How Much Credit (or Blame) Should Management Receive When a Bank's Price-Earnings Ratio Improves (or Weakens)?

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Total return for the stock market can be divided into two components: "fundamental return" and "speculative return." We examine how information on managerial performance might be obtained ex post by splitting speculative return into "industry-specific" and "firm-specific" components when applying this analysis to an individual stock. Specifically, it can help distinguish management's contributions to total return versus general market factors. This analysis could be frequently used to evaluate the performance of a community bank's stock and its management because of the large number of small banks operating in the United States. Plus, implementation of this analysis is facilitated by the readily available price-to-earnings benchmarks for banks.

INTRODUCTION

On May 6, 2013, highly-regarded Wharton finance professor Jeremy Siegel projected the Dow would be between 16,000 and 17,000 by the end of 2013. At the time of his interview with Bloomberg's Trish Regan, the Dow was trading just under 15,000. Siegel justified his forecast by saying the market would get to this level not just through earnings growth, but also through what he termed "multiple expansion." He observed the market was at 15× earnings, with the likelihood it would go to 16× or 17× earnings by year's end. Indeed, by the end of 2013, the Dow closed at 16,576.66. Siegel proved to be prescient in his forecast.

In a practitioner's paper written by Grinold and Kroner (2002), they refer to price-to-earnings (*P/E*) multiple expansion or contraction as "repricing." They present a model similar to the decomposition model used by Estrada (2007), with additional terms for inflation and share repurchase. In their study of return data spanning 1926 to 2001, they conclude, "the noisiest component of returns is clearly the *P/E* repricing component." Neither Grinold and Kroner nor Estrada use the term "speculative return." Rather, Ellis (p. 129, 2002) seems to be the first to credit Bogle for use of the term "speculative return" for the expansion and contraction of a firm's *P/E* multiple. We do not find this specific terminology in either of the earlier articles written by Bogle (1991a, 1991b), but he does use the term "speculation" in a later article (1995) and the exact term "speculative return" in a recent book (2012) and article (2015).[1] Many years earlier, well-known macroeconomist John Maynard Keynes (1936/1964) refers to "speculation" as the "activity of forecasting the psychology of the market" in his treatise, *The General Theory of*

Employment, Interest, and Money (p. 158, 1964 edition). Yet, Bogle (2015) observes, "Keynes made no attempt to quantify the distinction between enterprise and speculation, so [I] tackled that task."

The term "speculative return" seems appropriate when so many factors can influence the psychology and, thus, the magnitude of a *P/E* multiple. Grinold and Kroner discuss technological and financial innovations, such as more transparent accounting standards and the ability to better diversify one's portfolio through the use of mutual funds, as reasons for higher *P/E* multiples over time. For the time period they examine, they conclude repricing leads to higher prices for stocks because of the lower perceived risk by the market. In the 2013 interview cited above, Siegel asserted multiple expansion was likely for stocks because of the ultralow interest rate environment that existed at that time.

In this article, we build on work done by Walker and Kramer (2015) to show how analysis of speculative return can be meaningfully used in the boardroom to evaluate stock performance in general and managerial performance in particular. The analysis presented in this paper can be used for other industries and sectors of the economy, but we relate it specifically to community banking because that is where our experience lies. Plus, this work should be particularly useful in banking because there are thousands of community banks still in existence, and a plethora of benchmarks are available to these banks. Reliable benchmarks are a critical component in decomposing speculative return into the managerial-influenced component and a second component that captures external factors.

While other researchers (Bogle, Estrada, and Grinold and Kroner) use the decomposition model to forecast market returns, this paper's contribution extends the work done by Walker and Kramer (2015) and shows how the model is used ex post. That is, we show how the model is useful to people who are more interested in decomposing stock performance at the end of a period rather than trying to forecast future performance. In particular, board members and executive compensation committee members should find this analysis informative.

REVISITING THE FUNDAMENTAL AND SPECULATIVE RETURN IDENTITY

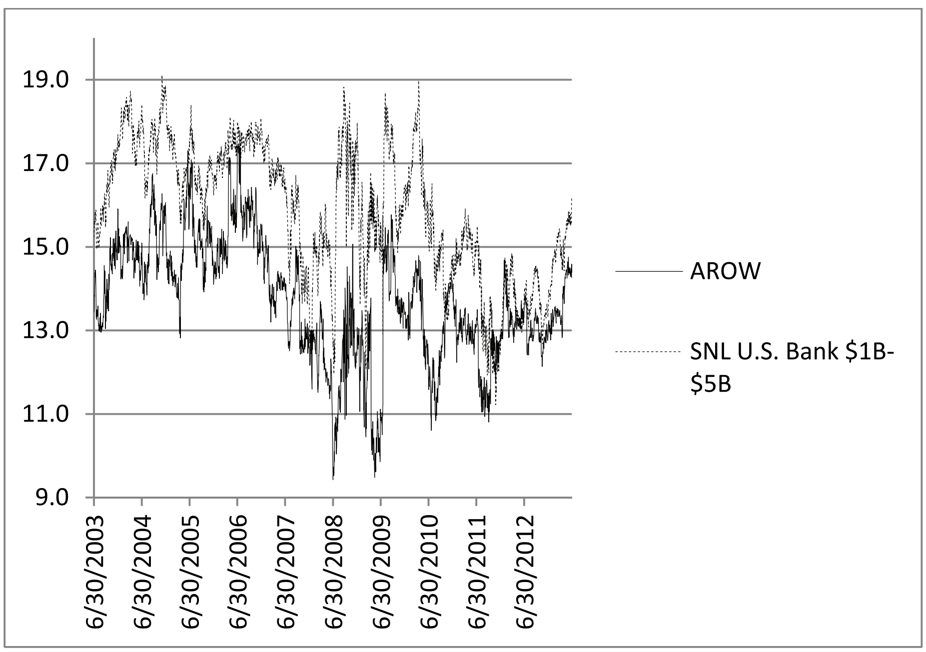
When discussing a firm's stock performance in the boardroom, there are several possible approaches to take. One is to focus just on the changes to stock price, but that overlooks the dividends that are often a significant component of return. It is appropriate to measure a stock's performance by calculating total return. The conventional definition for "total return," provided by CFA Institute (p. 51, 2012), is "the rate of return that includes realized and unrealized gains and losses plus income for the measurement period." Walker and Kramer (2015) show how total return (*TR*) for period *t* can be precisely decomposed into fundamental return (*FR*), speculative return (*SR*) and a synergy term:

