South Carolina in a Globalized Economy: How We Got Here and Where We Go Next

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Clemson University Center for International Trade Working Paper 040918. Prepared for the International Trade Panel discussion in the MacNeil/Lehrer Foundation Sponsored Foreign Policy Series, Greenville Technical College (September 28, 2004).

Globalization is the result of a combination of technological developments on the one hand and conscious policy choices on the other. The policy choices were made by managers of the US economy and of the multilateral economic management system that emerged—at the behest of the US—from the end of World War II.[1] While technological developments dramatically and persistently worked to reduce transport and communications costs[2] during the six decades after the War, conscious policy choices were joining with improving management practices to spread 'market friendly institutions' (see Box 1) to rest of the world. The intent was to create one big, inter-linked marketplace with the US sitting at the center. The best indicator of US success in pulling that off are the efforts made in Europe in recent decades to create a big and powerful European Union with its own competing major currency, the Euro.

In following paragraphs, I discuss the impacts these developments were having on South Carolina companies and workers by 2004. Then towards the end of this paper, I will talk about what we are trying to do to position our state to prosper within the globalized economy that US policymakers have played a central role in creating.

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The United States has not had a trade surplus since 1975. The deficit in the US trade balance for 2003 amounted to $495 Billion, or about 4.5% of US Gross Domestic Product (GDP). The US trade deficit for 2004 probably will surpass that and set still another record. In a strange way, this huge and growing trade deficit mirrors a great strength of the US economy that is undervalued in traditional manufacturing-oriented areas like my home state of South Carolina.

There are three components to this new kind of economic might: (1) The move to centrality of the US Dollar in the 2nd half of the 20th century, (2) The late-20th century emergence of the US as the world's hub of economic dependability and promise-keeping,

[1] See the short papers titled "The Birth of Bretton Woods" and "The Death of Bretton Woods" at http://business.clemson.edu/cit/economy1.htm

[2] See the transport and communication cost reductions reported in Ward, W.A., Madhusudan Bhattarai and Pei Huang. (February 1999). "The New Economics of Distance: Long Term Trends in Indexes of Spatial Friction". Working Paper WP020299. Downloadable at http://business.clemson.edu/CIT/papers1.htm

and (3) The dramatic new role US capital markets institutions play in the global economy of the 21st century. Innovations and developments in the 'financial' sector of the US economy are holding the values of US financial assets high and, thus, putting pressure on the 'real' sector of the economy to be innovative and to produce high value as well.[3]

Box 1. Institutions and the 21st Century Global Economy

'Institutions' are the formal and informal rules of behavior that determine acceptable interaction between and amongst individuals in a society. Informal institutions are defined and handed down implicitly through family, culture and religion. Formal rules, in contrast, are formulated and passed down explicitly by governments or other organized and sanctioned entities (e.g., the International Chamber of Commerce). U.S. and British *common law* traditions allow formal institutions to develop out of the resolution of real-world conflicts through a democratically-functioning formal court system, giving these two countries arguable advantages as bases for the New Capital Markets and for the innovation and intellectual property that we discuss in following sections of this paper.

Vijayaraghavan and Ward (2001) discuss the impact of institutions on economic development across a broad spectrum of countries in a paper titled "Institutions and Economic Growth: Empirical Evidence from a Cross-National Analysis", downloadable at http://business.clemson.edu/CIT/papers1.htm

In the second half of the 20th century, the US made a number of explicit and implicit decisions that structured the 21st century economy in a way that will require major adjustments by a number of US firms—particularly in agriculture and manufacturing. At the same time, a number of adjustments also must be made in the economic development and workforce development policies pursued by states and by local communities in the US. Those adjustments are discussed in the final sections of this paper.

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As the US economy struggles to maintain exports of the traditional goods and services that show up in the trade account, the country gains exports of financial services and capital market products that, if they show up at all, show up on the financial side of the broader balance of payments accounts (BOP). While the common tendency in the news is to focus upon 'sale of US assets to foreigners' as the way the trade deficit gets financed in the BOP, that simple truth is not so simple in the era of what I have elsewhere proclaimed to be the New Capital Markets (in the forthcoming book *The Rise of Market-Based Society*).

These New Capital Markets began developing in the US from the early 1970s and got picked up in the United Kingdom (UK) in the 1980s. In the emerging era in which the

[3] The US is not the first country to have to deal with a labor force made high-cost by the success of its own financial sector. Swiss economic managers and citizens have dealt with these issues for generations now.

New Capital Markets play an important role, it is the sale of 'contracts' both to Americans and to foreigners that is the developing story in all of this. We are not buying things by selling off our productive assets. Instead, we are buying things with the proceeds of our ability to broker reliable promises that help the rest of the world to manage the risks of organizing to produce outputs. While the rest of the world pays a premium for the risk-management value that is added by US political and economic institutions, US-based companies and individuals collect the premium and spend part of it on imports.

