Working Paper WP081597 August 15, 1997

Labor Quality and Economic Development: Development Strategies for Anderson County (South Carolina) In the New Global Competition

William A. Ward

William A. Ward is Professor in the Faculty of Economic Development and in the Department of Agricultural and Applied Economics at Clemson University.

Background work related to this Working Paper was supported by Hatch Project 1509 on Global Economic Restructuring and its Implications for South Carolina, funded through the South Carolina Agriculture and Forestry Research System.

Labor Quality and Economic Development

Development Strategies for Anderson County (SC) in the New Global Competition

William A. Ward

Dr. Ward is Professor of Agricultural and Applied Economics at Clemson University. He serves on behalf of Clemson University as an *ex officio* member of the Anderson County Economic Advisory Board.

Industry came to South Carolina in the first half of this Century to find **cheap** labor. By the 1990s, industry was coming here in search of **quality** labor – a change whose pace accelerates as the decade of the nineties blends into the 21st Century. Potential investors who raise inquiries with the Anderson County Office of Economic Development are less and less interested in the simple cost of labor and are more and more interested in the productivity of labor as measured by the value of output per dollar of labor input. Economic development, at its core, is about jobs and about quality of life. Thus, these changing demands for labor are not to be taken lightly by government, business leaders and educators in Anderson County.

Labor in the New Global Competition

The changing nature of the demand for labor is a global phenomenon. It is tied to fundamental changes in the way that markets work and in the way that production is organized and managed. This changed nature of market competition is being referred to as the "New Global Competition" – a term that has little meaning in the absence of descriptions of how things work now compared to how they used to work. Thus, the objective of this article is to describe what has happened to create this new competition, how industry is reacting to the changes, and what local developers need to do in order to react strategically to this new environment. Labor force quality plays a critical role in developing effective new strategies for reacting to the New Global Competition.

In the future, we must be increasingly able to provide a quality labor force – not just a cheap one – to our existing industry and to potential new investors in the County. The other side of that same coin is that we need to resist tying up quality labor in low-productivity and low-wage jobs. We need to 'target' the types of investments that we want made in the County and to work with existing industry, with government, and with educators to bring quality new jobs to the County. While only 4.1% of the Anderson County labor force is included among the unemployed, Mike McCuen of the S.C. Employment Security Commission estimates that as many as 6,800 workers in Anderson County may be under-employed in the sense that they are working in jobs that are below their capabilities.

Labor Quality in 'Old' and 'New' Forms of Production

There is a natural tendency to think of labor quality as consisting of technical skills or of education levels. No doubt, education and technical skills are increasingly important elements of workforce quality. The importance of education is indicated by the fact that recent graduates of the 'special schools' that are run by the TEC system to provide labor for industrial expansions had an average of 13.1 years of previous schooling. Indeed, many local companies have a number of college graduates working on their production lines.

In the new forms of production organization, however, labor quality goes far beyond education and technical skills alone. In today's business environment, personal skills and attitudes of workers are also important. The terms 'adaptability' and 'ability to work in teams' are often used in job descriptions and in help wanted ads these days.

But why do workers need such personal attributes on the production lines of today? Why can't they just get a factory job, get trained to do the same repetitious task for forty years, and have a union write the 'rules' under which they will be required to do those tasks? The simple answer is that this description of the old system of production no longer describes the way that companies in Anderson County operate within the New Global Competition.

In the 'old' industrial systems a person could get a good-paying, production line job even if he or she only had a basic education – basic reading and simple mathematics skills. Indeed, calculations done several years ago by Jim Hite at Clemson University indicated that in the 1940s and into the 1950s workers in some areas of the state could improve their lifetime earnings by dropping out of high school at age sixteen and going to work in a textile mill. Opportunities to use additional years of schooling were so limited in those days that a couple of years of earning power were worth more than the high school diploma. Clearly, this perverse outcome is no longer true in Anderson County.

