

LEAN ECONOMICS

A Survival Strategy in a Slow Growth Economy

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INTRODUCTION

Toyota Motor Company began its operations in 1933 as a start-up automobile manufacturing entity. Toyota's operating plans, from its early beginnings through about 1950, was based on Henry Ford's mass production methods. This practice within a Japanese economy led Toyota Motor Company to near bankruptcy by 1950. I am told by well respected Toyota employees, Japanese banks actually took over Toyota's financial management about 1950 and restructured the company.

From all that I have read, the early 1950s marked a new beginning for Toyota. Taiichi Ohno, the inventor the acclaimed Toyota Production System (TPS), currently better known as Lean Production Systems (LPS), benchmarked a new beginning transformation as early as 1947.

I find Toyota's story nothing short of amazing, considering that a start-up operation which basically went broke after about twenty years of operation is today the number one automobile producer in the world (Hall, 2006). What are the economic strategies that account for this amazing turn-around in effectiveness and efficiency of operation?

This paper will present the notion that Toyota's amazing success story is a case study of how a company utilized basic economic principles in charting its remarkable success. I will argue, Toyota's story is a case history of effectively applying basic economic principles that are well documented in any good university level economics text book.

ECONOMIC DEVELOPMENT STARTS FROM NEED

A basic definition of economics taken from my old *Principles of Economics* (Grayson & Lohman, (1958) text is as follows: *Economics may be defined as the study primarily of scarcity and substitutions.* Years passed before my son studied the subject in another text, *Economics: Principles, Problems, and Policies* (McConnell, 1987) in which we find the definition: *“Economics is concerned with the efficient utilization or management of limited productive resources for the purpose of attaining the maximum satisfaction of human material wants.”* No matter how we define the subject, McConnel (1987) has argued there are two facts that must be well understood. First, *“ Society's material wants, that is, the material wants of its citizens and institutions, are virtually unlimited or insatiable. Second, Economic resources—the means for producing goods and services—are limited or scarce.”* We will go with McConnell's definition.

Unlimited Wants

A very brief review of the notion that society has unlimited wants and that these wants are insatiable provides a basis for economic activity. The desires of consumers to purchase goods and services provide the basis for economic activity. We purchase automobiles and TVs for the services they render. Business organizations invest in production facilities and machinery in anticipation of satisfying some particular customer wants. The available capital needed to purchase consumer wants may be limited, but this does not necessarily limit wants. This leads us to the second fundamental fact of economics, the reality of scarce resources.

Scarce Resources

The fundamental fact of economics is that economic resources are limited or scarce (McConnell, 1987). These are all the natural, manufactured, and human resources that are utilized in the production of goods and services to satisfy consumer wants. These resources are generally categorized as land, capital, labor, and entrepreneurial ability.

Economics: The Science of efficiency

This brings us to a more definitive definition of economics as the social science concerned with the problem of using or administering scarce resources (means of production) so as to attain the greatest or maximum fulfillment of society's unlimited wants (the goal of production) (McConnell, 1987).

Society desires to utilize scarce resources to maximize consumer wants. This means society would like to achieve full employment and full productivity. This means society would prefer to have all able persons employed in some meaningful way that adds value to society. The second part of the equation means resources of production should be allocated and utilized efficiently.

TOYOTA,S ECONOMICS STORY

Reflections of Taiichi Ohno, in his book, *Toyota Production System: Beyond Large-Scale Production* provides us with valuable insights into the subject of Toyota's economic history. He has argued, "The Oil Crisis in the fall of 1973, followed by a recession, affected government, business, and society the world over. By 1974, Japan's economy had collapsed to a state of zero growth and many companies were suffering" (Ohno, 1978).

Toyota Motor Company actually continued to make profits during the crisis period that ran through about 1977. This awakened Japanese organization leaders to investigate why Toyota Motor Company did not have devastating losses through Japan's economic crisis of the 1970s. This awakening led Japanese organizations to an adaptation of the basic theory and principles of Toyota's system of production. This turn-around in Japanese productive methods has now provided them with about a thirty year head start in efficiency as compared to their United States contemporaries.

Given Japan's devastated economic collapse in 1973, it turned to the study of lean economics. History will show that between the years 1973 to 1980 Japan's industrial leaders studied carefully the work of Taiichi Ohno as briefly outlined above. Their study paid off through a revitalized economy by 1983.