$$TR_t = \left[\frac{EPS_t - EPS_{t-1}}{EPS_{t-1}} + \frac{DPS_t}{P_{t-1}}\right] + \left[\frac{\left(\frac{P}{E}\right)_t - \left(\frac{P}{E}\right)_{t-1}}{\left(\frac{P}{E}\right)_{t-1}}\right] + \left[\frac{EPS_t - EPS_{t-1}}{EPS_{t-1}} \times \frac{\left(\frac{P}{E}\right)_t - \left(\frac{P}{E}\right)_{t-1}}{\left(\frac{P}{E}\right)_{t-1}}\right], \quad (1)$$

where EPS_{t-1}, EPS_t, $(P/E)_{t-1}$ and $(P/E)_t$ are the stock's earnings per share and price-to-earnings ratio at the end of periods t–1 and t, respectively, and DPS_t is the dividend per share paid in period t.[2] The first bracketed term of Equation 1 is the mathematical representation of FR_t, the second bracketed term is the representation of SR_t and the third bracketed term is what Walker and Kramer term "*synergy*$_t$," each of these for period t.[3] Mathematically, Equation 1 is an identity because the three bracketed terms exactly equate to TR_t (except in the infrequent scenario when there is a stock repurchase). Note that fundamental return is decomposed into *EPS* growth and dividend yield, and the magnitudes of both of these components are tied to decisions made by management. Logically, smart (or lucky) managerial decision-making over time should produce strong earnings growth, a healthy dividend and, correspondingly, a solid fundamental return for shareholders. In contrast, we argue the attribution of speculative return—measured as increases and decreases to a firm's *P/E* ratio—to managerial actions and macroeconomic forces is not nearly as objective.

Figure 1 shows a 10-year time series comparison between Arrow Financial Corporation and the SNL U.S. Bank Index for banks between $1 billion and $5 billion in assets, ending June 30, 2013.[4,5] The comparison shows Arrow Financial Corporation's *P/E* over the 10-year period has been persistently under the industry's *P/E*, but has moved up and down fairly consistently with the index. Indeed, the Pearson correlation coefficient between the two time series is 0.67, which is fairly high. This correlation quantifies the fact that two-thirds of the bank's moves follow the industry's changes to *P/E*, while a third of the volatility in the bank's *P/E* is firm-specific. Because we are dealing with time series, we are running the risk of attributing the correlation to a spurious relationship—namely, one that does not really exist. However, benchmark *P/E* ratios are an aggregation of the *P/E* ratios of the individual firms. In this case, the benchmark comprises banks in the $1 billion to $5 billion asset range. Arrow Financial Corporation's assets fall into that range. While we have not taken steps to prove the correlation is not a result of a spurious relationship, the connection between individual firms' *P/E* multiples and the benchmark's *P/E* multiple is obvious.

FIGURE 1
FIRM AND INDUSTRY P/E RATIOS OVER THE LAST 10 YEARS (ENDING 6/30/13)



Furthermore, for the 10-year period, the average difference between the bank's *P/E* and the industry's *P/E* is −2.2. The bank's board might want management to focus on identifying why the bank's *P/E* is consistently lower than the industry's. One explanation might be that the perceived growth of loans and/or deposits in Arrow Financial Corporation's market area is less than that of the average bank. Another explanation could be that management has signaled the market it has no interest in being acquired by another bank and any attempts to purchase the bank would not be supported. Hooper (2007) reports that poison-pill plans adopted by banks—one example of a deterrent to M&A activity—increased after the 1994 implementation of the Riegle-Neal Interstate Banking and Branching Efficiency Act, which opened the banking industry to interstate mergers and acquisitions. Anecdotally, Embassy Bank for the Lehigh Valley frequently promotes its intentions to remain independent. Embassy Bank is a relatively young bank, incorporating in 2001. It will be interesting to see if its stock sells at a discount relative to its peer group over the long term, assuming it continues its policy of promoting its intention to remain independent.

DECOMPOSITION OF SPECULATIVE RETURN INTO INDUSTRY-SPECIFIC AND FIRM-SPECIFIC SPECULATIVE RETURN

We now examine a little more closely the meaning of speculative return. The speculative returns and components for our sample banks are shown in Table 1.[6] An institution's *P/E* can change for two reasons: (1) a macroeconomic change that affects the industry and, thus, most if not all banks' *P/E* ratios; and (2) a firm-specific change that directly impacts the firm's stock price or earnings. The proverb "a rising tide lifts all boats" applies to *P/E* ratios. This proverb refers to the macroeconomic forces and market conditions beyond management's control. For 2012, the industry *P/E* was up 6.1 percent for DNB Financial and Old Line Bancshares. Likewise, it was up 8.0 percent for the Arrow Financial Corporation. When banks do peer-group comparisons, they often select benchmarks based on bank size as measured by total assets. A relevant "industry" benchmark for the first two banks is SNL Financial's Bank Index for banks with assets between $500 million and $1 billion; for the third sample bank, a relevant benchmark is SNL Financial's Bank Index for banks with assets between $1 billion and $5 billion.

There are myriad reasons why the industry *P/E* ratio might rise or fall over time, with many of them tied to the strength of the economy and the outlook for the industry. The Great Recession serves as a timely example. As credit standards were made more stringent, the market likely perceived that growth in banks' earnings would slow because of constrained loan production. A lower growth assumption for the banking industry would manifest itself in lower *P/E*s for banks and the industry at large. Also, there was the concern about the likely write-down of bad loans, which could explain lower *P/E*s for banks. Conversely, as the economy has strengthened and we moved beyond the financial crisis, we see in the FOMC minutes that credit standards are easing around the country, auguring higher growth rates for banks' loan portfolios. Continuous updates to the market's projections of earnings growth over time impact *P/E* ratios. If, for example, the market anticipates higher-than-average earnings growth for a particular industry in our economy, then we can expect higher-than-average *P/E* multiples for companies in that industry, consistent with the use of the term "growth stocks" for shares of companies with above average growth prospects.

