BYU Studies Quarterly

Volume 52 | Issue 3 Article 3

10-1-2013

Certification and Signaling: The Importance of Markets and What Makes Them Work

J Michael Pinegar

Certification and Signaling

The Importance of Markets and What Makes Them Work

J. Michael Pinegar

BYU Studies has a long history of publishing the annual lecture given by the recipient of the Karl G. Maeser Distinguished Faculty Lecturer Award, BYU's highest faculty honor. And so it is with great pleasure that BYU Studies Quarterly *publishes this year's lecture by Dr. J. Michael Pinegar of the BYU Department of Finance, this year's Maeser Lecturer. His speech was delivered as a forum address on May 21, 2013, at Brigham Young University.*

I am humbled by and grateful for the privilege of speaking to you today. I know my presence here has more to do with others than it does with me. I love BYU. I love my colleagues in the Marriott School and across campus. I love my students. I also love and am grateful for my family.

When I was finishing my PhD at the University of Utah, I met at a national conference with several schools to interview for potential positions at their respective universities. One of those schools was the University of North Carolina. After discussing my, as yet, incomplete dissertation and various other details of my training, one of their faculty members began to study my résumé. After looking at the personal section that listed my wife and five children, he looked at the professional section that listed no publications or substantive teaching experience. Then he looked at his colleagues in the room and said, "I don't know about the rest of you, but I am much more impressed with this guy's wife than I am with him." That comment signaled a quick close to our interview.

Since that interview, I have been blessed with more teaching experience and a number of publications. But if my friend from North Carolina looked at my improved professional résumé today and also met my wife, he would still be more impressed with her than with me. Nevertheless, she insisted that I be the one to speak today. Acknowledging my ultimate responsibility for what I say, I hasten to thank her and other friends whose comments on earlier versions of this talk have improved what you will hear in this forum.

To contextualize what I will say, I will first read a short but important excerpt from the dedicatory prayer of the Provo Temple:

> Let that great temple of learning, the Brigham Young University, and all that is associated with it . . . be prospered to the full. Let thy enlightening power rest upon those who teach and those who are taught, that they may "seek learning, even by study and also by faith."
>
> Bless us, O Lord, that we may "teach one another the doctrine of the kingdom," as thou hast commanded. May we do so with such diligence that thy holy grace shall attend, so that we may "be instructed more perfectly in theory, in principle, in doctrine, in the law of the gospel, in all things that pertain unto the kingdom of God."[1]

In this temple of learning known as BYU, all things we teach should be temple worthy and should pertain to the kingdom of God. To reach that goal, we must train the whole soul, both body and spirit (see D&C 88:15). Joseph F. Smith stressed the interconnectedness of our temporal and spiritual well-being when he wrote "that a religion which has not the power to save people temporally and make them prosperous and happy here, cannot be depended upon to save them spiritually, to exalt them in the life to come."[2] When we understand the interconnectedness between the temporal and the spiritual, the body and the spirit, our learning by study and by faith will instruct us more perfectly in *all* theory, regardless of our respective disciplines.

In that context, I will now speak on the importance of markets and what makes them work. I will focus first on financial markets and then on labor markets. In discussing labor markets, I will illustrate the concepts I share by referring to former students.

---

1. "Provo Temple Dedicatory Prayer," *Ensign* 2 (April 1972): 26–32.

2. Joseph F. Smith, "The Truth about Mormonism," *Out West* 23 (September 1905): 242, cited in Joseph B. Wirthlin, "Inspired Church Welfare," *Ensign* 29 (May 1999): 76.

Financial Markets

I begin my discussion of financial markets by posing a question I have asked my students a few times right after general conference, namely, "Did you hear the prophet give thanks for the market in conference?" Hearing my question, you may wonder, as have some of my students, from what planet I watch conference, if I watch it at all. However, for a few moments, I invite you to consider the implications of the prophet's expression of gratitude for those who attend conference and for those who broadcast conference to a worldwide audience.

