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## Developing a Greater Understanding of the Relationship between Operating Cash Flow and Net-Income

Understanding the intrinsic relationship between operating cash-flow and net-income may provide important insight into the performance and economic well being of the firm. Expansion in working capital account balances that place downward pressure on operating cash flow will often precede increases in net income. In contrast, *increases* in operating cash flow will oftentimes provide a false sense of security to company managers that are flush with cash as net working capital requirements decline. Most financial managers keenly follow both measures separately. However, this paper will demonstrate that the relationship and timing between the two measures may provide the most meaningful insight of all.

Individual companies exhibit substantial differences with respect to operating cash to net income. Steady, but not overwhelming pressure on operational cash flow compared to net income normally indicates a healthy, growing company. To be sure, astute financial managers that understand the proper tension between operating cash flow and net income are better equipped to respond to signals that foretell the story that lie ahead.

A review of the academic paper titled, "Information Provided by Accrual and Cash-Flow Measures of Operating Activities" by Ingram and Lee, (1997) is used as the backdrop for this paper and provides substantial evidence and support for the use of operating cash-flow to net-income as a management tool. Accordingly, this paper will draw heavily from the article and will therefore acknowledge the author's important contribution to this subject.

According to the International Accounting Standards Committee, IASC, the Financial Accounting Standards Board, FASB and the Accounting Standards Board, ASB, the accrual method of reporting is the method of choice for the purpose of predicting future cash flows to determine value (Elliott and Elliott, 2007). While this would appear to be a sensible position, they go on to say that several academic researchers have challenged the position arguing in favor of the *cash flow* method of accounting reporting instead. The difference of opinion between the standards organizations and the academic researchers open the door for an exciting area of research with respect to accrual based operational cash-flow and historic based net-income. Clearly, both operational cash flow and historic net income provide strong signals about future company performance. This paper will seek to examine the feasibility of combining both operational cash flow and net-income in order to understand the relationship and behavior of the two measures when used together.

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Ingram and Lee, (1997) make two primary points that argue against the common belief that cash flow by itself, or accrual based measures of operating cash flow are sufficient to determine organizational value. In addition, the paper seeks to “debunk the potentially misleading accounting myth that, over long periods of time, income and operating cash flow converge (Ingram and Lee, 1997:183). Indeed, these are two strong statements. In particular, the notion that cash and accrual methods of reporting ultimately converge over time is supported by Elliott and Elliot, (2007), Higgins (1998) among others. Indeed, Ingram and Lee, (1997:116) go so far as to say; “We demonstrate that, for many companies, accrual and cash based measures diverge over extended periods of time”.

### **Understanding how it Works-**

In order to grasp the potential benefits of understanding the net-income / operational cash flow relationship, a short review of basic cash flows arithmetic will help explain the *timing-relationship* between operations cash flow and net income.

We are concerned with *operating* cash flow portion of the indirect statement of cash flows, and its impact on both financing and investing activities of the firm. Operating cash flow in essence, can be defined as net income plus depreciation and amortization expense minus the change in current assets plus the change in current liabilities. This definition of operating cash flow is consistent with others including Higgins, (1998), Elliott and Elliott, (2007). The indirect cash flows statement explains the change in the cash value between two financial periods and can be found using the following widely known equation:

$$\Delta C = \begin{array}{ccc} \text{Operations} & \text{Investing} & \text{Financing} \\ \Delta C = (Ni + DA - \Delta CA + \Delta CL) + (- \Delta NCA) + (\Delta NCL + \Delta CS - D) \end{array}$$

### **Where;**

C = Cash

Ni = Net Income

DA = Depreciation and Amortization

CA = Current Assets

CL = Current Liabilities

CS = Capital Stock

NCA = Non Current Assets

NCL = Non Current Liabilities

D = Dividends

Many different versions of the cash flow equation exist. And, like many financial equations it should not be viewed as an absolute rule for it may or may not work in every unique business environment. The operations portion of the cash flow equation,  $(Ni + DA - \Delta CA + \Delta CL)$ , is essentially net-income, adjusted for depreciation and amortization, or non cash charges minus the change in working capital account balances. The change in working capital, expressed as  $\Delta WC$ , can be found by  $\Delta CA - \Delta CL$ .

Essentially, our interest lies within the movement and timing of the working capital accounts compared to net income. In essence one might easily observe that a considerable lag exists between cash-based income and changes in accrual based operating cash flow.

To be clear, companies with high operating cash flow compared to cash income would indicate a slower growing company. This statement makes perfect sense when considering a company exhibiting steady growth that suddenly finds that it does not have a need to replace inventory levels or finance receivables at the same rate, normally producing large increases in operating cash flow. Such a company will report high levels of operating cash flows *compared* to income and will actually be in a state of decline.

Ingram and Lee, (1997) suggest that a superior method of measuring economic viability of the firm is to measure the *relationship* between income and operating cash flow. The authors argue further that the *relationship* between income and operating cash flow provides insight into the company's periodic performance as well as a mechanism to determine the likelihood of future expected growth. In a sense this proposed alternative method compares the income produced, to the behavior of working capital accounts responsible for producing that same income.