TABLE 1
SPECULATIVE RETURN ANALYSIS FOR THREE SAMPLE BANKS FOR 2012[7]

Community Bank	Industry-Specific Speculative Return	Firm-Specific Speculative Return	Industry/Firm Synergy	Speculative Return
DNB Financial	6.1% +	16.9% +	1.0% =	24.1%
Old Line Bancshares	6.1% +	3.6% +	0.2% =	10.0%
Arrow Financial	8.0% +	–0.6% +	0.0% =	7.4%

We isolate the second bracketed term of Equation 1 to expand our examination of a bank's speculative return as shown in Equation 2:

$$SR_{B,t} = \frac{(\frac{P}{E})_{B,t} - (\frac{P}{E})_{B,t-1}}{(\frac{P}{E})_{B,t-1}}. \qquad (2)$$

Note we have added the subscript "*B*" to denote we are looking at the speculative return for a particular bank *B* for period *t*. (This could be done for any firm, not just a bank.) The term $(P/E)_{B,t}$ is bank *B*'s *P/E* ratio at the end of time *t*, while the term $(P/E)_{B,t-1}$ is bank *B*'s *P/E* ratio at the end of period *t*–1. To expand the understanding of the determinants of speculative return, we next decompose the *P/E* ratio into two components as shown in Equation 3:

$$(\frac{P}{E})_{B,t} = (\frac{P}{E})_{I,t} \times f_{B,t}, \tag{3}$$

where the term $(P/E)_{I,t}$ is the *P/E* for industry benchmark *I* at time *t* and $f_{B,t}$ is bank *B*'s "factor" at time *t*. If the value of the factor is equal to one, then the bank's *P/E* multiple is exactly equal to the industry's *P/E* multiple. If the factor is less than one, then the bank's *P/E* is less than the industry's *P/E* and vice versa. Both the industry's *P/E* and a bank's *P/E* are observable from market data—provided the bank's stock is publicly traded, which is not always the case for a community bank. In contrast, the factor is not directly observable, but it can be calculated from the market data by rearranging Equation 3 to solve for $f_{B,t}$:

$$f_{B,t} = \frac{(\frac{P}{E})_{B,t}}{(\frac{P}{E})_{I,t}}. \tag{4}$$

Using the time-series data shown earlier in Figure 1 in Equation 4, the average factor for Arrow Financial Corporation for the 10-year period ending June 30, 2013, is 0.866, meaning its *P/E* ratio has averaged 13.4 percent less than the industry's *P/E*. This significant discount raises the question: Why would the bank's *P/E* be this much lower? If a firm's *P/E* ratio is consistently lower than the industry's *P/E*, this indicates the market is discounting the value of the firm's earnings relative to other banks for one reason or another. Two factors that are often discussed in the literature for why a company's stock could sell for a lower-than-industry *P/E* multiple is (1) a below average expected growth rate for earnings and (2) lower earnings quality.[8] If a firm is expected to grow its earnings less quickly than its peers, it stands to reason why the market would pay a lower price for $1 of earnings. When a consumer purchases a gallon of gasoline for $3, he is paying this amount for exactly one gallon of gas. In contrast, when an investor purchases a company at a *P/E* multiple of 15×, he is paying $15 for $1 of earnings that are expected to grow over time. If company A's earnings are expected to grow at 5 percent and company B's earnings at 8 percent, it is rational that the investor will be willing to pay a higher price for $1 of company B's earnings. The challenge for investors is to arrive at a reasonable estimate for earnings growth.

Next, we can substitute the formulation shown in Equation 3 for the firm's *P/E* ratio into Equation 2 to obtain a new expression for a bank's speculative return that explicitly incorporates the industry-specific and firm-specific components:

$$SR_{B,t} = \frac{\left[(\frac{P}{E})_{I,t} \times f_{B,t}\right] - \left[(\frac{P}{E})_{I,t-1} \times f_{B,t-1}\right]}{\left[(\frac{P}{E})_{I,t-1} \times f_{B,t-1}\right]}. \tag{5}$$

This formulation of speculative return enables us to isolate the "industry-specific speculative return" (*ISSR*) by holding the factor (*f*) constant across periods, such that $f_{B,t-1} = f_{B,t}$. Then we can isolate the "firm-specific speculative return" (*FSSR*) by holding the industry *P/E* ratio constant across periods, such that $(P/E)_{I,t-1} = (P/E)_{I,t}$. In this analysis, an inherent assumption is that a relevant industry benchmark $(P/E)_I$ for the bank is available to use. As mentioned earlier, when making comparisons to evaluate performance, many banks select and use peer groups based on asset size, but there are other criteria used, such as market location and business model. When the factor (*f*) is held constant, Equation 5 reduces to:

$$ISSR_{B,t} = \frac{(\frac{P}{E})_{I,t} - (\frac{P}{E})_{I,t-1}}{(\frac{P}{E})_{I,t-1}}. \quad (6)$$

We term this component of speculative return "industry-specific speculative return" because it is virtually *independent* of the actions of a bank's management team.[9] Instead, macroeconomic conditions and market forces determine the industry-specific speculative return. Recall that Figure 1 includes the time series for the industry's *P/E* multiple (for the $1 billion to $5 billion peer group) for the 10-year period ending June 30, 2013, in comparison to the *P/E* ratio for Arrow Financial Corporation. The average *P/E* for the industry during this period is 15.9× with a standard deviation of 1.6. In terms of changes to the industry multiple, the average annual percentage change, on an absolute value basis, to the *P/E* ratio is 10.9 percent, and the median change is 9.0 percent. (We report these statistics using absolute values because otherwise the *P/E* expansions and contractions would be offsetting, making the average and median less informative.) For the same 10-year period examined, the largest *P/E* expansion is 20.8 percent (for 2004) while the largest *P/E* contraction is 22.7 percent (for 2008).[10] The large *P/E* expansion during 2004 was a few years prior to the financial crisis when the economy was expanding and most banks were thriving. In contrast, the large *P/E* contraction during 2007 coincides with the lead-up to the Great Recession. Based on the benchmark used for Arrow Financial Corporation, the industry-specific speculative return of 8.0 percent for 2012 is a result of the *P/E* multiple for the SNL Financial peer group increasing from 12.5× to 13.5×. Similarly, based on the benchmark used for the two smaller sample banks (DNB Financial and Old Line Bancshares), the industry-specific speculative return of 6.1 percent for 2012 is a result of the *P/E* multiple for the SNL Financial peer group increasing from 11.4× to 12.1×. (The industry benchmarks' *P/E* ratios are summarized in Table 2.)