A large and growing part of US 'trade' now consists of exporting 'contracts' – including base currency (the Dollar) and portfolio management instruments (stocks, bonds, indexes and derivatives of all types)—to buy imported CD players, toys, mangoes, and any number of other goods and services. Make no mistake, the basic and most important contract that we are able to sell domestically and abroad is the contractual relationship that the US Federal Reserve and the US Government have with the American people and with the rest of the world to maintain a stable US Dollar as the numeraire (a term economists use to mean the unit of account or the common denominator) of the world monetary system.

So all of this exchanging of contracts for goods and services begins first and foremost with a currency, the US Dollar, the rest of the world wants to have. The Central Banks of other countries use Dollars (or Treasury instruments, see below) like gold was used in the 19th century, to back their own currencies. Global reserves of foreign exchange stood at about $2.5 trillion in 2004, with seventy percent of those reserves held in US Dollars (down slightly from 75% prior to the successful introduction of the Euro). And households use Dollars in place of and in addition to their little stocks of gold stuffed into mattresses and into hidden holes in the walls of both the mansions and the hovels dispersed throughout the dozens of poorly managed countries of the world. To that end, it is estimated that more than 60% of all the actual Dollars in circulation (about $2,000 per American citizen) are held outside the US (mostly in $100 denominations). So, part of the US trade deficit is needed to feed these two hungers for Dollars held abroad.

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Then there is the second level of contracts the US economy excels at that include all the various financial and capital markets instruments that are sold over-the-counter (OTC) and on organized exchanges (i.e., formal secondary markets). It begins, of course, with the next kind of contract proffered by the US Government in financing the Budget deficit—i.e., US Treasury instruments.

During the second half of the 20th century, the structure of interest rates paid on US Treasury bills, notes and bonds developed into the standard for measuring risk-free returns on investments of various durations. This occurred because the US Government came to be viewed as the most trustworthy major formal entity in the world. For decades now, debt instruments issued by other governments have traded at a discount to US Treasury instruments (in other words, they carry higher interest rates). Privately-issued debt instruments trade at even bigger discounts—all the way down to the 'high-yield' (a.k.a. junk) bonds that Michael Milkin made into important sources of finance for

company restructuring during the 1980s. So when one builds a simple portfolio designed to optimize risk-return tradeoffs these days, US Treasuries provide the risk-measurement numeraire (there's that word again) for those portfolios—whether or not Treasuries of various types turn out to be components of the actual investments that make up that particular portfolio.

Around this basic structure of contracts that starts with a-Government-that-keeps-its-promises, ten Nobel laureates in economics—eight of whom were Americans—created the burgeoning new sub-discipline called financial economics during the last half of the 20th century. It started in the 1950s with Kenneth Arrow (an American) and Gerard Debreu (a Frenchman) describing in highly abstract mathematical terms an economy in general equilibrium in which there was a market for EVERYTHING that humans placed value upon and in which all individuals could enter into efficient contracts to buy and sell those things.

Box 2. Nobel Laureates who created 'Financial Economics'

1997 ROBERT C. MERTON and MYRON S. SCHOLES for a new method to determine the value of derivatives.

1990 The prize was awarded with one third each to: **HARRY MARKOWITZ, MERTON MILLER, and WILLIAM F. SHARPE** for their pioneering work in the theory of financial economics.

1985 FRANCO MODIGLIANI for his pioneering analyses of saving and of financial markets.

1983 GERARD DEBREU for having incorporated new analytical methods into economic theory and for his rigorous reformulation of the theory of general equilibrium.

1981 JAMES TOBIN for his analysis of financial markets and their relations to expenditure decisions, employment, production and prices.

1972 The prize was awarded jointly to **SIR JOHN R. HICKS and KENNETH J. ARROW** for their pioneering contributions to general economic equilibrium theory and welfare theory.

Then later in the 1950s Harry Markowitz linked developments in modern statistical theory to a then-threadbare theory of financial markets to form the core of Modern Portfolio Theory (MPT). By the late-1980s, extensions to MPT combined with other developments in financial economics to create an environment in which Robert Merton, Fischer Black and Myron Scholes could develop options pricing models that, with the arrival of computing power, allowed analysts to actually calculate the expected relationships amongst diverse markets. By the late-1990s, new applications of options pricing models were helping to make the New Capital Markets and the globalizing economy of the real world look more and more like the systems of equations scribbled by Arrow and Debreu in the 1950s.

Taken altogether, these developments helped promote an explosion of contracts by the late-1990s that were designed not only to finance expansions in productive capacity but also to manage the risks inherent in producing and selling almost anything. These contracts combine futures, options, and agreements-to-pay against any number of different kinds of data being generated out of the democratization of computing power in the 1990s (all those microprocessors out there generate data, you know). Together, these contracts are called 'derivatives', because they are abstractions that derive from something else (a stock or a bond) that traditionally was considered a bit more 'real' and a bit less abstract—though, in reality, stocks and bonds themselves were abstractions when considered from the perspectives out of which they grew at the end of the Middle Ages.

