calculated from the first question requirement to the pro-forma amortization schedules based on the new financial plan. Second, the student must prepare the amortization schedule in the second question requirement, which applies the savings from Q1 to paying down debt. After doing so, the student can use the assumptions in Exhibit 3 to generate a balance sheet as of December 31, 2010, and then December 31, 2011. Exhibit TN-3 presents the balance sheets to the end of 2011. The Miner family's net worth at that time is estimated to be -18,680.

4. *Calculate the interest expense (a) for both credit card and student loan debts in the accelerated-repayment scenario (b) savings from adopting the accelerated repayment schedule.*

Students can extract the total interest expense from Exhibit TN-2. In Panel A, the credit card interest is \$3,360 in 2011 before the Miner family repays the credit card debt. Add this to the sum of the interest expense on the loan from 2010 to 2015 (\$39,788, reported in Panel B) to arrive at the total interest expense of \$43,148. The interest savings from the accelerated repayment is the total amount of interest under the existing payment scheme (\$103,370, which is given in the question requirement) minus the \$43,148 calculated in part (a) to yield \$60,222. Depending on time constraints, the instructor might ask a student to verify the total interest payable on the original repayment schedule of \$103,370. A student can do this by extending Exhibit 4 in the case information out to 2025.

5. *(a) About how many clean water wells in Africa will the Miner's student loan expense cost if they amortize the loans through 2025, the original schedule? (b) If the Miners adopt the accelerated repayment schedule, how many clean water wells could they buy with the savings? How many weeks at the beach? (c) What other borrowing cost metrics do you recommend as relevant to student-loan borrowers?*

(a) The interest payable on the original loan schedule was \$103,370, given in question 4 but can also be calculated by extending Exhibit 4 to 2025. If a donor needs \$10,000 to help build one clean water well in Africa, then the number of clean water wells the total interest represents is 103,370 divided by 10,000, which is more than ten clean water wells in Africa.

(b) The savings calculated in question 4 is \$60,222. This implies that by adopting an accelerated debt repayment schedule, the Miner family can create the opportunity for \$60,222 divided by \$10,000, which is more than six clean water wells in Africa. In other words, one way to nudge family efforts toward accelerated debt repayment could be in framing the goal not as a vague savings dollar amount but in that it would allow for six clean water wells to be constructed in Africa. For a more personalized leisure-based nudge, \$60,222 would also yield six separate three-week four-bedroom ocean-front accommodations in the Outer Banks or a total of 18 weeks of four-bedroom ocean-front accommodations.

(c) The idea behind this question is to inspire students to think of a meaningful goal that will nudge them toward a more substantial commitment to accelerate student debt repayment. The discussion of this question might yield several student opinions that \$60,222 in interest savings is motivation enough. But behavioral economics research (quoted in the Larrick video) shows that

recasting an obscure dollar amount into meaningful metrics is likely to provide the decision-maker with additional motivation to make decisions that yield a better allocation of the decision-maker's resources.

6. (a) *What is the Miner Family's net worth at the end of 2015, assuming they spend any available cash surplus in 2015 on a family vacation after achieving \$0 debt? (b) Is this amount higher or lower than you would expect for an MBA six years after graduation? (c) Are these budgetary sacrifices in the early days after business school worth it to achieve greater control in the future? Why or why not?*
- (a) Exhibit TN-4 presents the Miner family balance sheet for each year as of December 31 from 2012 to 2015. It extends the balance sheets prepared in question 2. TN-4 shows that the Miner family net worth as of December 31, 2015, is \$291,651, with zero debt.
- (b) Responses to this question will vary depending on whether the respondent is an undergraduate or an MBA student. It will also depend on factors such as the socio-economic background of the student. Given the size of the original debt, the net worth might be somewhat surprising to some, but it is almost entirely driven by a fierce commitment toward saving for the long term. Some may consider the case slightly unusual in that it does not factor in homeownership. But the annual budget does factor in accommodation costs, which can vary significantly across different regions.
- (c) In the case of the Miner family, the budgetary sacrifices became habitual and well worth doing. It has permitted Matt Miner to pursue his passion of helping others design their own financial independent path, which Matt articulates at [workpantsfinance.com](http://workpantsfinance.com).

## Teaching Plan

For a 65-minute class session, the instructor can set up four discussion pastures with a five-minute wrap-up, described below. I have suggested a series of questions for each pasture that an instructor can use to build the class discussion. Given that many, if not most, students likely face some student debt in their own lives, I have found students very interested in responding to the questions. The challenge for the instructor is to keep the discussion moving and avoid getting too bogged down in details of someone else's experiences that have other students have not considered before class.

### I. Overview and problem definition (10 minutes)

1. What problem does the Miner Family face? Does this sound familiar?
2. How do you think about addressing this type of issue? Do you have a budget? Do you have a "head in the ground" strategy? Do you prepare a net worth statement?
3. How important is it **not** to ignore this problem? Is there any way you could measure the importance?

