Tools for Credit Analysis

• In a perfect world
  – Financial Soundness
    • Balance sheets with cost and market values
  – Financial Performance
    • Accrual income statement
Tools for Credit Analysis

• In the real world
  – Financial Soundness
    • Market value balance sheets
  – Financial Performance
    • Schedule F tax statement
  – How can we measure financial performance in the real world?

Tax Forms/Income Statement

• Balance sheets
• Schedule F database
Balance Sheets

- Problems with Ag Balance Sheets
  - Market valuation
  - Whenever...

Income Statement

- Problems with Schedule F
  - Cash based
  - Tax rules that distort income
  - Fast depreciation
Balance Sheet

• A snapshot of the assets and liabilities of a business at specific point in time
  – Assets
    • Everything owned or payable to the business
  – Liabilities
    • All obligations owed
  – Owners Equity/Net Worth
    • Total assets minus total liabilities

Balance Sheet Analysis

• Current position
• Financial structure
• Total solvency
• Net worth change
Balance Sheets

• Market value balance sheets provide:
  – Solvency
  – Collateral analysis
  – Loan to value

• What’s missing?
  – Reliable measure of performance
  – Earned net worth change

Balance Sheet Challenge
Asset Valuation

• Market Valuation
  – Capital assets valued at estimated fair market value

• Cost Valuation
  – Capital assets valued at depreciated value
**Balance Sheet Challenge**

**Asset Valuation**

- **Market Valuation**
  - Market estimates supplied by borrower
- **Cost Valuation**
  - Base values used for credit analysis

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**Cost or Base Value Balance Sheets**

\[
\text{Net worth change} = \text{Change in retained earnings} = \text{Earned net worth change}
\]
Copy Market Values to Cost

Income Statement

• Problems with Schedule F
  – Cash based
  – Tax rules that distort income
  – Fast depreciation
Sch F vs. Accrual Net Income
% difference for years averaged

<table>
<thead>
<tr>
<th>Years Averaged</th>
<th>All farms</th>
<th>20-40% in debt</th>
<th>&gt;40% in debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-04</td>
<td>67%</td>
<td>56%</td>
<td>60%</td>
</tr>
<tr>
<td>2003-05</td>
<td>41%</td>
<td>56%</td>
<td>61%</td>
</tr>
<tr>
<td>2004-06</td>
<td>63%</td>
<td>57%</td>
<td>63%</td>
</tr>
<tr>
<td>5-Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002-06</td>
<td>66%</td>
<td>55%</td>
<td>60%</td>
</tr>
</tbody>
</table>


Accrual Adjusted Income Statement

<table>
<thead>
<tr>
<th>Jones Farm</th>
<th></th>
<th>Smith Farm</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross income</td>
<td>$500,000</td>
<td>Gross income</td>
<td>$500,000</td>
</tr>
<tr>
<td>Cash expenses</td>
<td>-450,000</td>
<td>Cash expenses</td>
<td>-450,000</td>
</tr>
<tr>
<td>Net cash income</td>
<td>50,000</td>
<td>Net cash income</td>
<td>50,000</td>
</tr>
<tr>
<td>Inventory change</td>
<td>+100,000</td>
<td>Inventory change</td>
<td>-100,000</td>
</tr>
<tr>
<td>Depreciation</td>
<td>-40,000</td>
<td>Depreciation</td>
<td>-40,000</td>
</tr>
<tr>
<td>Net farm income</td>
<td>110,000</td>
<td>Net farm income</td>
<td>-90,000</td>
</tr>
</tbody>
</table>
Accrual Adjusted Income Statement

- Reflects the value of everything produced during the year
- Reflects the cost incurred to produce it
FINPACK Financial Analysis Tools

FINAN vs. Schedule F Accrual Analysis

• What do you lose if you choose Schd F
  – Income sources
  – Prices received
  – Crop yields
  – Livestock efficiencies
  – Potentially some accuracy

20 data points
Accrual Adjusted Income Statement

- A cruel thing happened on the way to the Farm Financial Standards

- 16 of the 21 measures require accrual Net Farm Income
Accrual Adjusted Income Statement

• Can you accurately evaluate debt coverage with cash based information?