The production work in the old system was routine and repetitious, and it was heavily monitored by a hierarchy of supervisors and middle managers. Line workers did not 'adjust' the machines they worked on – they just 'fed' them, or they 'ran' them. Machines were adjusted or repaired by supervisors or by specialized workers. There was not much need for interaction when each person performed a discrete job, often without really knowing what the next person down the line did or why. They could function without being adaptable, and they could get along without teamwork skills.

In the old system, line workers were provided the basic training in running their machines by either on-the-job training (OJT) or through the 'special schools' run by the Technical Education Centers like Tri-County TEC, Greenville TEC and other TECs throughout the state of South Carolina. These kinds of skills were sufficient for most of the industry that we had in SC up to and through the 1970s. The output coming from much of that industry was of the 'commodity' type – i.e., standardized outputs produced

in large runs of the exact same 'model', color, or type of output. Quality was 'controlled' at the end of the line by specialists, rather than 'managed' along the line by the production workers. Defective product was either reworked – an expensive process in most cases – or it was sold through the outlet stores that long have marked the entrances to factories in the Carolinas and Georgia.

In the old system, college-educated people were hired to become middle managers. TEC-educated people worked their way up to being production supervisors and sometimes beyond, into middle and higher management. There was a hierarchy that not only provided promotion prospects but also controlled and managed the work that was done by the 'skilled' workforce – whose skills in most cases really only consisted of the months or years of experience at doing the same, repetitive production line tasks. A worker could make a fairly dependable and a fairly decent living in the old factories of the olden times – either as a production worker, or as a supervisor, or as a middle manager.

In the best of the olden times, workers could demand high wages for the application of the routinized 'skills' that they had developed. If they joined a union, they could use the bargaining power of the union to capture not only higher wages but also shorter hours and improved working conditions. They could do so because of the special economic conditions that existed then but which do not exist now.

Where Did the Old System Go?

A number of things have changed since the days of the 1960s when South Carolina formalized an industrialization strategy based on cheap labor and abundant water and 'space'. The ensuing changes have put Anderson County industry into a much more competitive and dynamic economic environment.

The first change was in the way that 'capital' functions within an economy. Related to that change was the decline in US dominance of both the financial and the technological aspects of 'capital'. From the end of World War II until the late1970s, American technology was dominant. And the technology we were using was 'embodied' in the plant and in the equipment – not in the labor force, as it is today. These large-scale investments in fixed assets required large-scale access to financial capital. Let us look first at financial capital, then at the shift from technology embodied in fixed assets to technology embodied in 'human capital'. Then let's look at how all these elements have come together in a number of places around the globe to create the intense competition and rapidly evolving economic environment that demands a new style of production worker.

Capital Markets Developments Since the 1960s

Through the end of the 1960s, the US was dominant in its access to the world's stock of financial capital. Indicative of this point is the fact that in 1960 the US owned two-thirds of the world's stock of monetary gold. Capital markets in other parts of the

world had not re-developed after the Depression and World War II. The term 'multinational enterprise'– MNE – was coined in the 1960s to describe large-scale **American** firms like General Motors who were spreading their foreign direct investment (FDI) around Europe and the rest of the world.

Between 1974 and 1995, international capital markets changed dramatically. The breakdown in 1973 of the Bretton Woods system for managing international capital flows led the world's major economies to liberalize trade and finance and to let their exchange rates float. Both Europe and North America began to more closely link their internal economies with the outside world. In the late-1970s *bona fide* European multinational enterprises were able to develop and to begin investing large sums abroad. Obviously, South Carolina benefited greatly from this 'opening up' process, with firms like BASF, Hoescht and Michellin coming to our state fairly early in this process.

Also in the 1980s, a number of Newly-Industrialized Countries (NICs) had begun to develop and to become real forces in world trade – Korea, Taiwan, Hong Kong, Singapore, Malaysia, Thailand, Argentina, Chile. Increasingly during the 1980s, the technical capacities (discussed below) in the NICs got linked up with the financial capacities provided by international capital markets.

