

Rethinking the Costs of Economic Growth
Association for Social Economics Presidential Address, 2008

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When you are a critic of the received wisdom in economics, as I am, at some point you have to stop and consider whether there is anything in the conventional approach to the subject that you think is actually right. Especially if teaching the subject is what pays your bills, it helps to have some part of the standard material that you can latch onto with enthusiasm, so your students don't think you are completely crazy. If you are constantly at war with the textbook and the syllabus, the students are apt to give up trying to understand anything at all. I probably waited too long to undertake this task, leaving it until I decided to write my own survey textbook to really examine my own beliefs.

The basic idea from mainstream economics that I think is right is the gains from trade theorem. I have come to believe that the key to economic development and growth, the key to the great escape from hunger, misery, and want, is comparative advantage, specialization, and exchange. The poorest people in the world are incredibly resourceful and hardworking. They grow their own food, build their own houses, make their own garments, educate their own children, treat their own illnesses, and they are dirt poor. The richest people in the world do the same thing over and over again, one coronary artery bypass surgery after another, one performance of the greatest hits after another, one contract drafted after another, all day every day, and they buy almost everything they need. The simple recognition of the value of specialization is most of what it takes to escape poverty.

I will consider first the reasons that specialization explains development and growth better than the other leading possibilities. Then, after a brief examination of past literature on the costs of growth, I want to give full attention to the negative consequences that specialization has for the economy and the society. I will then return to the issue of the desirability of growth, and how to avoid the problems it brings.

The sources of economic growth

Capital accumulation alone can't account for the magnitude of growth (Helpman 2004, ch. 3). Most of the growth in per capita incomes is the result of total-factor productivity growth. Sometimes capital growth does no good at all. The commodity price revolution of the 1970's rendered a large part of the capital stock obsolete rather suddenly. The vast investment in desktop computers in the 1980's and early 1990's did little good until specialized software and networking finally sparked a productivity explosion (Gordon 2003). Until then, they were just very expensive typewriters. Capital for growth must be specialized tools to go with specialized labor, making use of knowledge of the state of the art. Woodworking hobbyists acquire rooms full of highly specialized, expensive hand tools that, placed in a modern factory, would retard productivity, not enhance it.

The mistaken idea that capital investment is the source of all growth lies at the bottom of much current policy debate. It is used to justify the idea that the growth dividend should not be shared with labor, but only with the stockholders. It is also used to justify the idea that income from capital should not be taxed, but the entire tax burden should be borne by labor (i.e. zero taxes on dividends, or the Roth IRA). Not only is this bad economics and bad social policy, but it also reverses the whole western philosophical tradition that favors work and wages, while casting suspicion on income gained from interest or speculative gain.

Usually the gains in total factor productivity are attributed to technological change (Helpman 2004, ch. 4). Economists have never found a satisfactory independent measure of technological change. Counting patent grants and totting up R&D spending have obvious limitations, and using productivity as a proxy assumes what we're trying to prove. Technology thus becomes the hand-waving expedient that can explain anything we want it to. But those of us in academic life get to see our science and engineering colleagues change technology close up, so we know what it is even if we can't measure it. Technological change is what happens when smart people apply themselves to solving very particular, narrow problems. This may mean bringing together people with expertise in different academic fields, but the problem must be a narrow one. In other words, technological change is a byproduct of specialization.

Many people attribute economic development to changes in the kind and amount of energy humans use to accomplish their work. In Carlo Cipolla's famous account (1974), the agricultural revolution spurred growth by increasing the efficiency with which humans converted solar energy to food and work. The industrial revolution brought about another leap in efficiency as mechanical energy was harnessed to accomplish tasks, first from renewable sources like falling water or burning wood, and later from fossil fuels. This line of thinking suggests that economic development is ultimately limited by our ability to convert renewable energy to useful work.

It is hard to argue with the fundamental character of energy, or with the empirical correlation of energy use with economic growth. But it is not impossible to conceive of a world in which increased human wellbeing is decoupled from the growth of energy use. If some of us specialize in the problem, we can be smarter about how we use energy. As incomes grow, the mix of goods will shift toward less energy intensity. Then we can have growth without increasing energy use, and a move toward sustainable but expensive energy sources need not burden the economy. The energy intensity of GDP has been falling in the U.S. since the oil shocks of the 1970's, and we still have a way to go to match the energy efficiency of other rich countries. The gains-from-trade idea suggests that in principle, economic development does not depend on the growth in the use of any particular good or category of goods, even energy-converting goods.