From 1970 to the present, these theorists were helped along by capital markets professionals who would organize markets for newly-developed exchange-traded instruments, most remarkably in places like Chicago, Philadelphia and London.[4] And they were assisted by newly-educated 'financial engineers' capable of mining data for relationships that could be written into contractual agreements between buyers and sellers of derivative instruments, the bulk of which move through the OTC market.

As this huge market in abstractions began to develop, the US economy—and its little brother economy in the UK—brought all the balls and all the bats that were going to be used in playing this new game. So by 2001, OTC derivatives contracts having a nominal value of more than $100 Trillion (more than twice the GDP of the whole Earth), and growing, were said to exist. More than 90% of these contracts went through Dollars. And the bulk of them were written by money center banks in the US and in the UK—two economically strong countries that, incidentally, have trade deficits.

Because of the strength of US political and economic INSTITUTIONS, the US economy and the US Government can produce and export Dollars; and they can create new contractual instruments and sell them in a global economy that needs both financial liquidity and the portfolio balancing devices that US-based financial instruments provide. Thailand cannot do that. China cannot do that. Even the European Union cannot yet do that, though that was one of the objectives of setting up the Union and creating the Euro, to rival the ability of the US and the Dollar to collect 'rents' off of the advantages provided by US political and economic institutions.

Because of the roles played by the US Dollar and by the US-dominated New Capital Markets, the US can run large Budget deficits and large trade deficits without the US economy collapsing into Asian-style crisis. Indeed, much of the global economy relies upon the US doing just that. How far can the U.S. push the twin deficits before exceeding the external demand for U.S. Dollars and U.S.-dominated capital markets products?

Global trade grew at a compound annual rate of 9.7% per year from 1950 to 2000. That kind of growth rate in trade explains part of the growing external demand for U.S.

[4] This broader story is summarized in a beautifully written book by Peter Bernstein. See *Capital Ideas*. New York: The Free Press, 1992.

financial products. The second part of this story is the market liberalization of the world's largest two countries containing together 1/3 of the world's population—China and India.[5] Neither of these two massive countries currently provides the kinds of formal market institutions needed for sophisticated capital markets to develop. Thus, they will continue for some time to rely upon foreign capital markets products—including Dollars and Treasury instruments—to keep their real sectors up and growing. As these countries continue to liberalize and merge their economies with the global economy, they will represent a huge force favoring growing availability of Dollars and financial products held outside the US. There is a limit to the U.S. ability to run a Budget deficit and a trade deficit. But that limit is big, and it is growing as the developing and emerging market countries liberalize their economies.

So, given the central currency and capital markets roles the US has assumed (whether or not manufacturers and their workers in South Carolina wanted their country to do so), it is not likely that the US economy will see a traditional trade surplus anytime soon. What about US agriculture and manufacturing sectors? What are they and their workers to do in such a new environment?

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The first thing to keep in mind is that the biggest issues facing US agriculturalists and manufacturers arise from a series of explicit and implicit decisions made by US policy analysts, starting from 1945. The first of these was to put the US economy and the US Dollar at the center of the international economic system, as we pointed out above. The second was to support the emergence in the US of the New Capital Markets that are outlined above and I discuss in greater detail elsewhere. The third was to promote the use of 'formal' institutions for governing economic interactions not only within countries but also between countries. This was part of the 'globalism' that promotes contract-controlled exchanges between individuals as an alternative to government-controlled interaction domestically and across borders. This is all part of the "privatization" of national and global economies that were propelled along by the Reagan and Thatcher revolutions. And the fourth major decision was to focus upon innovation as the source of growth in the real sector (as opposed to the financial sector, discussed above—which certainly had plenty of innovation of its own in the late-20th century) of the US economy.

All of the above decisions were supported by analysis coming out of what some have called 'technical economics'—i.e., the mainstream of economic thought emerging from the Arrow-Debreu tradition. Lingering in the background and only slowly re-emerging in the 1980s and the 1990s was another tradition in economics—the Institutionalist tradition—that traced its roots back to Richard Ely and beyond. The Institutionalists focused attention upon the legal and social environment and upon the formal and informal rules that allowed markets to develop and to function efficiently. While technical economics made their models under the assumption that the requisite institutions existed, Institutionalists studied the role of these institutions in managing uncertainty and risks in human interchanges, and they studied how one might go about creating 'efficient' economic institutions that were needed to achieve the technical economists' predicted outcomes.