The first of the NICs to develop a functional capital market linked to global capital markets was Korea (if we ignore Hong Kong – already linked by virtue of then being a part of the UK). The Korea Fund was the first of the emerging market funds to be developed by the International Finance Corporation (IFC), the part of the World Bank that deals with private companies and with capital markets activities. Work began on the Korea Fund in 1986, but it was almost ten years before that Fund came to full fruition. It now provides Korean firms with access to savings and investments from the US and other countries.

The IFC's experience with the Korea Fund led in the mid-1990s to a proliferation of such emerging markets funds. As a result of these developing capital markets, by 1996 total <u>private</u> flows of capital to the emerging market economies was more than $240 Billion per year and rising, outstripping for the first time in 1995 the flows of official development assistance to those countries. The FDI component represented forty percent of the total private flows ($109 Billion per year), and it too was still rising. Thus, access to financial capital was no longer THE constraining force limiting entry into businesses – not even in the developing economies.

<u>Changes in the Meaning of 'Technology'</u>

First, let's review our earlier description of the way technology worked in the old system; then we'll look at technology in the new forms of production. As we said previously, this has major implications for labor quality and labor demand.

In the old industrial systems, 'technology' was embodied in the machinery and equipment. Workers with limited skills could be used, because the object was to make as

many identical units of output as possible and to do so for as long as possible. Markets were large and undemanding, so all units of the output could be alike – i.e., they could be 'commodities'. Recalcitrant workers with an attitude problem were tolerated, because it was the machinery that was important to the production process. Indeed, it was this decreasing importance of labor that had caused the original forms of these technologies to be called 'revolutionary' – as in the term 'Industrial Revolution'. The economic system that resulted was called 'capitalism' because of the role that financial capital played in assembling and using these industrial-era technologies.

In newer production systems, the technology is embodied in a constantly-evolving marriage between worker and machinery, between factory and forward-linked market, and between factory and backward-linked suppliers. Man and machinery together constitute an 'organism'. Workers no longer just run the machine. They also are responsible for making sure it is running right, even for recommending improvements in the machinery and its organization within the plant. Line workers also will frequently be involved in discussions between their own plant and the buyers of the plant's output regarding the organization of production to meet the quality, quantity, and timing required to get and keep the contract.

Human Capital and the Ability to Develop and Use Technology

Even in the light of the above workforce requirements imposed by the new style production systems, worker skills and human capital are not the limiting factors globally that they were in the 1960s and 1970s. Education and skills have become much more widespread. International development assistance in the 1950s, 1960s, and 1970s focussed upon creating a cadre of college and graduate-educated professionals to manage the development process. Jim Halpin (now deceased) was a Professor of Botany at Clemson University and Associate Director of the SC Agricultural Experiment Station. He once told a group of students that when he went to Chile for USAID in the 1950s, he was the only botanist there with a Ph.D. degree. Today there are dozens, and almost all of them now are of Chilean nationality.

By 1995, more than forty percent of the Ph.D. degrees awarded annually in engineering by US universities were going to non-US citizens. By 1990, even countries as poor as India had thousands of graduate-educated professionals in government, in universities, and in private business. Today Bangalore, India, is mentioned in the same breath with Silicon Valley in California – indeed, more lines of computer code are now written each day in Bangalore than in any other city in the world.

All told, there are billions of potential workers in the emerging markets and in the developing countries – not to mention the labor force of half a billion in rapidly-growing mainland China. By 'creaming' those huge labor markets, multinational enterprises are able to put together workforces possessing all of the important dimensions of labor quality. Much of the high-quality designer clothing available in local shops, for example, is now crafted in some of the poorest countries on earth. Even poverty-stricken Bangladesh with its hundred million people can come up with a few thousand world-class

workers. These workers can now be linked with technology and with financial capital to produce products that compete almost anywhere in the world – not just in their own home markets.