Explanations of development and growth often focus on the advantages of decentralized market economies and stable legal institutions. That being said, economists have amazingly little faith in the robustness of markets, and so tend to overstate the requirements for markets to function effectively. Specialization and development does not require a complete set of markets, with perfect competition and a uniquely determinate vector of prices. Even bilateral monopoly can give rise to gains from specialization and trade. Market economies are robust, and can survive some social constraints on prices.

Indeed, market-based economic development is entirely consistent with interventions designed to increase income equality. The division of labor is limited by the extent of the market, and a large, thriving middle class is a great way to extend the market. Income inequality introduces social pathologies that are expensive, but

necessary, to control (Tiemstra 1992). Productive resources like land are more likely to be effectively employed if they are in the hands of striving workers than in the hands of the very rich.

The benefits of specialization and the gains from trade are sometimes used to justify corporate mergers and other moves toward large size and monopoly power. But the gains-from-trade theorem does not require that specialization take place within a single firm. Quite the contrary--it is an argument for decentralization. As Yang so effectively puts it, "The benefits of the division of labor are network effects rather than effects of the scale of a firm or sector" (2003, p. 68). Trade is generally a good thing, but corporate giantism is not.

The costs of economic growth: the early literature

The literature from the 1970's on the costs of economic growth includes highly controversial books from E. J. Mishan (1970, 1977) and Herman Daly (1977), the first report for the Club of Rome (Meadows et. al. 1972), and symposia like the one at Lehigh University in 1972 (Weintraub et. al. 1973). At the same time there were a number of books by Christian commentators (mostly theologians) questioning the affluent lifestyles of western evangelicals, and implicitly criticizing growth. These include prominent works by Ronald J. Sider (1977, 1980), John V. Taylor (1975), and Adam Corson-Finnerty (1977).

These works rely partly on broad empirical generalization and partly on romantic nostalgia. Historically, since the mid-nineteenth century economic growth has been associated with increased use of fossil fuels and degradation of the natural environment. The critics saw the aesthetic costs of pollution diminishing the quality of life even as economic activity grew, and they feared the depletion of natural resources would limit growth.

Today things are both better and worse. Air and water look and smell better than in early industrial times, and economists emphasize that the richer countries regulate pollution, health, and safety more rigorously than poorer countries do. There are better substitutes for fossil energy than there were. But biological diversity seems to be declining everywhere, and the looming effects of global climate change pose a serious

threat. For the most part, the environmental question has been separated from the phenomenon of growth. As noted above, I believe that economic growth can be consistent with environmental sustainability, but there is much more to be explored in this question. The character of development has to change, and it won't happen automatically.

The "Little England" nostalgia for an earlier, simpler time infects much of this literature (e.g. Mishan 1977, ch. 28-30; Meadows 1972, pp. 175-78; Sider 1977, ch. 8). The reader pictures tweed-coated academics strolling back from the village to the rose-covered cottage with the makings for dinner and greeting the vicar and Miss Marple on the way. It's rather precious. The reverse side of the tight community and moral consensus of a bygone era was the rigid class structure that precluded a democracy of power and wealth, and stifling conformity and prejudice that punished creativity and ambition. The hardships and lack of opportunity for those at the bottom of the income and social scale are forgotten. I think the criticism was onto something, but because these writers failed to connect social change to the economic development process, they mistook what they were losing.

Specialization and the costs of growth

If the gains-from-trade theorem shows us the root of economic growth, the logic of the specialization suggests where the costs of growth arise. I wish to discuss three of these: inflexibility of the economy, ecological vulnerability, and shallow social relationships.

Economic inflexibility

Most of us were trained to think of comparative advantage in a Heckscher-Ohlin world, where the source of the advantage was differences in factor endowments, but resources could always be reallocated among industries costlessly. Changes in the economic environment, e.g. new trade agreements, would lead to changes in the pattern of specialization, but this is achieved instantly and costlessly. In the real world, the comparative advantages of individuals and firms, and hence of countries, arise from education and training, skill and experience, social connections, and highly specialized

equipment and buildings. These are difficult, if not impossible, to change in the face of changes in the economic environment. These are the cases where economic change leads to structural unemployment. These transitions are felt the most intensively by workers who are not well educated, and hence have skills which are not easily adaptable to new occupations.