Accrual Adjusted Income Statement

• Accrual vs. cash based debt coverage
  – Last 5 years, accrual has been better generally been better than cash
  – 2013 – will the chickens come home to roost
Accrual Adjusted Income Statement

• Requires fiscal year end balance sheets
  – Minimize within year cyclical changes
  – Measure net worth change over a set time-frame
  – Ability to measure profitability
  – Accounting discipline

How can we help you get fiscal year end balance sheets?

• FINPACK Lite
• Personal version of FINPACK $149
  ➢ (.01468% of average gross farm income)
• Import from FBM
• Send out the Balance Sheet Worksheet
**Balance Sheets**

What if you can’t get fiscal year balance sheets?

**Earned Net Worth Analysis**

- Measures earned net worth change between any to balance sheet dates
- Calculate term debt coverage for the period
Statement of Owner’s Equity

**Commercial Business**

<table>
<thead>
<tr>
<th>Beginning shareholder’s equity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Net income after taxes (income statement)</td>
<td></td>
</tr>
<tr>
<td>- Dividends</td>
<td></td>
</tr>
<tr>
<td>= Ending shareholder’s equity</td>
<td></td>
</tr>
</tbody>
</table>

Retained earnings = Earned net worth change

**Farm Business**

<table>
<thead>
<tr>
<th>Beginning net worth</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Net farm income (accrual)</td>
<td></td>
</tr>
<tr>
<td>+ Non-farm income</td>
<td></td>
</tr>
<tr>
<td>- Owner withdrawals/family living</td>
<td></td>
</tr>
<tr>
<td>- Income taxes</td>
<td></td>
</tr>
<tr>
<td>+/- Valuation changes</td>
<td></td>
</tr>
<tr>
<td>= Ending net worth</td>
<td></td>
</tr>
</tbody>
</table>

Retained earnings = Earned net worth change
### Earned Net Worth Change

#### Farm Business

<table>
<thead>
<tr>
<th>Ending net worth</th>
<th>- Beginning net worth</th>
<th>= Net worth change</th>
</tr>
</thead>
</table>

#### Earned Net Worth Change

Net farm income

- Non-farm income

- Owner withdrawals (family living)

- Income taxes
Valuation Changes

- Not just land
- Machinery and buildings – if depreciation isn’t realistic, valuation changes creep in
- Use of inconsistent depreciation methods may distort the signals

Depreciation Is Real

<table>
<thead>
<tr>
<th>Southern Minnesota Crop Farms 2003 - 2012</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mach &amp; building purchases</td>
<td>$84,577</td>
</tr>
<tr>
<td>Mach &amp; building sales</td>
<td>6,533</td>
</tr>
<tr>
<td>Net purchases</td>
<td>$78,054</td>
</tr>
</tbody>
</table>

Source: FINBIN (www.finbin.umn.edu)
Depreciation Dilemma

- Depreciation is a real expense
- Tax depreciation just messes everything up
- Economic depreciation
  - Starts with original purchase cost
  - Spreads cost as accurately as possible across useful life of the asset
- Land values never change

FINPACK Financial Analysis Tools
### Yearly Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning balance sheet</td>
<td>January 1, 2005</td>
<td>January 1, 2006</td>
<td>January 1, 2007 -</td>
</tr>
<tr>
<td>Ending balance sheet</td>
<td>January 1, 2006</td>
<td>January 1, 2007</td>
<td>January 1, 2008 -</td>
</tr>
<tr>
<td><strong>DEPpreciation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginning value, noncurrent assets</td>
<td>364,883</td>
<td>426,081</td>
<td>1,011,391</td>
</tr>
<tr>
<td>Capital purchases</td>
<td>(+) 103,275 (+)</td>
<td>(+) 370,563 (+)</td>
<td>(+) 1,111,391 (+)</td>
</tr>
<tr>
<td>Ending value, noncurrent assets</td>
<td>(-) 427,392 (-)</td>
<td>(-) 742,186 (-)</td>
<td>(-) 979,618 (-)</td>
</tr>
<tr>
<td>Capital sales</td>
<td>(-)</td>
<td>(-)</td>
<td>(-)</td>
</tr>
<tr>
<td>Depreciation / Capital adjustment</td>
<td>(+) 40,766 (+)</td>
<td>(+) 56,378 (+)</td>
<td>(+) 78,097 (+)</td>
</tr>
<tr>
<td>Term debt coverage ratio</td>
<td>1.96</td>
<td>2.74</td>
<td>3.43</td>
</tr>
</tbody>
</table>

