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Some Observations on the Great Depression*

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The prosperity of the 1920s in the United States was followed by the Great Depression in the 1930s. Will the prosperity of the 1980s and 1990s be followed by another great depression in the coming decade? This question is not that far-fetched. Depressions are not a thing of the past. The Japanese economy, for example, has been depressed for nearly a decade and is currently operating at a level far below trend. Argentina experienced a depression in the 1980s every bit as severe as the one experienced by the United States in the 1930s. The Brazilian economy is currently operating at a level well below trend and could fall even farther. Empirically, depressions are not a thing of the past, and only by understanding why depressions occurred in the past is there any hope of avoiding them in the future.

Given the importance of understanding depressions, I'm surprised that Harold Cole and Lee Ohanian (in an article in this issue of the *Quarterly Review*) are the first to study the Great Depression systematically from the perspective of *neoclassical growth theory*. I'm surprised because economists use growth theory to study economic growth and business cycle fluctuations quantitatively and to evaluate tax policies. Why hasn't growth theory been used to study the Great Depression? Perhaps because economists are reluctant to use standard theory to study an event that historically was treated as an aberration defying an equilibrium explanation.

Cole and Ohanian examine the Great Depression from the perspective of growth theory and show that growth the-

ory cannot account for the Great Depression as a 10-year economic event. In the process of documenting deviations from existing theory, they define what a successful theory of the Great Depression must explain. Their analysis led me to conclude that the key to defining and explaining the Great Depression is the behavior of *market hours worked per adult*. (Cole and Ohanian report this measure of labor input as *total hours*. *Adult* is defined as 16 years and older.) Briefly, market hours worked per adult (from here on, simply *market hours*) dipped to 72 percent of their 1929 level in 1934 and remained low throughout the 1930s. Even in 1939, market hours were still only about 79 percent of their 1929 level.

By focusing on the entire decade of the 1930s, Cole and Ohanian shift the nature of the question from

Why was there such a big decline in output and employment between 1929 and 1933?

to

Why did the economy remain so depressed for the entire decade?

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In particular, in the 1934–39 period, why didn't the economy recover from its depressed level? Cole and Ohanian show that the standard conjectures put forth to explain the Great Depression are not consistent with observations. In the last half of the 1930s, there were no banking crises. There was no deflation. There was a large increase in the money supply and a corresponding drop in the interest rate, just as the demand-for-money relation predicts. There was growth in total factor productivity. So why were market hours still 21 percent below their 1929 level in 1939? Given the considerable evidence against technology, monetary, or banking explanations, I am led, as Cole and Ohanian are, to the view that there must have been a fundamental change in labor market institutions and industrial policies that lowered steady-state, or normal, market hours.¹

Growth Theory

Before I explain why I think the behavior of market hours is the key to explaining the Great Depression, a brief review of growth theory is in order. The now-textbook theory includes two basic decisions. One is the *consumption-investment decision*, in which investment is roundabout consumption. That is, investment in more machines, office buildings, and factories today enhances future production possibilities, permitting greater consumption in the future. This feature of the production technology provides a way to transform consumption today into consumption in the future. Less consumption and more investment today can increase consumption in the future. The other decision is the *labor-leisure decision*. (*Leisure* is shorthand for productive time allocated to nonmarket activities and not *leisure* in the conventional sense of the word.) More labor and less leisure today results in more market output today. This added output can be used for greater consumption today or for greater investment today, which permits greater consumption in the future.

With growth theory, if technology advances smoothly and there are no changes in market distortions, the economy grows at a steady rate with constant shares of output being allocated to consumption and investment and a constant fraction of time being allocated to the market. The theory predicts the consequences of changes that affect the constraints people face. Such changes would include, for example, a change in the tax system, a change in technology, a change in the price of imported goods relative to domestically produced goods, or a change in regulations or laws.

Growth theory without the labor-leisure decision was

developed to account for secular growth. With the natural extension to include the labor-leisure decision, the theory has proved successful in accounting for phenomena other than what it was designed to explain. For example, the theory predicts well the behavior of the U.S. economy during World War II. (See Braun and McGrattan 1993.) This surprised a lot of economists, because the general view was that *patriotism* was needed to explain employment and output behavior during World War II. This successful prediction of the consequences of a large public finance shock is reassuring for the theory.

Another dramatic empirical success of growth theory is in the study of business cycle fluctuations. The developers of growth theory thought the theory would be useful for studying long-term growth issues but that a fundamentally different theory would be needed for studying business cycle fluctuations. Once the implications of growth theory were derived, however, business cycle fluctuations turned out to be what the theory predicts. (See Prescott 1986.) The theory can answer such business cycle questions as, How volatile would the economy be if total factor productivity-growth shocks were the only disturbance?

The Great Depression and business cycles are similar in that both include variations in output accounted for in large part by variations in labor input to production. The Great Depression and business cycles are fundamentally different in terms of magnitude and persistence. The Great Depression was nearly an order of magnitude bigger than typical business cycles and lasted a decade rather than a year or two. However, magnitude and persistence are not the fundamental difference. To explain the fundamental difference, I'll first explain what business cycles are.