TABLE 2
INDUSTRY-SPECIFIC SPECULATIVE RETURN BASED ON TWO BANK BENCHMARKS

SNL Benchmark (Asset Range)	2011 P/E (end-of-year)	2012 P/E (end-of-year)	Industry-Specific Speculative Return
SNL Banks ($500M–$1B)	11.4×	12.1×	6.1%
SNL Banks ($1B–$5B)	12.5×	13.5×	8.0%

Next, to isolate the firm-specific speculative return, we can set $(P/E)_{I,t-1} = (P/E)_{I,t}$ in Equation 5 to neutralize the effect from a changing industry *P/E* multiple. Under this assumption, Equation 5 becomes:

$$FSSR_{B,t} = \frac{f_{B,t} - f_{B,t-1}}{f_{B,t-1}}. \quad (7)$$

It is this component of speculative return that we argue *is not entirely speculative*. There are numerous actions a bank's management team can take that will lead the market to place a higher or lower valuation on the bank's *EPS* relative to the market. One of the best examples is action that leads to a shift in the expected growth rate of earnings. We can anticipate the market's discounting of an upwardly revised assumption for *EPS* growth results in a higher *P/E* multiple. Mathematically, all else equal, this would imply an increase in the bank's factor (f_B). Of course, changes to a bank's factor could also be *negative*. For example, if market perception shifts from an expectation of average to lower-than-average growth potential for a bank relative to industry, a drop to a below-average *P/E* multiple might be expected, again with the caveat of "all else equal." Arguably, a bank's factor and its relative *P/E* will depend not only on managerial decisions, but also on local market conditions and opportunities. Because management cannot control the local economy or competitive landscape, the bank's factor and firm-specific speculative return are partly speculative, whereas the industry-specific speculative return is entirely speculative.

In reference to the numbers presented earlier in Table 1 for the speculative return analysis for the three sample banks, DNB Financial's speculative return for 2012 is a staggering 24.1 percent—well above the industry gain of 6.1 percent. Equation 7 enables us to find the firm-specific speculative return for DNB Financial is 16.9 percent because the bank's factor increased from 0.6123 to 0.7156 during 2012. (All of the sample banks' factors are reported in Table 3.) One conclusion an analyst might make is DNB Financial has taken meaningful steps that were recognized by the market during 2012 that boosted its *P/E* by more than just the *P/E* gain for the industry. For example, if a bank has taken measures to enhance its risk management processes, the perceived riskiness of the cash flows generated by the bank could decrease and that would make the bank more valuable, which would lead to "repricing" of the bank's *P/E* multiple. There could also be other factors indirectly attributable or entirely independent of managerial behavior, such as a takeover premium priced into DNB Financial's stock. While the term "speculative return" is appropriate given there are capricious macroeconomic and expectational factors that affect the valuation of the stock market—and the valuation of specific stocks to various degrees—the term might be a bit of a misnomer to the extent that well-thought-out managerial actions have possibly served to increase the bank's *P/E* multiple. A board of directors is challenged to assess what portion of a bank's firm-specific speculative return should be credited to managerial actions. In the case of DNB Financial, the board might want to investigate why the bank's factor is significantly less than 1.0 despite the improvement during 2012.

TABLE 3
FACTORS AND FIRM-SPECIFIC SPECULATIVE RETURNS FOR SAMPLE BANKS

Community Bank	Factor (end of 2011)	Factor (end of 2012)	Firm-Specific Speculative Return
DNB Financial	0.6123	0.7156	16.9%
Old Line Bancshares	0.8262	0.8560	3.6%
Arrow Financial	1.0046	0.9990	–0.6%

COMPLETING THE SPECULATIVE RETURN IDENTITY

Following the logic used by Walker and Kramer in their earlier analysis of total return (2015), once something has been so-called "decomposed," one would think it could be reconstructed by simply adding the pieces back together again. In mathematical terms, we know the whole is equal to the sum of the parts. When it comes to total return on a stock, it can be precisely separated into the percentage change in price, referred to as the capital gain/loss, and the dividend yield. This particular decomposition of total return does not lead to a synergy term, as this division of total return into these two components *is exact*.

Yet, as shown by Walker and Kramer (2015), when the total return is decomposed into fundamental and speculative return, this decomposition *does* lead to an additional term between fundamental and speculative return, which they term "synergy."[11] When fundamental return is then decomposed into *EPS* growth and dividend yield, this decomposition of fundamental return is perfectly additive without a synergy component. In contrast, our decomposition of speculative return, one of the main contributions of this paper, produces a situation whereby the sum of the parts does *not* equal the whole, unless we include another term, which we also name "synergy." It is important to note the synergy term associated with the decomposition of speculative return is different than the synergy term associated with the decomposition of total return.

Mathematical Formulation of Synergy Inherent to Speculative Return

The mathematics inherent to the speculative return is somewhat simpler than the math behind the total return calculation because the decomposition of total return (see Equation 1) has more terms and mathematical operations in its overall formulation. A better understanding of the speculative return calculation comes from looking closely at the algebra. First, consider the basic multiplication of two terms $(1 + a)$ and $(1 + b)$ as shown in Equation 8:

$$(1+a)(1+b) = 1 + a + b + ab. \tag{8}$$

The product of the two terms on the left-hand side of the equation is sometimes approximated to be equal to $1 + a + b$ when a and b are small numbers. When a and b are small (less than one and close to zero), the approximation is good. As a and/or b becomes larger, the approximation is less accurate.