[5] See the little paper "China Supply Shock", available at http://business.clemson.edu/cit/economy1.htm

By the early-1990s, the Institutionalist tradition had crept into the thinking about economic development and had joined up with technical economics—both within the US and in terms of what the multilateral and bilateral development organizations were doing in the developing and emerging market economies. (For his role in bringing institutions to the forefront of economic thought, Douglass North was awarded a Nobel Prize in Economics in 1993.) Taking the leadership role in this transformation of thinking on economic development was the research group at the World Bank, as well as scholar-practitioners in the Chief Economist's office of the then-newly-created European Bank for Reconstruction and Development (EBRD). Providing early research and theoretical support for these efforts was a group at University of Maryland led by (prior to his death) Mancur Olson.

Economic institutions lie at the heart of an 'enabling environment' in which financial markets can work efficiently and in which production can occur with high efficiency and with managed risk. Creating such enabling environments became the main tasks facing economic developers working outside the developed countries of the world by the 1990s. The US and the UK became the models for such a society—after all, they had taken this model the farthest within their own societies.

The development of an enabling environment for cross-border transactions—i.e., for international trade and for international finance—between private parties became the next leg of that agenda. Some have linked this 'globalism' agenda to the dominant economic actors in the world—the US Treasury, the World Bank, and the International Monetary Fund—and have labeled this approach the 'Washington Consensus', since all three organizations are located in Washington, DC.[6]

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The focus upon national and international economic institutions discussed above came together not only in the economic development strategies pushed by the Washington Consensus organizations, it also became the heart and soul of the World Trade Organization (WTO) that finally emerged in 1995. The WTO grew out of eight rounds of GATT (General Agreements on Tariffs and Trade) negotiations running from the end of World War II through the early-1990s. Though an "International Trade Organization" had been envisioned as the third sister organization to the World Bank and the International Monetary Fund at the Bretton Woods Conference in 1945, it never came to fruition. The US Congress and much of Europe proved reluctant to cede trade policy to a multilateral organization at that time.

By the 1980s, however, it was becoming obvious to those of us working in the multilateral economic system that the fate of the US economy and the fate of multilateralism were intimately linked. As Globalism became the economic development policy of the Washington Consensus organizations in the late-1980s and early-1990s, the WTO grew in importance as a potential mechanism for spreading the US/UK system of

[6] In 1989, John Williamson used the term "Washington Consensus" to describe the general agreement that existed among international economists regarding reform of the economy of Colombia. The term got picked up and used in the 1990s to describe market liberalization philosophy in general. I use the term as shorthand for support of globalism by the three organizations that dominate international economic policy—the US Treasury Department, the World Bank, and the International Monetary Fund.

'formal' rules to cover international transactions. Among the formal rules that the WTO and the Washington Consensus sought to put into place were international agreements to define and enforce rights in intellectual property. This became the third leg of the WTO system of rules—i.e., rules on trade in goods, rules on trade in services, and rules on trade in intellectual property. The third leg came to be referred to by its acronym, TRIPS.

The biggest proponent of TRIPS was the US. The reason the US put so much stock in TRIPS was that economists already had identified innovation as the source of more than 2/3 of the growth in the US economy during the 20th century.[7] Creating domestic systems for promoting education, research and the application of innovation became the real-sector component of US economic development strategy, then, for the 21st century.

Given the tendency that we outlined above for the US financial sector to keep the Dollar high, it seemed increasingly likely that US-based firms' ability to compete globally would be determined by their ability to use innovation to add substantial value to products. But competing INTERNATIONALLY based on innovation would require developing INTERNATIONAL systems for protecting the intellectual property that one expected to get from all that science and innovation and that would be embodied in the products being produced and sold around the world.

The developing countries would lose a great deal—both economically and politically—from enforcing intellectual property rights. After all, they could produce, but they had little capacity to innovate and to invent. In order to get TRIPS accepted by the developing countries, the US and the rest of the developed world promised to trade off their traditional protectionist stances towards agriculture, textiles and apparels. The US pharmaceuticals and other industries that lived off of innovation were expected to gain from this tradeoff. Many US farmers and many US textiles folks would be the losers.

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Analysts are concluding that surviving and prospering in the kind of US economy we have described above will require that a number of changes be made in the communities and in the companies that make up the old agricultural and textile regions like my native South Carolina.[8] At the community level, they say, we will have to build education and research systems that will allow us to be both productive and innovative. And they tell us we will have to build education systems, local infrastructures, and living amenities that will keep at home the best and the brightest amongst our native population and that will be attractive to the best and brightest of the potential in-migrants.

And the analysts tell us that we should try to attract to our communities the headquarters, the research labs, and the early-product-life-cycle production of the most knowledge-intensive products we can find. Or we should generate them ourselves.

Meanwhile, there is growing evidence of a changing pattern of specialization in the international trade arena. Old trade models talked of specialization in products. For example, high-income countries would specialize in products that used a lot of capital to

[7] A marvelous, though technical, history of research and thinking on economic growth can be found at a web page of the New School University, http://cepa.newschool.edu/het/essays/growth/growthcont.htm
[8] See discussion promoted by the Palmetto Institute, at http://www.palmettoinstitute.org/

produce them. And low-income countries would specialize in products that required a lot of (cheap) labor input.