The more highly developed an economy is, the more specialized its workers and firms become, and the more difficult it is to change specialization in the face of new conditions. Also, as an economy grows, its structure tends to change because of changes in demand, as old goods complete their market penetration, and consumer attention turns away from goods to services (Kindleberger 1989). This may be the source of the "economic climacteric" that seems to afflict many highly developed economies, with symptoms of persistent structural unemployment, vulnerability to imports, and lagging productivity growth (Kindleberger 1996).

The coming of the great unspecialized machine, the computer, has softened this problem to some degree, but not entirely. Though engineers have persistently predicted the rise of "flexible manufacturing" made possible by computer-aided design and computer-controlled tools, factories still tend to be quite specialized. This may be partly because businesses searching for market power have an incentive to sink costs in order to create an entry barrier. The more specialized the machine, the more irretrievable the cost.

Vertical integration can also serve quite effectively as an entry barrier, but it also reduces flexibility by reducing the firm's openness to networks outside the organization. Some research suggests that firms in industrial districts, where different process stages are done by different "job shops," are more adaptable than vertically integrated firms (Best 1990; Piore and Sabel 1984). So the private incentive to establish market power by raising entry barriers leads firms both to sink costs and to integrate vertically. But the external consequence of both of these is to make the economy less flexible in the face of change. That change is itself a consequence of growth, because growing affluence changes the composition of the desired consumption bundle.

Ecological vulnerability

It is a fashion on campuses lately for environmental activists to ask the institution to source food from the local region as much as possible. The rhetoric of this issue relies heavily on emotional appeals, often based in romantic nostalgia for a supposedly simpler time when people were more connected to nature and the seasons. It is counted a virtue to know where ones food originates, and if possible to have a personal relationship with the farmer, if not the cow that provides the milk for ones breakfast cereal. Here in the temperate Midwest a surprising variety of foods can be obtained this way with the right connections and sufficient work.

It is easy to lampoon this effort, but there is a serious argument that could be made for local sourcing of food. It is not the argument that is occasionally made about the environmental cost of transporting food over long distances. At least in principle, it is possible to devise a sustainable system for transporting goods. Indeed, future sustainable economic development and growth depends on our ability to construct such a system. A beginning would be to price fuel so that the environmental costs of transportation are reflected in its money price. We are just at the beginning of serious efforts to implement sustainable transportation, but there are good reasons to expect that this essential task can and will be successfully accomplished.

A more serious objection concerns specialization. The economic development process will lead farmers to specialize in crops for which they have a comparative advantage, and seek to export those crops to the widest possible market. The rationale for specialization and trade in agriculture is the same as in industry: there are efficiency gains to be had from specializing in the area of ones comparative advantage. The result is the modern farm: acres and acres of identical plants, possibly even clones, with no other life as far as the eye can see. Maintaining this ecological anomaly requires huge inputs of petrochemicals, fossil water, and fossil-fuel-driven machinery, but until recently, these inputs have been cheap enough. College dining halls buy from the low-cost provider, as do most purveyors of food.

The difficulty is that these monoculture systems are not sustainable and robust. An infestation of pests, a new disease, or a spell of bad weather can lead to catastrophic failure. Such systems are never observed in nature. They can only be maintained through the use of large inputs of exhaustible resources. In the long run, we will have to find

another way to grow our food, fuel, and fiber (Meadows et. al. 2004, pp. 57-66). The virtue of local sourcing is that it creates demand for a wide variety of agricultural products in a limited region, which can result in a more diversified, and hence more robust and sustainable, agricultural sector.

This problem can also characterize manufacturing-based economies, and the conurbations that make specialized service economies possible. Any concentrated industry will yield a concentration of waste products, which can easily come to overwhelm the capacity of the natural processes of the local ecosystem to dilute, disperse, or decay. If these are synthetic waste products that do not break down naturally, so much the worse. Those who suffer the most are those without sufficient income to escape to cleaner neighborhoods or regions. The climate-change problem is in a different category, because there it is the global carbon cycle that is overwhelmed by the volume of human emissions.