AMERICA IN AN ECONOMIC DECLINE

American organizations have been in a general decline in productivity efficiency for many years, going all the way back to the early 1980s. Reflections of Dr. W. Edwards Deming in his last book, *The New Economics: For Industry, Government, Education* (1994), provides a brief review of the United States' manufacturing economic history beginning in 1910. He has argued the United States produced about half of the manufactured products for the world in 1910. He has further argued, the United States from about 1920 forward placed manufactured products in the "hands of millions of people the world over that could not otherwise have had them....It is easy to manage a business in an expanding market, and easy to suppose that economic conditions can only grow better and better" (Deming, 1994). He then argued to the contrary, "We find, on looking back, that we have been on an economic decline for three decades....The change has been gradual, not visible week to week. We can only see the decline by looking back" (Deming, 1994).

On looking back on my own reflections as a former IBM employee, how well I remember the day when we could not manufacture enough typewriters to supply the world (1960-1980); today typewriters are no longer the leading edge product for word processing; these have been replaced by the PC. Therefore, we can say economic conditions certainly do change with time.

In the words of Deming, "What must we do" (Deming, 1994)? When we see the world's economy in a "down-hill-slide," with no end in sight, change is necessary. Deming has argued, "We can elevate our economy with specialized services and products. This change will require knowledge. In other words, our problem is education and development of a culture that puts value on learning" (Deming, 1994). In contrast, I have argued above that Japanese organizations took the education route as a solution of their 1973 collapsed economy.

ECONOMIC DEVELOPMENT STARTS FROM NEED

Taiichi Ohno started his inventing work of the Toyota Production System with a vision that very closely articulates McConnell's two economic imperatives stated above. He looked back at the American mass production system and argued from a Japanese market need perspective:

We kept reminding ourselves, however, that careless imitation of the American system could be dangerous. Making many models in small numbers cheaply—wasn't this something we should develop? And we kept thinking that a Japanese production system like this might even surpass the

conventional mass production system. Thus, the principal objective of the Toyota production system was to produce many models in small quantities (Ohno, 1978).

Slow Growth Is Scary

Reading Ohno's book in light of our current 2009 environment, it sounds like he knew something about the future. He has argued, writing in 1978:

In today's slow-growth era, however, we must downplay the merits of mass production as soon as possible. Today, a production system aimed at increasing lot sizes (for example, operating a die press to punch out as many units as possible within a given time period) is not practical. Besides creating all kinds of waste, such a production system is no longer appropriate for our needs (Ohno, 1978)

Ohno elaborated on his economic thinking. He reasoned in the late 1940s that Japanese productivity, a critical measure of economics between countries of the world, was Toyota's essential problem that must be solved. His evidence at the time supported the argument that it took about ten Japanese workers to produce the equivalent of one American worker. He hypothesized the reason for such divergences in efficiencies, the subject of economics, was wastes within the processes of production. He subsequently set out on the path to thoroughly eliminate wastes in processes using just-in-time strategies, using common-sense ideas, using machine intelligence, using the power of individual skill and teamwork, using cost reduction methods, using multi-skilled worker concepts, using production flow methods, using production leveling techniques, using signaling devices to communicate authorizations to do work, and finally continuous improvement methods.

On June 15, 1950 Dr. W. Edwards Deming began his next thirty-year consulting practice in Japan, teaching its industrial leaders theories and principles of quality, formerly developed by his long time friend and colleague, Dr. Walter A. Shewhart. Shewhart's theory of continuous improvement had been well documented in his books, *Economic Control of Quality of Manufactured Product* (1931) and *Statistical Methods: From the Viewpoint of Quality Control* (1939). General MacArthur's staff had introduced this literature to Japan as early as 1947 (Hall, 2006). American manufacturers, on the other hand, have basically ignored this well documented work in favor of Henry Ford's mass production methods.

SUMMARY

Given our current economic slide, we find our overall economic plight in about a thirty year learning curve to catch up with Japanese productive capacity. Again, the best summery is stated above in the words of Deming, "What must we do" (Deming, 1994)? When we see the world's economy in a "down-hill-slide," with no end in sight, change is necessary. Deming has argued, "We can elevate our economy with specialized services and

products. This change will require knowledge. This change will require knowledge. In other words, our problem is education and development of a culture that puts value on learning” (Deming, 1994). In contrast, I have argued above that Japanese organizations took the education rout to a solution of their 1973 collapsed economy. We must launch a massive education rout to economic recovery, and fast.

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