Newer models of trade emphasize the specialization now occurs in "tasks" rather than in products. As international transport and communication costs have come down during recent decades, companies now produce outputs via distributed supply chains that stretch around the world. With automobile components, for example, a component and its elements might pass back and forth across the borders between the US, Canada and Mexico several times before the finished component comes back to Greer to be 'hung' on a BMW.

Plants in each country specialize in particular 'tasks'—not just for automobiles and auto parts but also for other products as well. China, for example, is now the low cost place to do assembly and a number of other labor-intensive tasks within those supply chains. The US, on the other hand, is a high-cost location. But it is a place where a company can protect intellectual property. So for those parts of a product or those parts of a supply chain where innovation and intellectual property protection are important, a company should put those in the US rather than in a place like China or Russia or Bangladesh where intellectual property protection still is not good.[9]

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As a professional economist and college professor, I say "Yeh, yeh! The US has to go up-tech if we are to continue to grow, compete and get richer." As a participant in one of the Washington Consensus organizations as the above strategy was being worked out, I thought it all made sense as a grand plan for the world. Given the immutable forces we were dealing with, there simply was nothing else out there that made better sense. And, like it or not, that same logic seems even more compelling today.

But I also am a member of a local Workforce Investment Board these days where we struggle over that quarter of our older workforce who don't have a high school diploma. And we struggle with the knowledge that as much as thirty percent of today's high school students in South Carolina will not stay to graduate. Even the four or five percentage points of those drop-outs who later will go back and get a GED pose problems for those of us trying to cope both with economic development and workforce policies for South Carolina.

The manufacturing plants that we see in South Carolina these days don't want people without a high school diploma. The average number of years of education of new-hire production workers in South Carolina manufacturing plants has been above 13 years since the mid-1990s. The US military no longer can use high school drop-outs. And the kinds of knowledge-intensive tasks that can survive in the economic, political and social environment sketched out above cannot do so with the kind of workforce that we used to

[9] Rolf Hemmerling of Pacific Rim Partners and John Hardaway of Nexsen Pruett made this point with great poignancy at a session on intellectual property that was held at the Poinsett Club in Greenville and sponsored by the Center for International Trade with Vince Sordello and Rusty Rohrbaugh of Morgan Stanley (March 16, 2004).

produce. Even our average high school diplomas don't seem to be coming close to what is needed for those kinds of companies and those kinds of tasks, it would seem.[10]

Nor does our workforce yet have the kind of entrepreneurial attitudes and skills needed for an innovation-based society. And companies tell us they struggle to find workers with the 'soft skills' needed to perform the teamwork roles and to accept the kinds of individual responsibilities that both 'operators' and 'technicians' need on plant floors organized around advanced manufacturing techniques the include lean systems.

Producing the kind of workforce that the US economic environment really needs in the 21st century is a daunting task. It will require major restructuring of not only our delivery systems for education and innovation but also our own thinking about what really is going on out there. Unfortunately, we are only in the beginning stages on both of these.

Meanwhile, individual companies adjust by doing what they always have done: They find a way to cope WITHIN the constraints that exist. Immediate survival forces them to be less interested in the long-run task of getting society to look realistically at the quality of our workforce. Instead, they somehow find a workforce to do what they must do to compete—whether it is native-born American, immigrant American, or plain old foreign 'out-sourced' workforce.

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The unspeakable story of the US workforce at the beginning of the 21st century is the extent to which math, science and engineering skills needs are being met by brain-draining off of other countries education systems. We are the global leader in innovation partly—maybe even primarily—because of our mottled immigration policies. We are not talking here about the illegal Latino immigrants who increasingly do the wallboard and landscaping work for the US. We are talking about the part of the workforce that does the innovation—the part in which more than half of the engineers with Ph.D. degrees working in the US are foreign born (most of whom got their graduate degrees in the US—graduate education joins financial services as a major export product of the US economy). We are talking about the 45% of the nation's computer science doctorates who are foreign born. We are talking about the part in which nearly two-thirds of the top scorers in the 2004 US Math Olympiad were children of immigrants. Ditto for 46% of the US Physics Team. We speak of the sixty percent of the finalists of the Intel Science Talent Search who either were immigrants or the children of immigrants, as were seven of the top ten award winners in that Search.[11]

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[10] Then there is the 53% increase in productivity in the manufacturing sector between 1990 and 2002 in the US, and the comparable manufacturing productivity growth rates in other countries as well. This alone has REDUCED by more than one-third the number of workers needed to produce the 1990 level of US manufacturing output. During the 1990s, no major country—including China—increased its employment in manufacturing. Since 2000, China has increased its manufacturing employment only by dramatically increasing its exports of manufactured goods. Nevertheless, the US lost more manufacturing jobs to productivity growth during that period than we did to competition from China.