Suppose a conference visitor flies into Salt Lake City on Delta, rents a Toyota at the airport, buys gas at an Exxon-Mobil station, stays in a room in a Marriott hotel, and wears a tie he purchased online through Google. In that process, the visitor employs the services of firms with combined stock market values approaching $900 billion. Members who watch conference at home on their Panasonic TVs on a station carried by Comcast and use Cheerios to keep their kids quiet employ firms with a combined value exceeding $160 billion. Even if members access BYUtv to watch conference on their iPads, they employ a firm that, by itself, has a market value that exceeds $420 billion.[3]

"So," you might ask, "why concern ourselves with firms' market values?"

Firms that provide products and services we use daily access financial markets to pay for assets used to produce those products and services. If we live in a home, drive a car, or eat, we benefit from products and services made possible by financial markets. And we benefit more if those markets work well.[4]

The Church also benefits from markets that work well. Imagine the difference in our conference experience if no Internet providers or cable or satellite companies existed or if no companies produced TVs or other

---

3. Estimates come from Yahoo Finance as of May 3, 2013. Importantly, aggregate stock market values *understate* the total market values of most publicly traded firms because they do not include the value of other financial instruments that these firms carry on their balance sheets. Moreover, even adjusted market values of public firms understate the value of funds provided in financial markets, because they do not include venture capital and other important sources of private funding.

4. For an intuitive discussion of the significance of capital markets, see Jim Kessler, Lauren Oppenheimer, and David Hollingsworth, *Why Capital Markets Matter: A Primer on America's Financial System* (Washington, DC: Third Way, Capital Markets Initiative, 2012), online at http://www.thirdway.org/publications/563.

broadcast media. Imagine what would happen to our missionary force if foreign exchange markets failed or if airline and automobile companies and suit manufacturers went out of business for lack of funding.

Actually, airline and automobile companies have failed. At the end of one flight I was on years ago, the captain thanked passengers for flying with his airline because, in his words, "there [were] *many* bankrupt airlines we could have chosen." Indeed, after Delta filed for bankruptcy in 2005, four of the top seven U.S. carriers were operating under bankruptcy protection.[5] In no small measure, however, the existence of capital markets enabled Delta and other "failed firms" to correct their difficulties and to continue to operate.

Thus, I say again that you and I and the Church collectively benefit from financial markets.

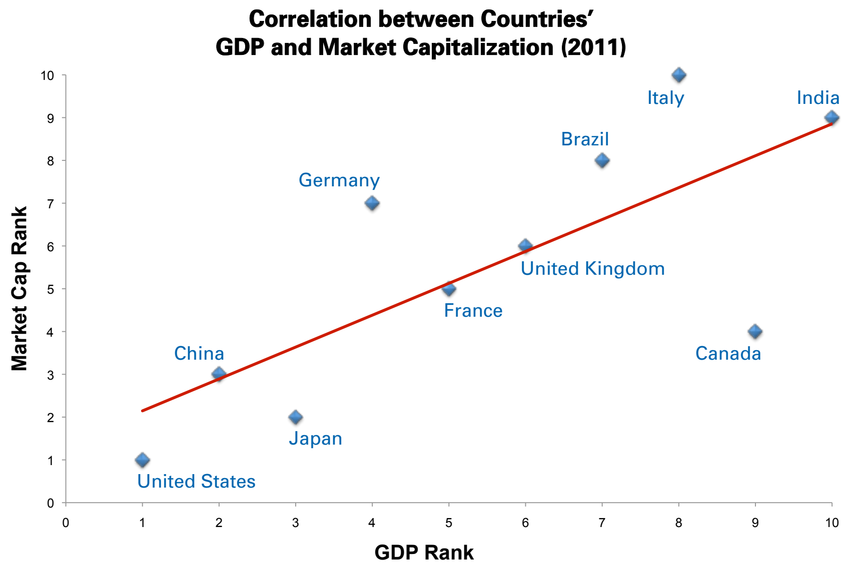
The benefits to the Church revolve significantly around its mission to share the gospel. In section 58 of the Doctrine and Covenants, verse 9, the Lord speaks of the gathering of Israel as a "supper of the house of the Lord . . . unto which all nations shall be invited." Verses 10 and 11 indicate that invitations to this supper will be sent first to "the rich and the learned, the wise and the noble," and then to "the poor, the lame, and the blind." Joseph Smith, the *first* to be invited to this supper in this dispensation was neither rich nor well educated. Thus, he may have wondered what the revelation meant when it said the invitation would be sent first to the "rich and the learned."

