

CLIMATE CHANGE, DEVELOPMENT AND THE THREE-DAY WEEK

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Introduction

Humanity is currently in the midst of a period of rapid economic growth. The growth began in roughly 1820 and has accelerated dramatically since 1950. Changes that have accompanied this growth include rapid growth in CO₂ emissions and increasing inequality in income between the West (Western Europe and its offshoots in North America and the Pacific) and the rest of the globe. Continuation of current trends will produce “more of the same.” It is, of course, appropriate to be skeptical about such a continuation. Peaking oil and gas production, terrorism, war and pandemics all have the potential to disrupt current trends. That being said, it can be useful to set these concerns aside and take seriously the issues associated with an increasingly affluent world.

Among the efforts to “take affluence seriously” are various proposals to reduce CO₂ emissions while still permitting development to occur. Under these proposals there are direct or indirect economic benefits for the less developed nations and substantial costs for the developed countries. As one might expect, the response to these proposals is rejection by some developed countries and half-hearted support by others. One could enhance the appeal of the climate and development proposals by adding a call for reduced hours of paid work. Addressing climate change, fostering development and promoting a shorter work week is a policy package with benefits for the majority of the residents of the developing and developed countries.

This short paper provides the background needed to assess the suggested policy package. The first section summarizes data on growth with estimates through 2030. The next section briefly discusses climate change and development. The final section draws on a variety of sources to address the shorter work week.

Long-Term Growth

Drawing on data developed by Angus Maddison,⁽¹⁾ the top portion of Table 1 shows the pattern of growth over the last 1,000 years in population, income (i.e., real GDP per capita at purchasing power parity (PPP)), and output (i.e., GDP). To avoid the need to deal with a variety of different, unfamiliar units, much of the data in Table 1 has been indexed. Use of 1950 as a common base year allows one to compare growth in different areas.

What has become the standard description of long-term global economic growth⁽²⁾ is apparent in the data at the top of the table. Between 1000 and 1820 there was little change in income. Since 1820—roughly when the impacts of the industrial revolution began to be felt—growth has been substantial. Since 1950 the growth has accelerated dramatically. In the period

from 1820 to 1950 and the much shorter period from 1950 to 2003, the increase in income was similar, roughly 200 percent. In contrast, between 1000 and 1820 income increased by only about 50 percent. Output, which reflects the combined effects of income and population growth, shows a similar but more dramatic version of the same pattern of growth. Only about 2 percent growth required to reach the level of output achieved in 2003 occurred through 1820. Another 11 percent occurred between 1820 and 1950. The bulk of the growth—about 83 percent of the total—has taken place since 1950. Accompanying and supporting this economic growth is globalization. Since 1950 there has been remarkable growth in trade. The data supporting the figures in Table 1 show that, in 2003, trade in goods was roughly the same size as the entire world output in 1950. Adding the trade in services which has appeared largely since 1950 would make the current level of trade larger by trillions of dollars.

Many changes have accompanied the economic growth shown in the top portion of Table 1. For example, there has been rapid growth in CO₂ emissions. Despite the fact that emissions intensity (i.e., CO₂ per \$1,000 GDP) peaked in 1950 and has declined substantially since then, the dramatic growth in output has resulted in continuing emissions growth. Of course, economic growth has brought benefits as well as problems. As the data at the top of Table 1 show, one of the benefits has been growth in lifespan. Lifespan is just one of many indicators of the increases in well being that have accompanied growth in income.⁽³⁾ As with many income-related effects, lifespan shows a “threshold effect”: current cross-sectional data show dramatic increases in lifespan with income growth in poor nations, but little or no effect above a modest income level (roughly \$2,500 per capita in PPP).⁽⁴⁾ A similar threshold effect holds for subjective well-being.⁽⁵⁾

The bottom portion of Table 1 turns from growth to distribution. It shows what has come to be called the Great Divergence—the growing difference in income, between the West and the rest of the nations of the globe since 1820. Side-by-side with the Great Divergence one has the spread across the world of Consumer Societies, defined as nations in which the average income is double the level at which individuals become “consumers,” that is they adopt the behaviors and preferences—a diet rich in grain-fed meat, purchases of electrical appliances and eventually cars, etc.—which drive CO₂ emissions.⁽⁶⁾