[11] Source: Editorial, Give Us Your Nerds, *Wall Street Journal*, July 16, 2004; and Stuart Anderson, The Multiplier Effect, National Foundation for American Policy, July 19, 2004.

All of this occurs within the alphabet soup of US visas that run from "A" to "T". The (in)famous H-1-B visa is available for only 100,000 scarce-skilled immigrants per year. This year the quota of H-1-B visas will be exhausted before the 'official' year begins. This says nothing of the category "L" visas in which the person officially works for a company outside the US but does all of his work in the US under a contract to the foreign company.

US immigration policy is at least as complex as US tax policy.[12] Why? Because of conflicting needs and objectives of different parts of US society and because of the political difficulty of facing up to whose needs and objectives matter most.

Job out-sourcing, as it is being called, is occurring at two ends of the skill scale. In today's low-cost-transport economy, tasks are being divided up and parceled around amongst locations with different cost and skill characteristics. Labor-intensive tasks are moving to the low-wage countries that make up the 'less-developed' and the 'emerging market' worlds. At the same time, companies are seeking skilled labor in the international market as well. One reason, as suggested above, is the scarcity of skills in math, science and engineering in the US. The other is that—once companies discover they can find those scarce skills elsewhere—the companies also discover the foreign technical workers in the liberalizing countries are cheaper than their US counterparts. Learning how to use the visa rules and the plant relocation possibilities to solve the first labor problem, they know how to use the same procedures to access the other workers as well. So they increasingly will out-source the skilled tasks also, so long as there is sufficient workforce out there in the big world to meet the demand. It is not clear, however, whether all of those firms fully appreciate yet the extent to which they put their intellectual property at risk with some of their sourcing decisions.[13]

Now we come back to the 'supply shock' issue arising from liberalization of the economies of the two most populous countries in the world. Though Indian and Chinese societies provide college educations in science and engineering to only a thin slither of their societies, these are big societies—one billion and 1.3 billion people, respectively. The Chinese workforce that remained underemployed at the beginning of 2004 is about the same size as the whole US workforce.[14] Many—though certainly not all—of those have education and high-level skills. US, Japanese and European multinationals can continue to 'cream' the Chinese labor market and that of India for a few more years yet. They will find there not only the production workers they need for low-cost manufacturing. They increasingly will find ways to use the educated and skilled workers that those vast societies are producing. So long as that is true, we also are likely to see a continuation of that mysterious willingness for the world to live with the twin US deficits

[12] Jimy Sanders of the USC Sociology Department and Jay Rogers of Leatherwood, Walker, Todd and Mann discussed these and other issues at a seminar on "Immigration and the US Economy" held at the Poinsett Club in Greenville and sponsored by the Center for International Trade with Vince Sordello and Rusty Rohrbaugh of Morgan Stanley (June 8, 2004).

[13] One source of country-by-country information on intellectual property protection is the "Index of Economic Freedom", one component of which is a property rights index, produced annually by the Heritage Foundation. See http://www.heritage.org/research/features/index/

[14] If Russia could get its political economy act together, we would see comparable outsourcing occurring there. The Soviet system actually did succeed in educating scientists and engineers. The parts of that old system—Slovenia, for example—that have reformed are doing nicely in the globalized economy.

arising out of the Federal Budget and US trade with the rest of the world. The reality is that US political and economic institutions continue to provide the most viable foundations for the financial sector component of the global economic growth that will be needed to employ all of these workers.[15]

In summation, the US trade deficit is neither as simple nor as unequivocally indicative of failure as conventional wisdom would make it appear. Some parts of US society are doing quite nicely, thank you, in this environment. Others are not. Even South Carolina has its gainers and its losers in this adjustment process (ask Blackbaud, and Transcon Trading how they are doing, and then ask some of our textile firms). How do we swing the balance so that there are more gainers than losers in South Carolina?

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We are learning from our efforts at the Pendleton District Workforce Investment Board (WIB) serving Anderson, Oconee & Pickens Counties that dealing with the issues discussed above will require efforts not only from those of us in the workforce development system but also from the workers and their families.[16] Trying to get statewide attention on this matter makes it look like we are blaming our workers. We are not. Rather, we are trying to enlist them in helping us to provide them with workable alternatives for their futures. (Note that the Workforce Investment Act of 1998 mandates that a majority of WIB membership come from the private sector.)

We are finding it difficult to provide a worker with the re-training he/she needs when that worker sees the problem as arising totally outside him/herself—i.e., due to "NAFTA", or "unfair trade practices by China". Sure, much of what is affecting these workers is occurring outside the realm of their control. But, let me tell you, it is outside the realm of our control as well. So we deal with the things we have some hope of affecting.