International Networks and Competition for Human-Capital-Based 'Technology'

By 1990, both financial capital and the technology of ideas flowed freely around the world. The US no longer had unchallenged technological dominance across the board – not because we had slid but because others had climbed. With that spreading of competence has come 'networks' of expertise which span international boundaries. Again, Bangalore provides an excellent example of this phenomenon. Real expertise in information technology sits in Bangalore, in Silicon Valley, in Seattle, and in Texas. This Diaspora of techies works together on projects, using INTERNET and telephone links. In some cases, the Bangalore techie and the California techie will have been classmates at MIT or Stanford – or faculty peers!

International interaction among scientists and among businesses is now a requisite for staying current and competent. But this interaction also functions to further the spread of expertise across the globe. The scientist in China who produces seed melons in cooperation with US researchers is increasingly competent to manage other seed development applications. The factory in Indonesia that was contracted to produce designer shirts in 1990 did not lose the skills when the contract ended, so they are now able to produce designer-quality shirts for K-Mart or for any other potential buyer. The code-writing shop in Bangalore that helped develop a major software package under contract to an American firm will shortly have the technical capability to develop their own packages – if they do not already.

Secrets are harder to keep these days. Technology that is embodied in machinery and equipment gets copied quickly – even in the presence of patent laws and intellectual property protection. 'Reverse-engineering' skills are now widespread. The ability to take a piece of machinery apart and then design a similar one – both inside and outside the limits of the patent – has spread dramatically, along with other aspects of technological competence. Every major company and every major nation now has the skills to reverse-engineer both equipment and software and to use the 'new' technology that results.

As a result of the foregoing, technological leadership does not last long, and companies must constantly innovate – the average time on market for consumer electronics products averages less than six months. Prominent companies like Sony and Panasonic must constantly evolve new streams of product technology innovations, as well as the process technologies for manufacturing them. Panasonic, for example, will have hundreds if not thousands of products either in production or on the drawing boards at any point in time. Success and failure are faced on a daily basis.

Reductions in Natural and Artificial 'Protection'

Because technology and expertise are emerging on such a broad front and are developing so rapidly, nations can not afford to close off their industries or their labor forces from the rigors of international competition. To do so might well doom the companies, the labor forces, and the national economy to stagnation and decline. 'Protection' in all of its guises is increasingly viewed as a destructive practice. As a result, even the less developed countries are rapidly and unilaterally reducing their **artificial** barriers to trade and exchange (i.e., their import tariffs, import quotas, foreign exchange licensing, etc.)

Artificial barriers to trade and exchange also are being relaxed on a multilateral basis through a series of GATT agreements (General Agreement on Tariffs and Trade). The World Trade Organization (WTO) has finally been established as a regulatory body for handling international trade disputes. The rigors of the New Global Competition has led even the politicians in Washington to support development of the WTO – an idea resisted by the US since it was first proposed at the Bretton Woods monetary conference at the end of World War II.

Natural barriers to trade and exchange have simultaneously been reduced by technological advances in shipping and overland transportation management. These developments – which accelerated in the 1980s – have brought about dramatic improvements in logistics costs and times. During that decade alone, cargo rates for ocean freight dropped by nearly twenty percent in nominal terms (and by more than that amount in purchasing power terms). The combined or 'inter-modal' freight efficiencies improved even more dramatically than did ocean freight.

Inter-modal transportation has benefited greatly from the recent developments in information and communication technology, as well as the improvements in management science which have driven industry's adjustment to the New Global Competition. The decade of the 1990s has seen much greater emphasis placed by industry upon the management of inbound and outbound logistics and upon the related management of materials inventories and finished goods inventories. Dramatic improvements have resulted. One Anderson County firm supplies components on a 'just-in-time' basis to an assembler who keeps only a three-hour supply of inventories of that component on hand. The rest of that buyer's components inventory is on trucks *en route* from our local plant.