Table 1 uses 2003—the last year for which Maddison provides historical data—as a proxy for current conditions. To look ahead one needs to choose a scenario for the future. In Table 1, Maddison’s own scenario, based largely on continuation of current trends through 2030, is used. This scenario is well-known and accepted.⁽⁷⁾ The results for 2030 show “more of the same”—slowing but continuing population growth and gains in lifespan, continuing divergence in income together with growth in Consumer Societies, and truly astonishing levels of output accompanied by higher CO₂ emissions, all supported by an unprecedented level of global trade.

TABLE 1 – GLOBAL DATA

(Most data are indexed with 1950 set at 100. Data in % or other units are noted)

		1000	1500	1820	1950	2003	2030
Growth –	Population	9	17	41	100	249	324
	Lifespan (Years at Birth)	24	24	26	49	64	70
	Income	21	27	32	100	308	599
	Output	2	5	13	100	767	1810
	Trade in Goods (% of Output)	0	.1	.8	5.5	19.3	34.2
	CO ₂ Emission from Fossil Fuel	NA	NA	1	100	411	540
	Emissions Intensity	NA	NA	8	100	54	30
Distribution -	Share of West (%):						
	Population	8.5	13.6	13.8	19.0	11.8	10.1
	Output	9.7	18.2	25.0	56.8	42.9	32.7
	Difference in Income (West – Rest)		4	12	100	377	565
	Population in Consumer Societies (%)	0	0	0	6.9	26.9	82.3

Climate Change and Development

There have been many attempts to reconcile the need to reduce CO₂ emissions with the desire to permit and indeed foster development. These include proposals which focus on CO₂ emissions and development directly, as well as systems of per-capita emissions allowances.⁽⁸⁾ All of these proposals are designed to produce global environmental benefits. In addition, there would be direct or indirect economic benefits for the less developed nations as well as substantial costs for the developed countries. One can make many arguments supporting the reasonableness and equity of this difference in benefits and costs. But, one must also acknowledge that such differences raise issues of feasibility and likelihood of adoption, based on recent work in economics and psychology.

Researchers have conducted a number of experiments involving the Ultimatum Game in which two parties have the opportunity to share a sum of money based on a division proposed by one of them.⁽⁹⁾ The results of these experiments show that offers of significantly less than half will be rejected, even when the alternative is nothing for either party. One cannot help being struck by the similarity between these simple experimental results and the behavior of those developed countries who reject the Kyoto agreement because developing countries are not required to make emissions cuts. Even among developed nations that accept the need for them to take the lead in addressing climate change, there is reason to be concerned that expenditures will be inadequate. Expenditures by developed countries to address climate change will provide most of their benefits to vulnerable, developing countries in the future. This, Thomas Schelling has observed,⁽¹⁰⁾ makes the expenditures resemble foreign aid, which, even for “generous” countries,

amounts to less than 1 percent of GDP. Unfortunately, the recent Stern Report⁽¹¹⁾ shows that adequately addressing climate change will require expenditures of at least three times that level.

In responding to the two points made above—unwillingness to accept differences in climate responsibility between developing and developed countries or to spend what is actually needed to address climate change—it is likely to be useful to situate climate change and development as part of a larger **global policy package** which provides benefits to those in the developed countries that go beyond the common benefits from addressing climate change. This is where “the three-day week” enters the picture.

Hours of Paid Work

The basic idea, suggested by the title of this paper, is that one could balance climate and development proposals by adding a call for reduced hours of paid work. Over the next 20 to 30 years one might, for example, target a three-day week in developed countries and a four-day week in developing countries as they move toward a level of average income at which further growth contributes only marginally to physical and subjective well-being. In the long run, hours of paid work and income could converge world wide at substantially lower levels than is seen in the developed countries today.