We can use the same mathematical construct to analyze the decomposition of speculative return. Using the symbols defined earlier for speculative return (*SR*), industry-specific speculative return (*ISSR*) and firm-specific speculative return (*FSSR*), a mathematical expression for speculative return can be found:

$$1 + SR = (1 + ISSR)(1 + FSSR). \tag{9}$$

The next step is to clear the parentheses:

$$1 + SR = 1 + ISSR + FSSR + ISSR \times FSSR. \tag{10}$$

Then the constant (1) can be subtracted from both sides of the equation to give an identity for speculative return:

$$SR = ISSR + FSSR + ISSR \times FSSR. \tag{11}$$

Not only is Equation 11 an identity, it is useful in a presentation for showing a bank's management and board of directors the components of speculative return. As with the product term *ab* in Equation 8, the product of *ISSR* and *FSSR* in Equation 11 is, potentially, either significant or insignificant. For example, earlier in Table 1 we showed the product term for DNB Financial is 1.0 percent, for Old Line Bancshares it is 0.2 percent and for Arrow Financial Corporation it is 0.0 percent. (If Arrow Financial Corporation's product term were reported to the hundredths place, it would be –0.04%—not zero, but very small.) To be consistent with the treatment of the product term between fundamental return (excluding the dividend yield) and speculative return used in Walker and Kramer (2015), we name the product of $ISSR_t$ and $FSSR_t$ as the "synergy" between these two components for period t:

$$Synergy_t = ISSR_t \times FSSR_t = \left[\frac{(\frac{P}{E})_{I,t} - (\frac{P}{E})_{I,t-1}}{(\frac{P}{E})_{I,t-1}}\right] \times \left[\frac{f_{B,t} - f_{B,t-1}}{f_{B,t-1}}\right]. \tag{12}$$

When the *ISSR* and *FSSR* are positive or negative, assuming both variables are finite (i.e., nonzero), then the impact to speculative return not only depends on the magnitude and sign of these variables, it also depends on the product of these two terms. More exacting, as the industry's *ISSR* increases or decreases, the *ISSR*-related impact on speculative return depends not only on the magnitude of *ISSR*, but also on the magnitude of *FSSR*. Likewise, as a bank's *FSSR* increases or decreases, the *FSSR*-related impact to speculative return depends not only on the magnitude of *FSSR*, but also on the magnitude of

ISSR.[12] It is this interaction between *ISSR* (which can be positive or negative) and *FSSR* (which can also be positive or negative) that we term "synergy." Thus, when analyzing the speculative return component of stock performance, the correct speculative return identity (for period *t*) is:

$$SR_t = ISSR_t + FSSR_t + Synergy_t. \tag{13}$$

Now that the synergy term has been defined, we are able to present the decomposition of speculative return in its fully expanded form:

$$SR_t = \left[\frac{(\frac{P}{E})_{I,t} - (\frac{P}{E})_{I,t-1}}{(\frac{P}{E})_{I,t-1}}\right] + \left[\frac{f_{B,t} - f_{B,t-1}}{f_{B,t-1}}\right] + \left[\frac{(\frac{P}{E})_{I,t} - (\frac{P}{E})_{I,t-1}}{(\frac{P}{E})_{I,t-1}}\right] \times \left[\frac{f_{B,t} - f_{B,t-1}}{f_{B,t-1}}\right]. \tag{14}$$

Walker and Kramer (2015) show that not only does the synergy between fundamental and speculative return have a mathematical interpretation, there is also an economic interpretation. The *P/E* ratio is the market's valuation of earnings. Thus, it is intuitive to see that the impact to total return depends on the interaction between changes to *EPS* and *P/E* because of the inherent connection between *EPS* and the valuation of *EPS* (given by the *P/E* ratio). In contrast, the formulations of *ISSR* and *FSSR*, shown in Equations 6 and 7, are independent of each other in that there are no common factors or terms. If the banking industry's *P/E* multiple improves, we expect a bank's *P/E* to improve as well, but we do not have any a priori reason to expect that a change to the bank's *relative P/E* will follow, as measured by the factor ($f_{B,t}$). For example, if a bank's *P/E* lags the industry *P/E* by 10 percent at the start of period one, we have no reason to expect this lag will be any different at the end of period one, regardless of changes to the industry *P/E*. Some might find it more straightforward to consider the product of *ISSR* and *FSSR* as simply an interaction effect explained by the mathematics, but in the next section we offer an economic interpretation.

Economic Interpretation of the Synergy Term

We believe the label "synergy" will be well received by bank management teams and boards of directors because the computation of speculative return using *ISSR* and *FSSR* is a situation whereby the whole is often more (or less) than the sum of the parts, as shown earlier by the data in Table 1.[13] In other words, if the synergy term is ignored when the *ISSR* and *FSSR* are both nonzero, it is impossible to find the *exact* value of speculative return by just adding these two components (and sometimes the error is significant).

In terms of the decomposition of speculative return in general (shown in Equation 11) and the synergy term in particular (shown in Equation 12), four different scenarios can exist: (1) positive *ISSR* and positive *FSSR*; (2) positive *ISSR* and negative *FSSR*; (3) negative *ISSR* and positive *FSSR*; and (4) negative *ISSR* and negative *FSSR*. Scenarios one and four produce positive synergy, while scenarios two and three yield negative synergy. We next consider the economic interpretation of each.

Positive Synergy

The most favorable scenario is when the industry's price-to-earnings multiple and a firm's factor both increase during the period examined, resulting in positive *ISSR* and positive *FSSR*. Indeed, this is the only scenario of the four outlined above that produces positive speculative return in all cases. As an example of this scenario, suppose, hypothetically, the outlook for the economy were to improve. Businesses would react by increasing their demand for funds to expand their operations. In turn, this would lead to the prospect of greater commercial lending by banks and improved earnings in general. It follows that this brighter outlook for banks would enhance the industry's valuation through a higher *P/E* multiple, leading to a positive *ISSR*. Now, further suppose an individual bank does proportionately more commercial lending than the average bank in the industry. It is certainly conceivable this bank would benefit more significantly from an upturn in commercial lending than the average bank in the industry. This would be reflected in a *P/E* multiple that rises more than the industry's multiple, resulting in an increase in the bank's factor and, thus, generating a positive *FSSR*.