### Net Farm Income

- **Income and social security taxes**: 26,720 (+), 35,373 (+), 46,460 (+)
- **Family living/child withdrawals**: 52,230 (+), 77,194 (+), 75,382 (+)
- **Personal income**: 33,201 (+), 28,889 (+), 46,460 (+)
- **Personal asset depreciation**: (+) 3,450 (+), (+) 3,150 (+), (+) 1,598 (+)
- **Change in personal accounts payable**: (+) 8 (+), (+) 18,538 (+), (+) 0 (+)
- **Net farm income**: (-) 138,518 (-), (-) 137,021 (-), (-) 284,322 (-)

### 11 data entry points
### Depreciation...

<table>
<thead>
<tr>
<th></th>
<th>Beginning Market Value</th>
<th>Percent</th>
<th>Amount</th>
<th>Depreciation</th>
<th>Ending Market Value</th>
<th>Change in Market Valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeding livestock</td>
<td>467,556.17</td>
<td>10.00%</td>
<td>53,402</td>
<td>480,615</td>
<td>502,900</td>
<td>21,885</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>2,600.00</td>
<td>15.00%</td>
<td>369</td>
<td>2,340</td>
<td>1,450</td>
<td>-890</td>
</tr>
<tr>
<td>Other intermediate assets</td>
<td>35,000.00</td>
<td></td>
<td>50,000</td>
<td>30,000</td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>Buildings and improvements</td>
<td>479,000.17</td>
<td>5.00%</td>
<td>24,455</td>
<td>464,252</td>
<td>462,700</td>
<td>-1,552</td>
</tr>
<tr>
<td>Other long term assets</td>
<td>2,251.81</td>
<td></td>
<td>2,401</td>
<td>2,401</td>
<td>2,401</td>
<td></td>
</tr>
<tr>
<td>Stocks and bonds</td>
<td>15,000.10</td>
<td></td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
<td></td>
</tr>
<tr>
<td>Personal vehicles</td>
<td>6,700.10</td>
<td>10.00%</td>
<td>1,598</td>
<td>14,382</td>
<td>12,790</td>
<td>-762</td>
</tr>
<tr>
<td>Cash value of life insurance</td>
<td>10,000.00</td>
<td></td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Retirement accounts</td>
<td>20,000.00</td>
<td></td>
<td>20,000</td>
<td>19,999</td>
<td>19,999</td>
<td>-866</td>
</tr>
<tr>
<td>Personal business investment</td>
<td>1,547.00</td>
<td></td>
<td>1,547</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Other personal intermediate assets</td>
<td>59,289.00</td>
<td></td>
<td>76,634</td>
<td>215,836</td>
<td>215,836</td>
<td></td>
</tr>
</tbody>
</table>

Total: 1,158,081.1 278,097 1,134,986 1,152,981 17,995

### Earned Net Worth Change

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in net worth (mkt)</td>
<td>87,458</td>
<td>247,872</td>
<td>233,830</td>
</tr>
<tr>
<td>Change in market valuation</td>
<td>(-)</td>
<td>29,716</td>
<td>171,238</td>
</tr>
<tr>
<td>Inheritances, gifts, contributed capital</td>
<td>(-)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gifts given, distributed capital</td>
<td>(+)</td>
<td>1,547</td>
<td>-</td>
</tr>
<tr>
<td>Change in earned net worth</td>
<td>(=)</td>
<td>59,289</td>
<td>76,634</td>
</tr>
</tbody>
</table>

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**Term Debt Coverage Ratio**

- Net farm income (accrual)
- Non-farm income
- Owner withdrawals/family living
- Income taxes
- Depreciation
- Interest on term debt

= Capital debt repayment capacity
+ Scheduled term debt payments

= *Earned net worth change*

---

**Debt Coverage in ENWA**

- Earned net worth change
- Depreciation
- Interest on term debt

= Capital debt repayment capacity
+ Scheduled term debt payments
Shortcuts to Accrual

- Can you get fiscal year end balance sheets?
  - Yes
    - Accrual financial analysis
    - Scheduled F Accrual Analysis
    - FINAN
  - No
    - Earned Net Worth Analysis