Clearly, this is one area where negative environmental consequences flow directly from the fundamental mechanism of economic development. To make a diversified, sustainable, and robust ecology we must sacrifice some of the benefits of comparative advantage, specialization, and trade.

Social superficiality

A lot of the complaints about the social costs of economic growth are sentimental, but there is enough discomfort about the issue to suspect that there is something real behind it. I have come to think that the process of specialization itself works to compromise the depth of human relationships (See also Scitovsky 1964). The effect must be carefully separated from other effects that may be the outcomes of population growth or changing relative prices.

What people miss about the good old times was the depth of relationships that resulted from repeated encounters with the same people in different contexts. In times past, it was very likely that at least some of the people you worked beside were also people you saw at church, in the grocery store and the barbershop, at the children's school and the tavern, and at the lodge or the club. The same lawyer drew up the deed to your house as well as your will, and the same doctor treated your diabetes and attended your

children's births. This was as true of urban neighborhoods as it was of small towns and rural villages. It could feel stifling or constricting, especially to young people, but you came to know these people very well, and there is value in that.

As the economy has developed, our relationships have become single-dimensional and superficial. We encounter many people in daily life, and we know very little about any of them, because we only encounter them in a single restricted context. Part of this is simply the outcome of population growth. There are just a whole lot more people around to encounter. Part of it is the change in habits that came with the automobile. Robert Putnam (2000) famously has theorized many causes for a declining level of overall civic engagement.

I think that no small part of it is the outcome of specialization. Since occupations are much more specialized than they were, it is less likely that someone we encounter in our economic role as producer will also show up in some other dimension of life, regardless of how engaged we are in civic activities. It is also less likely that one service provider will be able to meet a wide range of our needs or demands for services, or that the same service provider who meets our specialized requirements will also meet those of our friends. This can be true as much of hairdressers as of doctors.

Leisure activities have also become more specialized in this same development pattern, and so there is a whole crowd of buddies with whom we share a particular recreational enthusiasm, but are unlikely to share anything else. Watching TV can be a solitary experience, and Putnam singles it out as a major cause of social isolation, but it used to provide a common popular culture to many. When there were only three or four channels on the air, TV provided plenty of fodder for water-cooler conversation. It was a true mass medium. The proliferation of cable television channels to suit specialized tastes means it is decreasingly likely that we can even converse with an acquaintance about last night's programs.

The way ahead

If specialization and growth are the major causes of these problems, stopping the process is the most satisfying solution. There have been many advocates for regional self-sufficiency and limited growth, especially since globalization has accelerated in recent

years. Among the most prominent are Herman Daly (1989), the late E. F. Schumacher (1973), and the late Jane Jacobs (1970). It is easy for affluent Americans to say that we are too preoccupied with growth, too materialistic, and don't pay enough attention to the kinds of happiness that money can't buy. I have preached this often to my students, joining the great chorus of Christian commentators, and the Bible itself: "The love of money is the root of all kinds of evil." (I Timothy 6:10) "But store up for yourselves treasures in heaven." (Matthew 6:20)

But surely this neglects the good that comes of economic development. We may not value growth much if it means only that the super-rich add more floor space to their mansions, or that we get another TV so we don't miss a crucial play while in the kitchen fixing a snack. But we became economists because we want to see people prosper. There are many people who need better food, more education, improved medical care, and yes, high-speed Internet access. The value of economic growth depends on the use to which it is put. It is not sufficient for politicians, challenged on "the vision thing", to say that their vision is economic growth. Growth itself is not a moral vision, but only makes moral actions possible. Redefining growth so that we only count "good growth", as in a Tobin-Nordhaus-style "Measure of Economic Welfare" or a Daly-Cobb-type "Index of Sustainable Economic Welfare" does not solve the problem, but only covers it over. GDP is a measure of market activity, not welfare. Devising a new index will not make the need for a measure like GDP go away, and it prejudices the answers to questions about what economic activities really contribute to human well-being and what makes economic growth sustainable.