A numerical example helps illustrate the synergy that can exist when both the *ISSR* and *FSSR* are nonzero and positive in sign. To start, assume $(P/E)_I = 15.0\times$ and $(P/E)_B = 13.5\times$. Based on Equation 4, the $f_B = 0.9$. To more easily understand where valuation gains originate, it is helpful to examine the positive *ISSR* and positive *FSSR* scenario incrementally, even though the assumption is they would occur concurrently in the same period. First, suppose the industry multiple rises by 8 percent across periods, ceteris paribus, then $(P/E)_B = (0.9)(15.0\times)(1.08) = 14.58\times$, showing the bank's *P/E* multiple is up 8 percent. Instead, suppose that rather than an increase to the industry *P/E*, the bank's factor increases 10 percent ceteris paribus. This leads to $(P/E)_B = (0.9)(1.1)(15.0\times) = 14.85\times$, showing the bank's *P/E* multiple is up 10 percent. Now, to see the mathematical impact from a concurrent 8 percent increase to the industry multiple and a 10 percent improvement to the bank's factor, we have $(P/E)_B = (0.9)(1.1)(15.0\times)(1.08) = 16.038\times$. This represents an 18.8 percent improvement to the bank's *P/E*, which is 0.8 percent *more* than simply adding 10 percent (the *ISSR*) to 8 percent (the *FSSR*) for a total of 18.0 percent. In economic terms, the bank's valuation improves for three reasons:

1. Ceteris paribus, an increase to the industry's valuation (reflected in a higher industry *P/E* multiple) means there is more value for the bank to capture when applying its initial factor. In our example, this corresponds to an 8 percent valuation gain for the bank.
2. Ceteris paribus, an increase to the bank's factor means its valuation captures a greater percentage of the initial industry valuation. In our example, this corresponds to a 10 percent valuation gain for the bank.
3. A concurrent improvement to the industry's *P/E* and the bank's factor means the bank captures an additional valuation gain that is equal to the product of the incremental increase to the industry's *P/E* and the incremental increase to the bank's factor. We label this interaction term "synergy" because, usually, *SR* is greater than or less than the sum of *ISSR* and *FSSR*. In the above example, synergy contributes 0.8 percent to the valuation gain for the bank.

The other scenario that also leads to positive synergy, which is counterintuitive, is a situation in which the *ISSR* and *FSSR* are both *negative* for the period. In this scenario, the valuation for the industry is falling concurrently to the erosion of the bank's factor. While both terms create negative speculative return, the *positive* synergy serves to mitigate the magnitude of the negative *SR*. If the synergy piece were ignored, then there would be double counting of the lost valuation that is equal to the product of the incremental decrease to the industry's *P/E* and the incremental decrease to the bank's factor. By including the synergy, the magnitude of the overall (negative) speculative return is not as large as the sum of *ISSR* and *FSSR*.

Negative Synergy

It is also possible for a firm to have negative synergy. This scenario occurs if either *ISSR* or *FSSR* is negative, but both terms are not negative at the same time. First, consider the scenario in which *ISSR* is positive and *FSSR* is negative. Again relating this to our banking example, one plausible explanation is the bank's *P/E* does not improve as much, if at all, when the industry's *P/E* improves. This could be a lag effect or the market's belief the bank's value should not increase in lockstep with the industry. The negative synergy is generated because the industry valuation is improving (i.e., positive *ISSR*) while the bank's factor is decreasing (i.e., negative *FSSR*). In economic terms, the macroeconomic forces positively affecting the industry are not affecting the bank as much in percentage terms. As the industry valuation rises, the bank's valuation captures *less* of that increase than it would have had the factor remained fixed (or increased), thus the negative synergy term.

As for the opposite scenario (i.e., *ISSR* is negative and *FSSR* is positive), the industry *P/E* could decrease as a result of adverse macroeconomic forces. Perhaps the economy slows and the market would anticipate that the growth in banks' loan portfolios will diminish, which would hurt earnings growth for the industry. The reduced earnings expectation for the industry would likely lead to a lower *P/E* multiple for the industry. If a bank is in a resilient market area that is less sensitive to the adverse macroeconomic forces, it is plausible the bank's *P/E* ratio would not decrease as much, meaning its relative *P/E* ratio would *improve* and that would be reflected in a rising factor. While the improvement in the bank's factor in isolation is a positive contribution to the bank's overall speculative return, the interaction effect is negative because an increment of the bank's speculative return gain that is attributable to the factor improvement is negated because of the reduction to the industry's *P/E*.

ANALYSIS AND DISCUSSION

The title of our article poses the question as to what credit (or blame) management should receive when the bank's *P/E* multiple improves (or weakens). The analysis presented in our prior paper on this topic (Walker and Kramer, 2015) and the analysis done in this paper combine to enable us to put all the relevant pieces together to better understand the challenge a board of directors has when evaluating managerial performance. Using our shorthand notation, Equation 1 can be given as:

$$TR_t = FR_t + SR_t + Synergy_t. \tag{15}$$

In this paper, we have decomposed the SR_t term (the middle term in Equation 15) into three terms, as shown above in Equation 13. We can now substitute our decomposition of SR_t into Equation 15 to derive the final identity:

$$TR_t = FR_t + ISSR_t + FSSR_t + Total\ Synergy_t, \tag{16}$$

where "total synergy" can be defined as the sum of the two synergy terms—the first defined in Walker and Kramer (2015) and shown in Equation 1 and the second defined in Equation 12:[14]

$$Total\ Synergy_t = \left\{\left[\frac{EPS_{B,t} - EPS_{B,t-1}}{EPS_{B,t-1}}\right] \times \left[\frac{\left(\frac{P}{E}\right)_{B,t} - \left(\frac{P}{E}\right)_{B,t-1}}{\left(\frac{P}{E}\right)_{B,t-1}}\right]\right\} + \left\{\left[\frac{(\frac{P}{E})_{I,t} - (\frac{P}{E})_{I,t-1}}{(\frac{P}{E})_{I,t-1}}\right] \times \left[\frac{f_{B,t} - f_{B,t-1}}{f_{B,t-1}}\right]\right\}, \tag{17}$$

Sometimes the total synergy term is very small. Nevertheless, from an accounting standpoint, it is important because we want this alternative way of analyzing total return to be *exact* rather than an approximation. Table 4 summarizes the values for each of the components in Equation 16 for the three sample banks used previously in our analysis and shows the addition and equal signs as a reminder that the terms sum to total return.