When considering the plausibility of a global choice to adopt a shorter work week, it is useful to keep a recent historical example in mind. In Europe, after World War II, there is a long economic expansion fueled by efforts to rebuild and then catch up with technological developments in the U.S. and elsewhere. In the early 1970s this expansion ended. In response, many European nations decided to reduce the work week to avoid job losses.⁽¹²⁾ It is important to note that this choice has not hurt European productivity. In France, for example, GDP per hour worked is higher than in the U.S. The lower GDP per capita in Europe reflects the length of the “usual” work week, the number of weeks worked per year (i.e., less holidays and vacations), and labor force participation rates.⁽¹³⁾ The European experience shows that one can combine “progress” (technical innovation and economic change resulting in greater output per hour) with policies that limit hours of work. Of course, today Europe needs to address a variety of problems, such as high unemployment and an aging work force. However, as even Europe’s critics make clear, what is required is adjustment, not wholesale rejection of Europe’s basic approach.⁽¹⁴⁾

The idea of adding a shortened work week to proposals for emissions reductions and development arises from the results of a simple calculation. All else equal, a reduction in paid hours of work produces a corresponding reduction in income, and so in output. If the emission intensity of output doesn’t change, there is a corresponding reduction in CO₂ emissions. Thus, all else equal, a shift from five to three- and four-day weeks corresponds to CO₂ emission reductions of 20 and 40 percent, respectively. Based on the data in Table 1, under “business-as-usual conditions” including the current five-day work week, emissions can be expected to grow by about 30 percent between 2003 and 2030. Under the “all else equal” assumptions just discussed, reducing the hours of paid work could offset this growth, reducing emissions in 2030 to roughly the current (i.e., 2003) level. A reduction of this magnitude is, of course, not enough to fully address climate concerns. However, were it to occur, it would be an important step in the right direction.

The extent to which reduced hours of paid work will in fact translate into reduced emissions is a very complex issue. Here I would simply note that there are a wide range of lifestyle choices, associated with the informed pursuit of well-being—what Keynes called learning to live “wisely and agreeably and well”⁽¹⁵⁾—which would allow reduced hours of paid work to translate into reductions in CO₂ emissions. Spending more time on personally satisfying activities, such as “slow food” is one example.⁽¹⁶⁾ Sharing the results of such skill-based activities can address the same needs as positional consumption⁽¹⁷⁾ (i.e., buying a “better than average” car, home, or other significant possession) without the attendant increases in CO₂ emissions. There are many well-being- enhancing activities that do not require the sort of incremental consumption that drives CO₂ emissions:

- Providing volunteer services—child or elder care, assistance to the sick or infirm, etc. Experiments have shown that the sense of gratification this produces contributes particularly strongly to subject well-being.⁽¹⁸⁾
- Participating in local government—running for local office, serving on school boards, etc. There is evidence that such participation has a direct effect on well-being.⁽¹⁹⁾

Addressing climate change, fostering development, and reducing hours of paid work could all be part of a global effort to improve human well-being. Recognition of a common goal of well-being could help address potential conflicts between the various components of the policy package.

A final question, particularly relevant to actions to address climate change, concerns timeframe. Could one make profound changes such as shortening the work week quickly, say by 2030? Experience with population growth suggests that the answer is “yes.” Table 2 shows the growth in European population over the last 1,000 years. As the table shows, the population grew substantially for most of the period and then abruptly began to level off. The drop in the growth rate since 1973 is truly remarkable. Similar demographic transitions have been documented in nations world wide. Demographic transition is a choice. There is no reason why there couldn’t be a choice world wide to pursue a **socio-economic transition** which includes decreasing growth in output, shorten hours of paid labor, lessened environmental impacts and enhanced well-being. Of course, more than the individual choice required to drop the birth rate would be required for such a broad transition. Coordinated action by governments, representatives of labor and other groups, would likely be required. But, as the European response to the economic slow down in the early 1970s shows, such coordinated action has occurred in the past. It could in the future as well. Such action is most plausible as part of the changes in values, social structure, and governance discussed in scenarios such as Tellus’ Great Transition.⁽²⁰⁾

TABLE 2 – WESTERN EUROPEAN POPULATION

	1000	1500	1820	1950	1973	2003	2030
Population (Millions)	26	57	133	305	359	395	400
Annual Rate of Growth (Index)	NA	25	41	100	111	50	7.8

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