Clemson University sociologist Jim Witte has been conducting interviews with unemployed workers on behalf of the Pendeleton District WIB to determine their willingness and their ability to take on new training. (Sam Jordan can speak to the issue of the uptake on retraining programs provided under trade adjustment assistance.) Meanwhile, Jim Witte and CIT associate John Mittelstaedt also are working with the Greenville WIB and the Greenville Chamber of Commerce on workforce studies. In Anderson County, Shae Rozakos is working with her Manufacturing Council (Chaired by Butch Harris of Timken) to develop programs with the high schools to better prepare school counselors and their students for the demands of the 21st century manufacturing community of the Upstate.

While we already know we must push today's youngsters to higher levels of educational achievement—particularly in math and science—we also have to deal with the older workers who have families to support and no doubt will find it difficult to commit large amounts of time to full-time study. Symptomatic of this problem is the Upstate plant that closed during 2003, with two-thirds of their workforce over the age of

[15] Though European—including the UK—institutions are beginning to emerge as viable complements in fulfilling that role.

[16] Sam Jordan, the State WIB Director, who also is on this panel, is better placed to talk about some of the things happening with the WIB system nationally and statewide.

40 AND having ten years or less of education. In my opinion, this is the toughest and most painful part of the adjustment process that our state faces.[17]

What we see when we juxtapose the factors discussed in the first versus the second halves of this paper is a disturbing mismatch between the 21st century job demands compared with the existing job skills of our workforce in South Carolina. An important mismatch is occurring within the 'service' employment that is replacing 'production' employment (This is occurring both within manufacturing and between the manufacturing and the service sectors.). Within service employment, the growing part is the 'high-end' skills sets required for such things as medical and business services. Job skills of the production workers coming from the lost manufacturing jobs, unfortunately, disproportionately suit them only for the 'low-end' skills sets such as those in the hotel, restaurant, and retail industries. If we in the WIB system can find a way to help those workers get the skills they need for the high-end market, then we can conquer part of the adjustment problem we are facing in South Carolina. As I said above, however, this must be a job that both the WIB system and the workers appreciate and work together to accomplish.

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What role does the Technical College system play in all of this? It will have to play a huge role. But it will be different from the role Fritz Hollings, Bob McNair and John West foresaw in the 1950s and the 1960s when the system was being established.

We can no longer 'train' workers for the production organization of the push system of manufacturing. We must now 'educate' workers not only for the pull system and for the advanced manufacturing that will hire fewer of them than in the past (Don't forget the productivity numbers cited in a footnote above) but also for the kind of high-end service employment that will increasingly create more jobs than does manufacturing. The emerging dominance of service employment over manufacturing employment is a GLOBAL phenomenon—it is not just arising in the US as a result of competitive job losses in manufacturing.

The Technical College system has a major role to play in helping us make these adjustments. Their role is now much broader than the Special Schools (now renamed) that trained workers to run the machinery in response to the 'buffalo hunting' that sought to bring large-scale branch manufacturing plants to South Carolina in the 1960s and 1970s. The Technical College system both at the local and the state levels is wrestling with what this means and with how to react and adjust. The research universities are working with them as all of us try to make the needed adjustments.

Clemson University and Greenville Technical College are putting heads together with Greenville to make the most out of the International Center for Automotive Research (ICAR). Any innovations that spin off from ICAR will need workers suitable to the tasks of producing the resulting products. Greenville Technical College sees a major role for working with ICAR to assure that well-prepared workers are available.

[17] With all due respect to the owners of private textile companies who have voiced to me their fears of being the generation that puts into receivership the companies started by their grandfathers.

Meanwhile, Clemson University and Tri-County Technical College are working with Anderson County on creating a comparable matrix of expertise in support of the fiber-optics research taking place at Clemson Research Park. Comparable things are going on at USC and at MUSC. So let us turn next to a general discussion of what we are doing with 'clusters of innovation', the three research universities, and the three major urban areas in South Carolina.

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The state of South Carolina has designated three research universities within which 'centers of excellence' will be built. The three are, of course, Clemson University, the University of South Carolina, and the Medical University of South Carolina. Each University is in position to associate with local government and business leaders in one of the three urban areas—Columbia, Charleston, and the GSA metroplex of Greenville-Spartanburg-Anderson. Professorships are being endowed using lottery money—so long as the research universities and their partners from private industry and local government come up with comparable amounts of money to help cover the costs of the centers. This procedure assures that the state money goes for academic applications in which local business has an interest.[18]

Thanks to John Warner of Kemet and a number of other business people, the Carolina Crescent Coalition (C3) is working with each of the three research universities, with the three urban areas, and with related industry to enlist a coordinated effort at developing innovative clusters at those three points in the state. In most cases, the technologies being emphasized grow out of particular scientific expertise at that particular university. In a few cases, emphasis areas are being identified primarily by local industry, with the research universities scrambling to organize themselves to meet those needs (e.g., the supply chain management task force in the GSA region).