Essentially, *business cycles* are responses to persistent changes, or *shocks*, that shift the constant growth path of the economy up or down. This *constant growth path* is the path to which the economy would converge if there were no subsequent shocks. If a shock shifts the constant growth path down, the economy responds as follows. Market hours fall, reducing output; a bigger share of output is allocated to consumption and a smaller share to investment; and more time is allocated to leisure. Over time, market hours return to normal, as do investment and consumption shares of output, as the economy converges to its new lower con-

¹Lucas and Rapping (1972) come to similar conclusions. Their theory, based on monetary surprises, predicts the large decline in employment in the 1929–33 period. As Lucas and Rapping (1972) emphasize, their theory does not account for the failure of the economy to recover in the 1934–39 period.

stant growth path. The level of the new path is lower, not the growth rate along the path.

I've just described the response of the economy to a single shock. In fact, the economy is continually hit by shocks, and what economists observe in business cycles is the effects of past and current shocks. A *bust* occurs if a number of negative shocks are bunched in time. A *boom* occurs if a number of positive shocks are bunched in time. Business cycles are, in the language of Slutsky (1937), the "sum of random causes."

The fundamental difference between the Great Depression and business cycles is that market hours did not return to normal during the Great Depression. Rather, market hours fell and stayed low. In the 1930s, labor market institutions and industrial policy actions changed normal market hours. I think these institutions and actions are what caused the Great Depression.

Declines in Market Hours

Cole and Ohanian report that market hours declined 21 percent between 1929 and 1939. Given this change in normal market hours, growth theory predicts the behavior of investment and employment that occurred in the 1930s. In particular, the theory predicts an extended period of a low investment share of output in response to this change in market hours. In the 1929–39 period, *net investment*—new production of capital goods less capital goods consumed in the process of production—was close to zero. Growth theory also predicts that during the early periods after changes have reduced normal market hours, employment will be below the new lower normal level. The U.S. economy in the 1930s conforms well to these predictions of the theory.

Growth theory, however, does not explain why normal market hours changed so much during the 1930s in the United States. My view is that the explanation of why market hours changed is the explanation of the Great Depression.

Perhaps examining the data for other countries will help explain the change in market hours in the United States during the 1930s. The problem is that good data on market hours for most countries between World War I and World War II do not exist or are difficult to obtain. One country for which the needed data are available is France. (See the Appendix.)

Like the U.S. economy, the French economy boomed during the 1920s and experienced a depression in the 1930s. As in the United States, market hours in France

declined about 22 percent between 1929 and 1939, while trend-corrected productivity did not change. However, there is one important difference between the U.S. and French economies in the 1930s. Output in the United States declined more than 25 percent between 1929 and 1933, while output declined less than 15 percent in France. The French experience is more in line with the prediction of growth theory. The difference between the French and U.S. experiences indicates that some factor or factors not present in the French economy must have disrupted the U.S. economy in the early 1930s. This difference is of the business cycle variety because it was not highly persistent. This business cycle disruption to the U.S. economy in the early 1930s, though interesting and important, is a second-order factor. I think Cole and Ohanian are right that the big question is, Why were market hours still so low in 1939?

These observations on the Great Depression suggest that examining the behavior of other economies on the dimension of market hours is in order. I am not concerned with temporary low (high) employment associated with convergence of the capital stock down (up) to its constant growth path, which is what business cycles are all about. I am concerned with highly persistent differences in normal market hours.

The difference between the 1929 U.S. economy and the 1939 U.S. economy is not unparalleled. In the 1939 U.S. economy, market hours are about 21 percent lower than market hours in the 1929 U.S. economy. Trend-corrected total factor productivity is about the same in both economies. The difference between these economies is very similar to the difference between the current French and U.S. economies. Currently in France, market hours are 25 percent lower than market hours in the United States, while output per hour is essentially the same in both countries. This observation implies that France is now in a depression.

In fact, France is very concerned with its current low employment and perceives it as a problem. French economists are not arguing that France can solve its low employment problem by spending more or printing more money. Virtually all agree that the French employment problem is due to features of France's labor market institutions and industrial policies. Exactly what the problems are with current institutions and policies and what should be done are the questions that need to be answered if France is to solve its low employment problem.

Spain has an even bigger employment problem. Market hours in Spain today are 40 percent lower than market hours in the United States, while output per hour is essentially the same in both countries. (See the Appendix.) I think these comparisons establish that labor market institutions and industrial policies can have large consequences for normal market hours.

After the 1930s, market hours increased only gradually in the United States. Apparently, many of the changes that lowered steady-state market hours persisted. Only in the 1980s did market hours return to their 1929 level. The accompanying table reports market hours at 10-year intervals from 1929 to 1979 in the United States. It's interesting that market hours in 1949 are only slightly higher than market hours in 1939, while the investment share of output had returned to normal. Growth theory predicts the return of the investment share to normal, because by 1949, the economy had essentially converged to its new lower constant growth path. However, given that market hours were still low in 1959, the U.S. economy was still depressed in 1959. Between 1931 and 1959, only during wartime when public consumption is temporarily high, was the U.S. economy not depressed.