### II. Quantitative requirements (20-25 minutes)

Depending on time, an instructor could split the class into breakout groups and assign the schedules in the Teaching Notes to different groups. A representative from each breakout group would then report back to the main group with the numbers from their discussion in the breakout group. In a 65 minute session, however, there is unlikely to be time for breakout groups.

1. What numbers did you get after applying the assumptions about potential savings?

- The instructor could have a template for Exhibit TN-1 written on the board (or via a projected tablet) with the numbers left blank. After a student fills in the empty numbers, ask the rest of the class whether they have any questions for their classmate who supplied the numbers.
2. What numbers did you get for the revised credit card amortization schedule? How about for the revised student loan amortization schedule?
    - The instructor could have a template for Exhibit TN-2 written on the board (or via a projected tablet) with the numbers left blank. After a student fills in the empty numbers, ask the rest of the class whether they have any questions for their classmate who supplied the numbers.
  3. What numbers did you get for the balance sheet?
    - The instructor could have a template for Exhibit TN-3 written on the board (or via a projected tablet) with the numbers left blank. After a student fills in the empty numbers, ask the rest of the class whether they have any questions for their classmate who supplied the numbers.
  4. What questions would you have asked of Matt as you prepared the analysis?
    - Questions that students may have here include:
      - For what purpose is miscellaneous spending? (This expenditure is typically used for unforeseen emergency expenses that are difficult to define. It might also be for vacations or unplanned travel to visit family. Unspent surpluses provide a buffer in case of, for example, a short-term loss of employment).
      - Why not invest savings in an investment fund rather than pay down debt? (Matt's risk preferences were such that he wanted to have certainty with the use of the funds. The interest savings were larger than the guaranteed return he could get from investing the savings in, for example, secured term deposits.)
      - How difficult was it to substitute accommodations to reduce the overall costs of accommodations? (Perhaps the most challenging part is the time spent on finding suitable rental space for a family of five in a location that balanced commute time with affordability.)
  5. Could this analysis be helpful in your post-MBA planning? How?
    - One possibility might be to ask the students to prepare their own plan, using the templates in the case. Discussion of such plans would be fraught with challenges given the private nature of the data, but I recommend encouraging students to consider at least the templates in the case if they have not already done so.

### **III. Looking ahead (15-20 minutes)**

In this pasture, the instructor can introduce the additional information provided in the assignment questions 4 to 6. Assuming the instructor does not assign these questions before class, the students will be able to work on these responses during class to reinforce their understanding of the discussion thus far.

1. What is the Miner's net worth at the end of 2015, assuming they spent any available cash surplus in 2015 on a family vacation after achieving \$0 debt?
2. Is this amount higher or lower than you would expect for an MBA six years after graduation?
3. Can they afford any family vacations in those five years?

4. Are these budgetary sacrifices in the early days after business school worth it to achieve greater control in the future? Why or why not?
5. What other approaches to achieving debt-freedom in five years can you recommend to the Miners? Are there any creative ideas that you believe they failed to consider?
6. Could behavioral nudges play a role here? (i.e., depending on time, this would introduce Rick Larrick's research on communication of complex information).

#### **IV. Epilogue (10 minutes)**

1. What happened?
  - The Miner family diligently followed the accelerated debt repayment plan. Matt and Charity did revise the budget over five years because Matt's career path ultimately took different turns that he and Charity did not foresee in the 2010 plan.<sup>5</sup> However, the Miner family achieved their overall goal of repaying all debt by the end of 2015.
2. Where is Matt Miner now? What lessons would he have?
  - Matt Miner is now a Certified Financial Planner. His website and contact details are available at [workpantsfinance.com](http://workpantsfinance.com). Matt is generous with his time and has visited my class to give his personal perspective on the case materials.
3. What tactics will you adapt in your personal financial planning going forward?

#### **V. Wrap Up (5 minutes)**

What do we take away from this exercise?

- The importance of cost-based planning using quantitative analysis. Here we had the three elements of Strategic Cost Management:
  - Strategic Position analysis (Net Worth)
  - Cost driver analysis (Opportunities for Savings)
  - Value chain analysis (Changing the behavior of stakeholders – here the family)
- What behavioral incentives can we use to complement planning tools?