One interpretation of these verses, provided by Joseph McConkie and Craig Ostler, is that "the gospel was destined to come forth *in a nation* that had sufficient natural resources and land to which the scattered remnants of Israel could gather and find means to provide for themselves . . . so that [they] could in turn send forth missionaries by the tens and hundreds of thousands to others."[6]

My first point today is that we live in that nation and that the development of natural resources here and in other countries is strongly associated with the existence of capital markets. To see this, consider the following graph that depicts the relation between ranked market capitalizations and ranked economic output for the ten countries with

5. For a summary of bankruptcy filings by U.S. airlines, see "Airline Bankruptcies in the United States," *Wikipedia: The Free Encyclopedia*, http://en.wikipedia.org/wiki/Airline_bankruptcies_in_the_United_States.

6. Joseph Fielding McConkie and Craig J. Ostler, *Revelations of the Restoration* (Salt Lake City: Deseret Book, 2000), 420, emphasis added.



the highest gross domestic product in 2011. The upward sloping line illustrates my point. Countries with higher market capitalizations have higher economic output, on average.

Without delving into the question of causality, I will just assert that, if nothing else, capital markets facilitate economic growth. Niall Ferguson, the Lawrence A. Tisch Professor of History at Harvard University, makes this assertion more strongly. Specifically, he states, "The evolution of credit and debt was as important as *any technological innovation* in the rise of civilization." He states further that "without the foundation of borrowing and lending, the economic history of our world would scarcely have [gotten] off the ground."[7]

Given the significance of financial markets, it is important to understand what makes them work. To illustrate that, I will demonstrate what makes them fail by stressing the absence of one key ingredient—reliable information. To do so, I use an adapted version of the Akerlof lemons problem, named for George Akerlof, a corecipient of the Nobel Prize in economics in 2001.[8]

7. Niall Ferguson, *The Ascent of Money: A Financial History of the World* (New York: Penguin, 2008), 3, 31, emphasis added.

8. George A. Akerlof, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," *Quarterly Journal of Economics* 84, no. 3 (1970): 488–500.

Imagine a world in which only two types of used cars exist—high-quality cars worth $1,000 and so-called lemons worth $500. Some dealers sell only high-quality cars; others sell only lemons. No dealers sell both. Moreover, dealers know what kind of cars they sell, but buyers do not. Nor can buyers reliably discern differences in quality because of hidden mechanical problems. Under these conditions, buyers would not pay $1,000 for any car for fear they would be getting a lemon for the price of a high-quality car. Without some means of overcoming this information asymmetry—this gap between what buyers and sellers know—the market would fail because sellers of high-quality cars would withdraw from the market. Significantly, this failure would impose a cost on everyone who wants to buy a used car, now and in the future. Thus, the cost to society would be high.

Two common ways to reduce information asymmetries are certification and signaling. With certification, a reputable third party, such as an independent mechanic, affirms or certifies the quality of the car. With signaling, the seller himself incurs a cost to convey the quality of the car to potential buyers. This signal could come in the form of a warranty that sellers of lemons could not afford because of the poor quality of their cars. Both of these mechanisms alleviate fears of paying for high-quality cars but getting lemons in the used-car market today.