TABLE 4
FUNDAMENTAL-SPECULATIVE RETURN ANALYSIS FOR SAMPLE BANKS FOR 2012[15]

Community Bank	Fundamental Return	Industry-Specific Speculative Return	Firm-Specific Speculative Return	Total Synergy	Total Return
DNB Financial	18.9% +	6.1% +	16.9% +	5.1% =	47.0%
Old Line Bancshares	28.7% +	6.1% +	3.6% +	2.9% =	41.1%
Arrow Financial	5.4% +	8.0% +	–0.6% +	0.0% =	12.9%

The lead author's experience while in industry interacting with bank management and boards of directors is that the typical method for examining a bank's stock performance is to compare the total return performance over a three- to five-year time horizon relative to one or two benchmarks, such as a bank index and the S&P 500. These firm-versus-industry and firm-versus-market comparisons are ubiquitous and certainly not unique to banking. If a suitable bank benchmark is used, this sort of comparison provides meaningful information because it shows how the bank's return compares to similar institutions, as well as the overall market.

The fundamental-speculative return analysis provides an alternative way to examine stock performance, isolating the component that is essentially out of the control of management. The industry-specific speculative return measures the change in the industry's *P/E* ratio, and this component can be significant. In the review of a bank's performance, the decomposition of total return facilitates (at least) four important evaluations:

1. How does the bank's fundamental return compare to other banks' returns? The driver of stock price is expected dividend payments in the future, which derive from earnings. The terminology "fundamental return" and "speculative return" suggests the latter is left to chance while the former is based on managerial actions. Certainly management actions and talents influence the firm's earnings performance, but market conditions are also a factor.
2. The industry-specific speculative return reflects how much the industry's *P/E* ratio changes during the period. Arguably, management should not receive any credit or blame for this component of speculative return because changes to industry multiples are explained by macroeconomic forces beyond their control. Yet, *ISSR* can have a significant impact on total return.
3. The firm-specific speculative return reflects how much the bank's *P/E* ratio changes during the period relative to the benchmark. If the factor improves or erodes during the period, this can lead to an attribution analysis to identify what might have caused changes to the relative valuation.
4. Related to the firm-specific speculative return, the bank's factor is informative. If the factor is less than 1.0, the question arises as to *why* the bank is valued at a discount to market. The lead author has consulted with a community bank in the Midwest over the last 15 years that consistently has a lower-than-peer *P/E* ratio. Management and the board believe the bank's lower-than-peer capital ratio is a concern to the market.

The total synergy term will also likely spur discussion, particularly when the magnitude of synergy is significant. Note, however, total synergy is an amalgamation of the other terms. Specifically, the first synergy term is the product of fundamental return (minus the dividend yield) and speculative return, while the second synergy term is the product of industry-specific speculative return and firm-specific speculative return. Thus, the analysis and discussion of total return using the decomposition model should focus on fundamental return, industry-specific speculative return and firm-specific speculative return. Managerial decisions should have a direct impact on fundamental return and firm-specific speculative return, but are nonconsequential to industry-specific speculative return.

Typically, we like to examine not just the return attributes of an investment, but also its risk characteristics. Thus far, we have only used the decomposition model to analyze a stock's total return in the context of fundamental and speculative return as an alternative to capital gains/losses and dividend yield. The conventional approach to analyzing an investment's risk is to measure its return volatility (standard deviation or variance of total return) on a standalone basis and its systematic risk (beta) on a portfolio basis. The application of the decomposition model for forecasting by Bogle and others was to forecast returns and not risk. Likewise, our ex post application also focuses solely on a stock's return. How that decomposition might be used to analyze an investment's risk profile is a logical extension of this research. The first step could be to consider the volatility in the fundamental and speculative return components. Just as we have done in this paper with speculative return, the volatility of speculative return could be further decomposed into the volatility of industry-specific and firm-specific speculative return, and then compared between banks.

SUMMARY

Bogle (1991) demonstrates how total return for the stock market can be decomposed into two meaningful components: fundamental and speculative return. He and others (Estrada, 2006; and Grinold and Kroner, 2002) use the decomposition model to forecast capital market returns. Earlier research (Walker and Kramer, 2015) shows how this model can be used as an alternative way to analyze a bank's stock performance. While we applied this analysis specifically to community banks, this approach could be used for other sectors of the economy, provided there are suitable benchmarks available. In Walker and Kramer's earlier work, they show how this model can be turned into an identity by explicitly recognizing a synergy term, which is a function of a bank's fundamental return (minus the dividend yield) and the speculative return.

This paper takes the analysis one step further to show that speculative return can be decomposed into industry-specific and firm-specific speculative return. The term "speculative return" suggests it is a return beyond the control of management, but that is not entirely correct. Market sectors and industries go in and out of favor in terms of their valuation metrics. Indeed, the valuation of the entire stock market can shift up and down. (American Nobel Laureate Robert J. Shiller of Yale University has made a career of studying the volatility of markets.) Likewise, a bank's *P/E* ratio can be "rich" or "cheap" relative to the industry *P/E*, and that premium or discount can be attributable to managerial actions (or inactions). In this paper, we have shown how the speculative return component can be decomposed and interpreted. This decomposition of speculative return into industry-specific and firm-specific speculative return provides a more thorough alternative approach to analyzing stock performance. As the financial sector heals from the aftermath of the financial crisis and Great Recession, this method of looking at returns should help distinguish between management's contribution to building shareholder wealth and other factors. Moreover, the approach is compatible with the ubiquitous peer-group analysis community banks conduct because there are a plethora of bank benchmarks made available to the industry that can be readily incorporated into the analysis. Finally, there are thousands of community banks in the United States. Thus, there is a wide potential audience for this analytical approach.

ENDNOTES

1. Interestingly, Bogle (2012) voices his displeasure in the lack of recognition given to him by Grinold and Kroner (2002) regarding his fundamental and speculative return methodology. He says, "Grinold and Kroner failed to mention my 1991 [*Journal of Portfolio Management*] publication that introduced essentially the same methodology more than a decade earlier" (p. 318). In contrast, Bogle is complimentary of Estrada (2007), who *does* acknowledge his contribution. He says, "Professor Javier Estrada of the IESE Business School was extremely gracious in this regard." Bogle goes on to say, "In [Estrada's] article from the journal *Corporate Finance Review*, 'Investing in the Twenty-First Century: With Occam's Razor and Bogle's Wit,' he concluded 'Sir William of Occam taught us to focus on the essentials, and Bogle showed us how to apply that lesson to forecasting the long-term returns of stock markets.'" Furthermore, Bogle also voices praise for Burton G. Malkiel, Earl Benson, Sophie Kong, and Ben D. Bortner for their "generous [recognition of] my methodology."
2. In finance, the use of subscripts sometimes has a dual meaning. For example, EPS_t represents the earnings per share *for period t*. In contrast, $(P/E)_t$ represents the price-to-earnings *at the end of period t*. This period versus end-of-period distinction is similar to what is explained in accounting courses, in which the income statement represents performance for an entire period, whereas the balance sheet represents end-of-period account balances.
3. See Walker and Kramer (2015) for a description and interpretation of synergy used in the context of the decomposition of a stock's total return into fundamental and speculative return. In this paper, one of the contributions is that we decompose speculative return, and then identify and interpret another synergy term.