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<sup>5</sup> <https://www.linkedin.com/in/mattminer/>

## Exhibit TN-1

### Additional Income and Savings from Relocations and Household Budget Changes

Calendar Year	2010	2011	2012	2013	2014	2015
	\$	\$	\$	\$	\$	\$
Eliminate Property Tax Bill	-	4,000	4,000	4,000	4,000	4,000
Eliminate Home Maintenance Bill	-	3,000	3,000	3,000	3,000	3,000
Reduce Utility Expenses	-	1,000	1,000	1,000	1,000	1,000
Relocation Bonus (after tax)	-	14,000	-	14,000	-	-
Excess cash compared to baseline budget by eliminating van payment	-	5,400	5,400	5,400	5,400	5,400
Reduce Meals Out Budget	-	1,200	1,200	1,200	1,200	1,200
Reduce Miscellaneous Category	-	3,000	3,000	3,000	3,000	3,000
Excess cash compared to baseline budget by accelerating credit card repayment	-	-	7,200	7,200	3,388	-
<b>Annual After-Tax Relocation Income and Household Budget Savings</b>	-	<b>31,600</b>	<b>24,800</b>	<b>38,800</b>	<b>20,988</b>	<b>17,600</b>

## Exhibit TN-2

### Pro-Forma Amortization Schedules, Based on New Financial Plan

#### Panel A: Credit Card, 0% interest in 2010, 20% interest beginning in 2011

<b>Calendar Year</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Credit Card Interest Rate by Year	0%	20%	20%	20%	20%	20%
	\$	\$	\$	\$	\$	\$
Beginning Debt	24,000	16,800	-	-	-	-
Annual Interest	-	3,360	-	-	-	-
Scheduled Payments	7,200	7,200	-	-	-	-
Annual Additional Credit Card Payments	-	12,960	-	-	-	-
<b>Ending Debt</b>	<b>16,800</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

#### Panel B: All Student Loans

<b>Calendar Year</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Student Loan Interest Rate by Year	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
	\$	\$	\$	\$	\$	\$
Beginning Student Loan Debt	185,000	177,175	150,280	115,745	65,311	29,915
Annual Student Loan Interest	10,175	9,745	8,265	6,366	3,592	1,645
Annual Scheduled Student Loan Payments	18,000	18,000	18,000	18,000	18,000	18,000
Annual Additional Student Loan Payments	-	18,640	24,800	38,800	20,988	13,561
<b>Ending Debt</b>	<b>177,175</b>	<b>150,280</b>	<b>115,745</b>	<b>65,311</b>	<b>29,915</b>	<b>-</b>
<b>Surplus Annual Cash Flow After Debt Payments</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>4,039</b>



Exhibit TN-3

<b>Miner Family Balance Sheet</b>	<b>9/1/2010</b>	<b>12/31/2010</b>	<b>12/31/2011</b>
	\$	\$	\$
<b>Assets</b>			
<b>Cash</b>			
Checking Account	3,000	3,000	3,000
Savings Account	8,000	3,000	3,000
<b>Vehicles</b>			
2007 Honda Odyssey Van	19,000	-	-
2004 Honda Odyssey Van	-	8,000	8,000
1999 Toyota 4Runner	8,000	8,000	7,000
<b>Property</b>			
Primary Residence	220,000	-	-
<b>Investments</b>			
Combined IRAs	45,000	45,000	48,600
John Deere 401(k)	25,000	25,000	51,000
Health Savings Account	5,000	5,000	11,000
<b>Total Assets</b>	<b>333,000</b>	<b>97,000</b>	<b>131,600</b>
<b>Liabilities</b>			
Mortgage Loan for Primary Residence	204,600	-	-
Car Note 2007 Honda Odyssey Van	16,000	-	-
FOUR Zero Percent credit cards used to furnish home, 12/31/2011	24,000	16,800	-
Total Student Loans, average interest rate 5.5%	185,000	177,175	150,280
<b>Total Liabilities</b>	<b>429,600</b>	<b>193,975</b>	<b>150,280</b>
Miner Family Net Worth	(96,600)	(96,975)	(18,680)

Exhibit TN-4

<b>Miner Family Balance Sheet</b>	<b>12/31/2012</b>	<b>12/31/2013</b>	<b>12/31/2014</b>	<b>12/31/2015</b>
	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
<b>Assets</b>				
<b>Cash</b>				
Checking Account	3,000	3,000	3,000	3,000
Savings Account	3,000	3,000	3,000	3,000
<b>Vehicles</b>				
2007 Honda Odyssey Van				
2004 Honda Odyssey Van	7,000	6,000	5,000	4,000
1999 Toyota 4Runner	6,000	5,000	4,000	3,000
<b>Investments</b>				
Combined IRAs	52,488	56,687	61,222	66,120
John Deere 401(k)	79,080	109,406	142,159	177,532
Health Savings Account	17,000	23,000	29,000	35,000
<b>Total Assets</b>	<b>167,568</b>	<b>206,093</b>	<b>247,381</b>	<b>291,651</b>
<b>Liabilities</b>				
Total Student Loans, average interest rate 5.5%	115,745	65,311	29,915	-
<b>Total Liabilities</b>	<b>115,745</b>	<b>65,311</b>	<b>29,915</b>	<b>-</b>
Miner Family Net Worth	51,823	140,782	217,466	291,651