Like the used car example, investors also worry about the quality of the securities they purchase. To be comfortable, they must feel that they are not disadvantaged by information asymmetries. As in the used car market, certification and signaling may help reduce information asymmetries in financial markets. For example, certification is a common justification for accounting audits, bond ratings, the use of investment banks in the security issuance process, and many other institutional practices.[9] Signaling is used to explain stock price movements when firms unexpectedly increase dividends or announce share repurchases or when insiders in initial public offerings choose not to sell their shares

9. See, for example, Yun Lou and Florin P. Vasvari, "The Role of Reputable Auditors and Underwriters in the Design of Bond Contracts," *Journal of Accounting, Auditing, and Finance* 28, no. 1 (2013): 20–52; Simi Kedia, Shivaram Rajopal, and Xing Zhou, "Did Going Public Impair Moody's Credit Ratings?" (unpublished, 2013); and James R. Booth and Richard L. Smith II, "Capital Raising, Underwriting, and the Certification Hypothesis," *Journal of Financial Economics* 15, no. 1 (1986): 261–81.

for an extended period of time.[10] To the extent these and other mechanisms work, financial markets function more efficiently. To the extent they fail, market prices do not reflect the intrinsic value of the underlying assets and markets falter.[11]

Labor Markets

For most of you, certification and signaling in financial markets are new concepts. However, in labor markets you are, or should be, intimately familiar with these concepts, because you are the product about which information must be revealed. You are the product whose value must be certified and signaled.

Indeed, the labor market—the market in which you will be engaged very shortly—was the context in which Michael Spence developed his signaling model that allowed him to share the 2001 Nobel Prize with George Akerlof.[12] More to the point, attending college was the signal that conveyed the quality of potential employees. Now, you are in college and are creating your signal. What do you want potential employers to know about you? Or, from their perspective, what do *they* want to know about you?

Warren Buffett—the most famous and successful investor of our time—answered that last question in a speech to students at the University of Florida. Quoting his friend Pete Kiewit, Buffet said a good employee will have three attributes—integrity, intelligence, and energy—and of

---

10. See, for example, Merton H. Miller and Kevin Rock, "Dividend Policy under Asymmetric Information," *Journal of Finance* 40, no. 4 (1985): 1031–51; Larry Y. Dann, "Common Stock Repurchases: An Analysis of Returns to Bondholders and Stockholders," *Journal of Financial Economics* 9 (1981): 113–38; James C. Brau, Val E. Lambson, Grant R. McQueen, "Lockups Revisited," *Journal of Financial and Quantitative Analysis* 40, no. 3 (2005): 519–30.

11. The effectiveness of these mechanisms depends critically upon the incentives of the parties responsible for certifying and signaling value. If those incentives are misaligned, relevant information may be withheld or distorted. For recent discussions of this problem, see Jeffrey N. Gordon, "What Enron Means for the Management and Control of the Modern Business Corporation: Some Initial Reflections," *University of Chicago Law Review* 69, no. 3 (2002): 1233–50; and Jie He, Jun Qian, and Philip Strahan, "Credit Ratings and the Evolution of Mortgage-backed Securities," *American Economic Review Papers and Proceedings* 101 (2011): 131–35.

12. Michael Spence, "Job Market Signaling," *Quarterly Journal of Economics* 87, no. 3 (1973): 355–74.

these three, integrity is the most important, because if an employee lacks integrity, the employer wants the employee to be dumb and lazy.[13]

For a few moments now, I will speak about certification and signaling as they relate to the three qualities Warren Buffett cited. I will substitute the word "initiative" for "energy" and rearrange Buffett's order of the attributes. I will illustrate the attributes by referring to students I have known at BYU. In this discussion, the few mentioned students represent many more who go unmentioned.

Integrity

Several years ago, I was in the Provo Temple where, by chance, I met a former student. When we had a moment to talk, I said, "If I remember correctly, you are a convert to the Church." He said he was and then related his conversion story.

When this student was twelve, his mom and dad got a divorce. He then moved to Provo with his mom, where they both joined the Church. However, he joined only because his mother did and was, therefore, inactive throughout his teenage years.