#### **Strengths of the argument-**

The hypothesis in essence, advocates that companies with operating cash flows that are lower than income will outperform the reverse, where operating cash flows are higher than income. A company with higher income than operating cash flows will indicate a company on the incline and will demonstrate growth in financing, investing and operating activities. Clearly, this hypothesis makes sense when one considers that growth will necessitate increases in working capital accounts that may necessarily constrain operating cash flows.

A rigorous ordinary least squares statistical analysis testing approximately one thousand U.S. based companies confirmed the author's hypothesis (Ingram and Lee, 1997). It is presumed that the authors confirmed their sample data by conclusively ruling out the null hypothesis which would indicate that a correlation indeed exists between the variables, operating cash flow and income, just as the authors expected.

### Weaknesses of the argument-

While the relationship between cash based income and accrual based operating cash flows may indeed be important for asset intensive companies, it would seem less relevant for service companies with a lesser degree of codependency between operating cash flows and actual income. Ingram and Lee, (1997) make the point that companies in the low operating cash flow to income range may be different with respect to their degree of capital intensity and they place special emphasis on companies heavy with long term debt with a need to finance fixed assets.

Perhaps the most important finding by Ingram and Lee, (1997:179) is that the relationship between income and operating cash flow “jointly provide information about growth and growth opportunities in addition to that provided by income alone”. To be clear, the authors found that the income / operating cash flow difference is statistically significant at the .05 level when regressed against thirteen of fourteen variables used in their analysis and was significant at the .001 level with twelve of the fourteen variables. Examples of the variables used in the regression analysis include receivables, inventory, payables, sales, total assets, equity, market returns and capital-intensity among other important indicators.

### Practical Application-

To be sure, no *one-specific* rule has been established with respect to the optimal relationship between operational cash flow and net income. Each business environment is likely to differ substantially as a function of normal cycles, asset intensity and the size and maturity of the company.

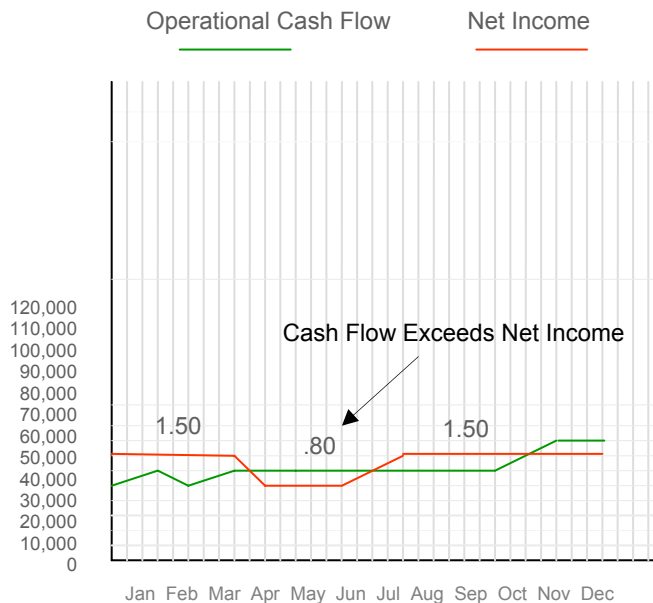


Chart 1

Chart 1 provides a graphic representation of the expansion and contraction of working capital accounts compared to net income. Understanding the specific cycle and healthy tension between the two measures may provide the manager with additional insight with respect to cash requirements and growth expectations for upcoming months.

#### **Opportunity for further research-**

While it would seem abundantly clear that it is important to view each measure within the context of the other, more research is needed in order to develop a clear understanding of the proper relationship between different industries, or between one company and the next. In addition, it could be argued that the ratio will, and in fact should, expand and contract as a function of normal business cycles.

Progress may be advanced further by recognizing the need to add one additional variable that adjusts the relationship between operating cash flow and income with an asset intensity coefficient. Such a coefficient would make an adjustment to allow the analyst to compare income to operating cash flow between asset intensive companies such as those engaged in the distribution industry for example, to those engaged in pure service industries.

#### **Conclusion-**

The work put forth by Ingram and Lee, (1997) demonstrate one example that derives benefit from the use of a cash-flow and an accrual concept simultaneously. While it is clear that the accrual method of accounting reporting represents many clear advantages over the cash based method as evidenced by the Elliott and Elliot, (2007), Ingram and Lee, (1997) present us with a thought provoking idea that suggests that two concepts, or at least elements of both concepts may be better than one for the purpose of measuring future growth and requirements for cash. A ratio or metric that links both income and operating cash flow makes clear sense and should be of benefit to the financial analyst.

It should be noted that Dr. Robert W. Ingram and Dr. Thomas A. Lee are considered to be among the most prolific writers of accounting literature according to the University of Alabama (2006) citing a study published in *Advances in Accounting*.

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