Each synergy term has its respective mathematical formulation and interpretation that can be included in the overall analysis of total return. In the final model, we combine the two synergy terms.

4. Arrow Financial Corporation is a multibank holding company headquartered in Glens Falls, N.Y.
5. The bank data used in this study was obtained from SNL Financial LC, founded in 1987. SNL Financial collects its raw data from the U.S. government. Each quarter, all FDIC-insured institutions are required to submit a Report of Condition and Income (known informally in the banking industry as a "Call Report") to the FDIC. While working in industry, the lead author of this research used data from SNL Financial and Call Reports extensively and found SNL Financial's data to be quite reliable.
6. The time period used is 2012, which is consistent with the time period used by Walker and Kramer (2015) whereby they first discuss the application of fundamental and speculative return in stock performance evaluation. In addition to Arrow Financial Corporation, we look at two other sample banks: DNB Financial Corporation, a bank holding company whose bank subsidiary, DNB First, National Association, is a community bank headquartered in Downingtown, Pa., and Old Line Bancshares Inc., the parent company of Old Line Bank, a Maryland chartered commercial bank headquartered in Bowie, Md.
7. The exact numbers for the speculative return analysis are contained in a Microsoft Excel spreadsheet, while the return numbers given in Table 1 are rounded to the 10^{th} place (i.e., x.x format). Sometimes the sum of the components (industry-specific speculative return plus firm-specific speculative return plus industry/firm synergy) will not exactly equate to the (total) speculative return shown in the table because of rounding errors. In the spreadsheet, the sum of the components *exactly* matches the values for speculative return for all three sample banks.
8. Cragg and Malkiel (1968) show that the growth rate in earnings is useful in explaining *P*/*E* ratios, although they are of little use in predicting performance.
9. If the industry benchmark contains the particular bank used for the analysis, changes to that bank's *P/E* ratio could have a small impact on the benchmark value in theory, but the impact would likely be negligible. The impact would depend on the weighting of the individual bank's *P/E* ratio. The subscript *B* is used for *ISSR* to remind the reader the *ISSR* is based on a benchmark relevant to the bank.
10. Descriptive statistics can be examined for many different industry benchmarks. The *P/E* benchmark used for the analysis of the two smaller banks in this article is based on the \$500 million to \$1 billion peer group. Based on this peer group, the average *P/E* for the industry during this period is 15.2× with a standard deviation of 2.0. In terms of changes to the industry multiple, the average annual percentage change, on an absolute value basis, to the *P/E* ratio is 12.3 percent, and the median annual absolute value change is 10.3 percent. For the same 10-year period, the largest *P/E* expansion is 29.3 percent (for 2013), while the largest *P/E* contraction is 19.2 percent (for 2010).
11. Synergy between fundamental and speculative return is given mathematically as: $\left[\frac{EPS_t - EPS_{t-1}}{EPS_{t-1}}\right] \times \left[\frac{(\frac{P}{E})_t - (\frac{P}{E})_{t-1}}{(\frac{P}{E})_{t-1}}\right]$. In Walker and Kramer (2015), discussion is provided to explain why labeling this term "synergy" is appropriate in this context.
12. The mathematical understanding of the need to multiply *ISSR* and *FSSR* to obtain the missing term in the identity is aided by considering a nonfinancial example. Suppose a rectangle measures $L_1 = 10$ (length) by $W_1 = 5$ (width) for an area of $A_1 = 10 \times 5 = 50$ (ignoring the units of measurement). If the length is increased by 10 percent ($L_2 = 11$) and the width by 20 percent ($W_2 = 6$), then the new area is $A_2 = 11 \times 6 = 66$. The area increases by 32 percent, which is approximated by adding the 10 percent increase to length (which corresponds to an incremental area equal to $\Delta L \times W_1 = 1 \times 5 = 5$) to the 20 percent increase to width (which corresponds to an incremental area equal to $L_1 \times \Delta W = 10 \times 1 = 10$) for 30 percent (which corresponds to 5 + 10 = 15 or 30 percent of $A_1 = 50$). The missing 2 percent piece is the product of the two incremental increases, 0.10 × 0.20 = 0.02 or 2 percent (which corresponds to $\Delta L \times \Delta W = 1 \times 1 = 1$ or 2 percent of $A_1 = 50$). For our decomposition of speculative return, we label the analogous two-factor product term "synergy." For further insight on the synergy term, Bailey, Richards and Tierney (2007) present an elegant price-quantity analogy, including a diagram, that dissects a revenue increase from increases to price (*P*) and quantity (*Q*). They observe the "difference in revenue" is "due in part to an increase in price…and increase in quantity…[and] to the interaction of both variables." Analogously, speculative return derives from *ISSR*, *FSSR* and the interaction of both variables.
13. To reduce wordiness in this section, the abbreviations for industry-specific speculative return (*ISSR*) and firm-specific speculative return (*FSSR*) are used. The italicized font reminds us that both terms are variables.

14. Mathematically, the curly brackets are not needed for Equation 17, but they provide clarity. The first set of curly brackets encases the synergy term associated with the decomposition of *TR* into *FR* and *SR*, while the second set of curly brackets encases the synergy term associated with the decomposition of *SR* into *ISSR* and *FSSR*.
15. As mentioned when we presented Table 1, the exact numbers for the fundamental-speculative return analysis are contained in a Microsoft Excel spreadsheet, while the return numbers given in Table 4 are rounded to the tenth place (i.e., x.x format). Sometimes, the sum of the components will not exactly equate to the total return shown in the table because of rounding errors. In the spreadsheet, the sum of the components *exactly* matches the values for total return for all three sample banks.

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