After high school, he went to Snow College and then to Idaho State University to play football, but before he began playing at Idaho State, he responded to a prompting to read the Book of Mormon. Responding to that prompting led to a desire to serve a mission. When he announced his desire, his father disowned him, his coach told him he would lose his scholarship, and his mother worried because she could not replace the money from his scholarship to pay for his education. Despite these obstacles, this student served a faithful mission.

About two months before his scheduled release, he received a call from his mother saying some schools were willing to give him a scholarship if he would come home early to play. He told her he loved his mission and would not come home early. Days later, he received a call from Norm Chow, who told him BYU had a scholarship waiting for him *after* he finished his mission.

This student signaled integrity by making, owning, and accepting the consequences of a difficult decision when he received a witness of the truth. He continued to signal integrity by remaining true to that witness. When

13. "Warren Buffett MBA Talk—Part 1," http://www.youtube.com/watch?v=DfuXKpMFUjc. Peter Kiewit was CEO of the Kiewit Corporation, an employee-owned business and one of the largest and most successful contractors in the world. The firm is headquartered in Omaha, Nebraska.

we met in the temple, he was forty-one years old and had been serving as an officiator for twelve years. He had also served in other callings and was working hard to provide for a young family.

This student is not unlike others I have known. On several occasions, I have received temple ordinances with, and sometimes under the hands of, my students. On one such occasion, my wife and I knelt at the altar with a former student while Gerold Davis, a professor who taught me here in a German class, used his priesthood keys to seal a long-deceased son to long-deceased parents. In linking that family, the temple also tied three generations of my BYU family together.

Initiative

Though integrity is indispensable, it is incomplete without initiative. I have written many letters for students in our Masters of Accountancy program who sought admission into law school or a PhD program. Near the top of these letters, I always include a statement about the quality of these students generally, typically using words to this effect: "These students have competed to be admitted into BYU, competed again to be admitted into our undergraduate business program, and competed a third time to be admitted into the Masters of Accountancy program. Each competition becomes increasingly demanding, resulting in a class of bright, highly motivated students." I then describe individualized signals I have received that justify my assertion that the particular students I am recommending are "highly motivated."

One such student recently completed his law degree at the University of Virginia. In my class, he was perpetually asking questions, not just to get participation points, but to learn the material. One day, after we had discussed a challenging concept, he asked if I could explain the concept again. I did so. Still not understanding, he looked around at his classmates and asked if they were satisfied with my explanation. He did not mean to be demeaning. He only wanted greater clarity. When I went back to my office, I reflected on our interchange and realized that my explanation had been wrong. I was disappointed and embarrassed by my mistake, but I was grateful for my student's insistence on understanding the material, because it allowed me to return to class the next period to try to correct the misinformation I had given the period before.

This student also frequently visited my office to ask questions not related to my class. When he was ready to begin his last semester, he asked for guidance on his schedule. He had completed most of his required classes and had flexibility in his course load. He had also just finished a time-consuming commitment as a member of the tax team that had won the master's-level national tax competition. His question to me was whether he should take Hal Heaton's advanced corporate finance class or choose a class in which he could finally relax. My finance colleagues will be amused at that question, because they know Hal's class is *not* conducive to relaxation. However, this student took Hal's class so he could learn from someone students and faculty universally recognize as a challenging but masterful teacher.

The last time I saw this student was at his wedding reception. He got married between his second and third years of law school to a beautiful young lady who is his equal. The job market for law students at that time was very tight. Many students had difficulty finding internships, but this student had two, both with very good firms. Surely, his genuine and consistent signals of initiative opened doors.

Sometimes we signal initiative more clearly in times of trial than in times of triumph. After a disheartening performance on a midterm, one accounting student came to me a few years ago to see how he could do better in my class. We discussed how a strong performance on the final could replace his midterm score and improve his grade. When he took the final, his score improved so much that his grade moved from a B to an A–.