An Application of Growth Theory: Japan in the 1990s

The depressed Japanese economy is a topic of concern today in Washington and other capitals throughout the world. U.S. and European top government officials are making an abundance of recommendations as to what Japan should do. Most of these recommendations are not based on established theory or even a careful examination of the data from the perspective of growth theory. An application of growth theory to the current situation in Japan might be useful in understanding the Great Depression in the United States.

The current situation in Japan is as follows. Output per adult in Japan is well below trend—exactly how far is hard to say. If the growth rate that characterized the 1980s had continued in the 1990s, output is now about 20 percent below trend. (See the Appendix.) Contrary to what others have suggested, I don't think the principal reason for this low level of output is that the Japanese banking system is in need of reform. I think the principal reason is that Japan chose to reduce market hours. In the early 1990s, the workweek in Japan was reduced by law first from 48 hours to 44 and then from 44 hours to 40. These reductions are important in accounting for the 12.5 percent decline in market

Yearly Market Hours Worked per Adult*

United States, 1929–79

Year	Hours
1929†	1,170
1939†	920
1949	949
1959	970
1969	1,034
1979	1,030

* Adult = 16 years and older.

† For 1929 and 1939, hours are Kendrick's (1961) estimates multiplied by 0.897.

With this adjustment, Kendrick's series equals the value of the modern series used in 1948. The year 1948 is the earliest nonrecession year for which both series are available.

Sources: See the Appendix.

hours in Japan in the 1990–97 period. Even with these reductions, market hours in Japan are still high by international standards. In 1997, market hours were 10 percent higher in Japan than in the United States.

Given the change in Japanese law and the resulting drop in normal market hours, growth theory predicts the almost stagnant output of the Japanese economy in the 1990s. This reduction in market hours lowered the marginal product of capital, making investment unprofitable. Given the lack of profitable domestic investment opportunities, the Japanese began saving by investing abroad. This explains Japan's large trade surpluses. The fact that the Japanese people do not appear to be that upset about the performance of their economy suggests that perhaps what has happened in Japan in the 1990s is what the Japanese people wanted.

The Japanese economy in the 1990s is not as depressed as the U.S. economy was in the 1930s. Market hours in Japan in the 1990s have fallen only half as much as market hours fell in the United States during the Great Depression. More importantly, the reduction in market hours in Japan in the 1990s was the stated objective of policy. In the 1930s in the United States, the concern was that people were working too little. In the early 1990s in Japan, the concern was that people were working too much. Policy changes reflected that concern.

Once data are available for the late 1990s, I'll be interested to see if my conjecture about the Japanese economy is correct. That is, are market hours the key to explaining the depressed Japanese economy? Moreover, are changes in market institutions and industrial policies the key to explaining changes in market hours?

Concluding Comments

From the perspective of growth theory, the Great Depression is a great decline in steady-state market hours. I think this great decline was the unintended consequence of labor market institutions and industrial policies designed to improve the performance of the economy. Exactly what changes in market institutions and industrial policies gave rise to the large decline in normal market hours is not clear. But, then, neither is it clear why market hours are so low in France and Spain today.

The Marxian view is that capitalistic economies are inherently unstable and that excessive accumulation of capital will lead to increasingly severe economic crises. Growth theory, which has proved to be empirically successful, says this is not true. The capitalistic economy is stable, and absent some change in technology or the rules of the economic game, the economy converges to a constant growth path with the standard of living doubling every 40 years. In the 1930s, there was an important change in the rules of the economic game. This change lowered the steady-state market hours. The Keynesians had it all wrong. In the Great Depression, employment was not low because investment was low. Employment and investment were low because labor market institutions and industrial policies changed in a way that lowered normal employment.

Appendix Data Sources

- France** Population: Bilan Démographique 1995, no. 428, Février 1996
<http://www.insee.fr>
- GDP and Employment: *OECD Main Economic Indicators*,
September 1998, p. 122
- Data Series: <http://www.cepii.fr/SERLONG.HTM>
- Japan** GDP 1990: *OECD Main Economic Indicators*, December 1994, p. 118
- GDP 1997: *OECD Main Economic Indicators*, January 1998, p. 76
- PPP 1990: *OECD Main Economic Indicators*, October 1998, p. 223
- PPP 1997: *OECD Main Economic Indicators*, October 1998, p. 223
- Population: <http://www.stat.go.jp/1602.htm#jf02-02>
- Employment: <http://www.stat.go.jp/1603.htm#jf03-05>
- Hours: <http://www.stat.go.jp/1603.htm#jf03-08>
- Spain** GDP, Hours, Population, and Employment:
Contabilidad Nacional de España, Instituto Nacional de Estadística
<http://www.ine.es>
- United States** Population: <http://www.census.gov>
- GDP for 1919: Romer 1989
- GDP for other years: U.S. Department of Commerce,
Survey of Current Business, August 1997
- Hours 1919–39: Kendrick 1961
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