In support of these initiatives, the Spiro Center for Entrepreneurial Leadership at Clemson is working with the business and the academic communities to put into place the skills and the infrastructure to support innovation and entrepreneurship. The development of entrepreneurial attitudes is one focus, both with respect to on-campus and to off-campus activities.

Working with C3 on issues related to early-stage financing for entrepreneurial ventures is another job that Caron St. John and the Spiro Center have taken on. Meanwhile, David Barkley in Applied Economics and Statistics at Clemson has worked with researchers at the national level on venture finance as it affects rural areas. And he has recently joined with Mark Henry on Federally-funded research looking at the extent to which urban clusters have spillover impacts on contiguous and non-contiguous rural counties. This will provide important knowledge about how we bring to more of the state some of the spillover impacts from the three research universities and their associated urban clusters.

The clusters of innovation strategy will not do the whole job by itself. And we are late arrivers to that strategy, compared to places like Research Triangle in North

[18] I can speak directly of what is going on in the Upstate and at Clemson. I will leave the cooperative efforts between USC and the Midlands economy to the discretion of panel member Doug Woodward.

Carolina, Route 128 in Massachusetts, or Silicon Valley in California. Moreover, unlike those three states, we start the process with no nationally-ranked research universities. Thus, we all should be supportive of Jim Barker's stated objective—approved by the Board of Trustees—to move Clemson University to the top twenty of public universities in America during his tenure. As Jim will tell you, if Clemson were to be judged on the quality of our students alone, we already would rank twelfth among public universities in America. As part of the Top-20 goal, Clemson has recently announced a plan to provide students with research experience as part of their undergraduate education—a topic I return briefly to below.

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Meanwhile, John Mittelstaedt and I have been working with Will Lacey and Clarke Thompson at the SC Department of Commerce on research directed at helping South Carolina firms integrate into the global economy. The first project looked at the trade logistics barriers facing small and rural firms in South Carolina. The results of that work have been used both by SCDOC and by the South Carolina Export Consortium in identifying issues to be addressed in export promotion work that all three of us are doing. The initial research was instrumental in three successful grant proposals by the Export Consortium to the Appalachian Regional Commission and to the USDA to support work on international marketing plans for small firms in South Carolina and to support a full range of international marketing assistance to firms in rural areas of the state.

Over the first four years of the CIT's existence, our graduate students have worked with more than thirty Export Consortium clients to develop more than forty international marketing plans. And graduate students at USC have worked with client companies to complete an even larger number of such plans via an Export Consortium that was the brainchild of a graduate of the nationally-ranked MIBS program at USC in the mid-1990s.

As part of our work with the Export Consortium, the CIT has developed an International Trade Management minor in which graduate students in the MBA, Management, and Applied Economics programs at Clemson work with Export Consortium-funded graduate assistants to assist with the development of international marketing plans. With the ITM program, we will be able to broaden the practical training in trade management beyond the dozen or so graduate assistants who have received two years of export marketing experience over the past four years. And following two experiments in bringing undergraduate students into that same process during 2003 and 2004, the CIT will formalize these efforts beginning Spring Semester 2005 under the initiative of providing undergraduates with research experience.

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I have given you my version of how we got to where we are with globalization and the South Carolina economy. And I have told you just a few of the things that we are doing at state and local levels to deal with the emerging environment—in particular, those things that I know about at Clemson and in the Upstate. I expect that other panel members will want to fill in some of the things I have left out. Now let me end this paper by looking at what I think we need to do next.

- Yes—we need to push our representatives in Washington to keep the pressure on China to abide by the rules under which they were allowed into the WTO. But, as I tried to show in preceding paragraphs, that won't take South Carolina back to our heyday of manufacturing job growth.
- There is little question that we need to focus on the quality of our K-12 system—particularly math and science education.
- And we must find ways to improve the performance of the bottom 50% of the students in that system. Educators tell me that the top 30-40% of students get a good education anyway. Making sure the remainder get the education they will need is the way we avoid having two societies—one doing well and one existing as an underclass.
- We need to develop an entrepreneurial attitude among our population at large. Entrepreneurs don't look for someone to take care of them nor do they look for someone to blame. They look for what they can do to make things better. Even manufacturing plant production lines need more entrepreneurial workers in the new environment.
- We need to continue supporting the efforts by the three research universities to develop clusters of innovation in our three urban areas. And we need to keep insisting that they do so.
- We need to work with our Technical College system to help find the 'new' role that will make it into the huge force for the economic good of our state that it was from the 1960s through the 1980s.
- We need to push our schools and universities to emphasize international education—including language education. International trade already is equal to one-fourth of US GDP—up from less than 10% in 1950. And our state is second only to Hawaii in the percentage of our workforce employed by foreign-owned companies.
- And we need to remember that not only can Bubba Make Wheels (BMW). Over and over again, he has shown us he can be a real competitor in the global economy—if we just give Bubba the tools he needs to compete. The environment has changed. We need to provide him with the new tools for that new environment.