About a year later, I received a call from a recruiter at whose firm this student had applied for employment. The recruiter wanted to know if I had ever had occasion to tell this student his performance was lacking and, if so, how the student responded to my criticism. I was grateful I could certify that this student did not wait to be told he was underperforming. Rather, he initiated the discussion himself and accepted responsibility for his own improvement. The student received and accepted an offer to work for that firm and eventually also became a recruiter.

Intelligence

The final attribute mentioned by Warren Buffett is intelligence. The Doctrine and Covenants says that "the glory of God is intelligence, or in other words, light and truth" (D&C 93:36). Truth is "knowledge of things as they are, as they were, and as they are to come" (D&C 93:24). Though knowledge is integral to intelligence, it lacks glory without light. I repeat, knowledge lacks glory without light.

One reason for that is that light shows us how to use knowledge. Our most significant source of light is the Holy Ghost who, Parley P. Pratt said, "quickens all the intellectual faculties, increases, enlarges, expands, and purifies all the natural passions and affections, and adapts them, by the gift of wisdom, to *their lawful use.*"[14] Perhaps that "lawful use" was the motivation behind Brigham Young's charge to Karl G. Maeser "not to teach even the alphabet or the multiplication tables without the Spirit of God."[15]

In a meeting last year with our department, Jim Gordon, assistant to the university president, asked members of our faculty why they came to BYU. Without hesitation, one colleague said he came because of Jim McDonald, in whose econometrics class he had felt the Spirit. My colleague felt the Spirit both in Jim's teaching and in his own ability to learn. When Jim's name was mentioned, several members of our finance faculty spontaneously nodded their heads in assent, having shared similar experiences in Jim's class.

I have also seen my students learn by the Spirit. On one occasion, after I read the answer to a question on a difficult final exam, I emailed the student who wrote the answer and said, "Your essay indicates that you were guided by the Spirit." This student wrote back and simply said, "How did you know?"

How did I know?

I learned by experience. I learned most poignantly in my PhD program, in which I occasionally felt I was teetering on the precipice of academic extinction. When I received my first paper back in that program, my faculty mentor said my paper read like a trade journal article. He then said, "Once you get your degree, you are welcome to write for trade journals if you want, but to get your degree, you have to learn to write for an academic audience." He then handed me a chapter from a dissertation written by Roger Clarke, a friend who had graduated from Stanford and who was then a member of the BYU finance faculty. My mentor then told me that the faculty's goal for me was to learn to write like Roger. When I read Roger's paper later that day at home, I wept at the disparity between his work and mine.

---

14. Parley P. Pratt, *Key to the Science of Theology*, 10th ed. (Salt Lake City: Deseret Book, 1965), 101, emphasis added.

15. Cited in John W. Welch and Don E. Norton, ed., *Educating Zion* (Provo, Utah: BYU Studies, 1996), 54.

Later, as I prepared for my qualifying exams, I spent eight hours a day, five days a week, for six to eight weeks reading and summarizing papers we had read in finance seminars in the preceding two years. Each review session began with prayer. When I took the exam, the Spirit brought to memory the things I needed to know to answer the questions with insight. When the mentor who commented on my first-year paper gave me the results of my exam, he told me if he did not know better he would have thought I had received help on the test.

The truth is I did receive help. The Spirit helped me to perform far beyond my own capabilities. It "[quickened my] intellectual faculties" and taught me that spiritually and intellectually "it is by grace that [I am] saved, after all [I] can do" (2 Ne. 25:23). That feeling of quickening was what I recognized in my student's answer.

In my experience, that quickening rarely comes quickly. Nor does it come all at once. Like the Brother of Jared, we must sometimes climb our own Mount Shelem, hew stones out of rock, and then work patiently while we wait to see the hand of the Lord touching those stones "one by one with his finger" (Ether 3:6). However, when we see those stones light up, we can be assured that our knowledge is becoming intelligence.