What then is to be done? The approach of Benjamin Friedman (2005) exemplifies how economists generally deal with these issues. Each of the negative consequences of growth is taken as a separate issue, to be addressed by a benevolent regulator who attacks the problem as close to its root as possible (see esp. chapters 14 and 15), using the appropriate taxes, subsidies, and other policy tools. The main intention is to keep the growth process alive, even as its problems are addressed, but the result is unsatisfying. First, it relies too heavily on government, and too little on business and civil society. We need to involve civil society for its commitment to principles rather than money or votes. To a large and increasing extent, business has bought into the idea of the "triple bottom

line," and we need to make use of that. Second, the conventional approach is preoccupied with economic efficiency as the standard for economic performance. Both these issues arise from an over-reliance on the assumptions of standard economic theory: people have no values or goals beyond increasing their own personal economic wellbeing.

In my own work on the flexibility issue (Tiemstra 1994), I have argued that the best solution is not to rely on government-directed industrial policy, but rather to encourage businesses to take the primary role in planning for economic transitions. In the process, managers should value sustainability, social capital and community stability as much as they value market success. Business managers know best what resources they have, and creative, entrepreneurial business leadership should be able to find new and profitable ways to deploy those assets as old industries decline. Finding new ways to make money with old resources is a skill that we value in managers, and that they try to cultivate. Conceived of this way, the process should avoid some of the problems that arise when these decisions neglect the interests of community, or are made exclusively by governments. Whether this type of planning is easier for vertically integrated firms or for firms in industrial districts should be a topic for further research.

Business flexibility should take account of the community's investment in infrastructure. I mean not just the physical infrastructure of transportation, utilities, and basic public services, but also the social infrastructure of civil society. The investments made in social networks by private, voluntary organizations are crucial to the functioning of human community. These investments are discouraged if social networks are constantly disrupted by the changing economic structure of the region. If businesses can respond to new economic conditions without causing such social disruptions, investment in social capital should increase, and the social superficiality that results from economic development can be avoided.

The most daunting, but most necessary, of these transitions is the move to an ecologically sustainable economy. I don't know exactly what such an economy will look like. I can only offer a few thoughts about how to get there. Government policies alone will not be sufficient. Market incentives and business initiatives alone will not be sufficient. The environmental movement alone will not be able to accomplish it. For sustainable growth to occur, it will take the efforts of people of good will in all sectors of

society. People must act with the goal of sustainability in view, rather than a narrow focus on economic efficiency.

These efforts need to be coordinated at the local or regional level in order for the pieces to fit together in the end. Since sustainability and community stability are to be served along with economic development, it is unlikely that the coordination task can be accomplished by relying exclusively on markets. There is a role here for regionally based indicative planning. Making sure that investments in community infrastructure are wisely made and effectively utilized requires planning across the boundaries of business, government, and civil society. Since regional ecological diversity is the key to sustainability, regional planning needs to coordinate smaller scale private and public decisions about land use and waste handling. And decentralized businesses can invest and redeploy assets more effectively if they know what other, neighboring businesses are planning. But an essential element of the process is innovation, so any planning process must be open to innovative solutions. Remember, innovation works best when creative people specialize and concentrate on narrowly defined problems. That is the way forward.

It is also the way backward in some ways. Regional, participatory indicative planning is an important feature of the strain of Catholic social thought that is the historical foundation of social economics (McKee 1987, pp. 97-100; Wilber and Jameson 1983, ch. 10). We have a tradition and a literature we can draw on as we put forward the ideas that will make a new, benign form of economic growth possible.

Conclusion

Contrary to what many economists seem to believe, economic growth is not the solution to all problems, or the answer to all moral dilemmas. The value of economic growth depends on the uses to which we put it. Growth that only provides more toys for the top third of the population is not worth the costs. Growth that creates better nutrition, health, and education for the bottom half is worthwhile.

Nor is growth the demon that haunts modern society. The fundamental principle of comparative advantage, specialization, and exchange teaches us that growth brings its special problems, which are not automatically solved by decentralized market processes.

But these problems are not insoluble. Leadership with a clear vision and firm moral purpose can operate the economy to create new solutions to these problems.

So when our crass, craven politicians suggest that the sum total of their vision for society is more economic growth, we should reject them. When nostalgia-paralyzed romantics want to take us back to life as it was in Native American settlements or English farming villages two centuries ago, we have to say that isn't good enough. With great wisdom and good leadership, it should be possible for us to be both prosperous and happy.

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