As a result of recent developments in transport efficiencies and logistics management, the economics of space and location no longer imposes the limits that it did throughout earlier history. It also does not protect local industry and local labor from more efficient competitors located in other places. At the same time, attempting to replace the declining natural protection with artificial protection carries the risk of removing us from the international networks that propel and even compel technological progress.

Intense Competition & the New Forms of Production Organization

All of the above factors have combined to create a kind of international competition among businesses that we have never before seen on such a scale. Companies have adjusted by using information technology and computerized manufacturing more efficiently. They also are adapting by improving internal management systems, by linking themselves more closely with their suppliers and their purchasers, and by better managing both quality and cost throughout the 'value chain' that runs from basic raw materials up through the after-market relationships. All of these things have involved 'de-layering' the management system – getting rid of the layers of supervisors and middle managers. In a fast-paced world, decisions can not wait for questions to go up a chain of command and answers to come back down. A 'flat' organization in which all workers are 'networked' both literally and figuratively has become the ideal. Similarly, inefficiencies in communicating with suppliers and with buyers can not be tolerated – if your company can not eliminate such inefficiencies, another company can and will.

To network effectively and to be capable of actually making some decisions quickly and by themselves, workers must possess the multiple dimensions of quality alluded to above. Workers must be very adaptable – which means they probably need more than just a basic education, not to mention a personality that can tolerate constant change and sometimes-difficult interactions across the value chain.

The workers must be able to work in teams, and they must be able to handle information technology. They must be willing to engage with senior management in the overall task of continuously improving – which means that they should not engage in the development of adversarial worker-management relationships. One local plant manager of a European firm relates that his sales contracts require the plant to reduce its costs by at least two percent per year. Much of the continuous improvement required to accomplish these continuing cost reductions has to come from workers on the plant floor.

The plant manager of still another European company in our County confides that his is the only plant within his organization at which the company would dare make all of the raw materials of one particular type in one plant. In the home country, a labor strike at such a world-scale plant would be highly probable and could shut down the whole company. Here in Anderson County, they do not worry about a strike; thus, the company was able to build a more efficient plant designed around economies of scale rather than having to build two or more sub-scale plants in different locations as a hedge against labor unrest.

A union-free environment used to mean cheap labor. Now it means dependable labor. Unions used to bring job security. Now they can endanger job security by reducing a company's ability to bring management and workers together to work synergistically in adjusting to the New Global Competition.

At the same time, there is decreasing distinction made between 'management' and 'worker' in the new style factories that dot the countryside of Anderson County. Among the most successful of these, an outside observer will be less and less capable of distinguishing between 'management' and 'labor' in the future.

Where Do We Go From Here?

Labor quality is the key to continued development of the Anderson County economy – make no mistake about it. The days are over when cheap labor attracted industry and when we could not only tolerate but also could supply industrial jobs for high school drop-outs. The future will not be so kind to this part of our citizenry – still representing more than one-fourth of the age 25-and-over population of the County. (Encouragingly, this is a substantial improvement over 1980 data that showed nearly forty percent of the 25-and-over population did not have a high school education.)

Unless the under-educated and under-skilled among our citizens are willing and able to upgrade themselves for the new job market, most are them are destined to see their purchasing power trend downwards for the remainder of their lives and to spend their 'retirement' in abject poverty. They can not improve themselves, however, unless we provide them with opportunities to upgrade their skills. As a society, we need to be clear about these realities and to provide training opportunities for those who will make the effort to save themselves from worsening poverty.

On a broader front, it is clear that the best thing that we can do for the future of Anderson County is to all pull together – government, educators, commerce, and industry – to do the things needed to give Anderson County the highest quality labor force that we can afford. Actually, we can ill afford to do otherwise in the face of the New Global Competition.