Sometimes intelligence has little to do with academic training. A year ago, I taught a young man from Madagascar. In 2008, he and his wife flew 1,300 miles to Johannesburg, South Africa, to be sealed in the temple. They were able to make this trip, in part, because of the financial assistance they received from other Malagasy Saints. After they were sealed, they made a goal to attend the temple as often as possible. Two years later, they had finally saved enough for a return trip. About a month before their scheduled departure, four families came to their home in the span of one week to ask for financial help. My student and his wife knew they would not have enough for their temple trip if they helped those families; they also knew that Heavenly Father had enabled them to save the money in the first place. They knew he wanted them to go to the temple, but that he would help the families if he were there. So, they decided to do what he would do. In the words of my student's wife, "What would have been the point of going to the temple if we didn't help?"

Miraculously, the Lord then lit the stones my student and his wife had hewn out of their mountain of faith. They checked the airfare again and found the price had gone down by about the same amount as what they had given the four families. Thus, they were able to go to the temple after all.

Of course, the airfare could have gone down even if my student and his wife had not helped. But imagine the difference in their feelings when, in the temple, they recommitted to follow the law of sacrifice, knowing that they had just recently done so without knowing the outcome, rather than waiting to see if they would have enough to help others from an uncertain surplus. The experience taught my student and his wife the temporal value of planning and saving. But it also taught them the spiritual value of being sensitive to the promptings of the Holy Ghost to use what they had the way God wanted them to use it. That way, in their words, God could "bless [them] more so [they could] bless more of his children."

Conclusion

At the beginning of my talk, I mentioned my interview with the University of North Carolina. As you might guess, I did not receive an offer from them. However, I did receive and accept an offer from the University of Iowa. My family and I spent six enjoyable years in Iowa City.

Toward the end of our stay, I was serving as the bishop of our ward. One Sunday, a sacrament meeting speaker discussed how the Lord moves families to accomplish His purposes. Lehi's family was the illustration in our speaker's talk; my family was the illustration the Spirit imprinted on my mind. At the time, I was preparing my packet for tenure, but the Lord was preparing me not to get it. When the department chairman told me I would not receive tenure, I was peaceful because the Spirit had already prepared me. BYU had maintained contact with me since I received my PhD, but for various reasons, the time was never right. Now, it was. I interviewed and gratefully accepted the offer to join BYU's faculty in 1988.

A few months after we arrived here, our oldest daughter came to me and said, "Dad, I know why you didn't get tenure." When I asked why, she said it was because she needed a new set of friends. Her friends in Iowa had begun making decisions that influenced her decisions badly and made her feel uncomfortable with the direction she was taking.

Sometime later, I also received a call from the department chairman at the University of Iowa who told me they had made a mistake and asked if I would consider coming back. I do not believe they made a mistake. I believe they did what they thought was best for the University of Iowa at the time. In doing so, they also did what was best for me.

You see, the name "BYU" appears on all my official correspondence. It will also appear prominently on the diplomas you students receive. It certifies that we all belong to a temple of learning. It reminds us that we must signal values consistent with temple learning, values that invigorate both body and spirit, values of integrity, initiative, and enlightened intelligence.

I have been surrounded here by students and colleagues whose examples in these areas have made me a better person. The Lord has managed my career and my attempts to signal my personal and professional worth much better than I could have on my own. For these tender mercies I am and will always be profoundly grateful.

At the time of this lecture, J. Michael Pinegar (who can be reached via email at byustudies@byu.edu) was the Joel C. Peterson Professor of Finance. He earned his MBA and PhD from the University of Utah and his BA from BYU. Before joining BYU's faculty, he taught at the University of Iowa. At BYU, he has served as the Finance Group leader, the chair of the Business Management Department, and in many other assignments at the department, college, and university levels. He has been honored with the Marriott School Outstanding Faculty Award, the Marriott School Outstanding Researcher Award, the Merrill J. Bateman Outstanding Professor Award, and the Karl G. Maeser Distinguished Lecturer Award.