



Symposium Article

# Crisis and Growth in the Advanced Economies: What We Know, What We Do not, and What We Can Learn from the 1930s

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This paper addresses the question of whether the medium- and long-term growth potential of the advanced economies has been impaired by the global financial crisis. It evidence from the Great Depression of the 1930s to illuminate the prospects, concluding the following. First, the impact of weak bank balance sheets and heightened risk aversion made it harder for small firms. in particular, to fund investment projects. Second, there is little evidence that increased public debt or policy uncertainty had major effects in depressing investment. Third, structural unemployment dissolved quickly in the face of increased demand. Fourth and finally, the crisis was also an opportunity as firms used the downtime created by the Depression to reorganize and modernize their operations.

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## INTRODUCTION

As this paper is drafted, it has become commonplace to observe that there is a high degree of uncertainty about the course of the economy. Those making this observation are typically concerned with the high level of uncertainty



surrounding the short-term growth prospects of the advanced economies: whether the expansion now underway will continue or be interrupted by a double dip. I would like to suggest that a comparably high degree of uncertainty surrounds the question of whether the medium- and long-term growth potential of the advanced economies has been impaired. This uncertainty arises for three reasons.

First, experience in other recent recessions is of dubious relevance to the current episode. Typically, studies of this question have looked at the trend rate of growth and its determinants before and after a set of banking crisis dates. The crises considered are heterogeneous: while some are as serious as the recent episode, others are considerably less so.<sup>1</sup> Financial crises also differ in how effectively they are resolved; growth experience following the Swedish crisis of the early 1990s, in the wake of which damage to the banking system was repaired relatively quickly, is unlikely to tell us much about the medium-term effects of the current crisis. Whereas the crises considered are, with few exceptions, idiosyncratic national events, the recent crisis infected the entire OECD; thus, the opportunity for individual countries to export their way out of domestic difficulties did not arise to anywhere near the same extent in the recent episode. Where previous studies look at growth performance in the wake of banking crises, the recent episode is more than just a crisis for the banking system. It affected the shadow banking system and securitization markets at the same time it affected the banks, and in some cases it affected them even more powerfully.

Second, empirical work focusing on aggregate effects is inconclusive and unconvincing. Estimating what has happened to the trend rate of growth as a result of a crisis presupposes an ability to estimate the trend. This is something on which economists do not agree. Growth potential is not constant in the absence of a crisis. A pre-crisis trend estimated over a relatively long period may under-state pre-crisis growth potential and therefore overlook post-crisis damage if productivity growth was accelerating prior to the crisis. Recall the ‘new economy’ argument that US productivity growth accelerated around the middle of the 1990s due to the adaptation to new information and communications technologies. If there really was and is a new economy, then attempting to measure the trend rate of growth over a longer period will underestimate it. Alternatively, measuring pre-crisis growth over a shorter period, say as growth between the two immediate pre-crisis business-cycle peaks, creates the danger that estimates of the trend will be distorted by peculiar features of the cyclical expansion and the

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<sup>1</sup> Consider Canada in 1983–1985, France in 1994–1995, Germany in 1976–1979, and the Savings and Loan crisis in the United States in the early 1980s, for example.



unsustainable growth that sowed the seeds for the crisis itself. This approach will tend to over-estimate pre-crisis growth and exaggerate the damage. It is no surprise, then, that studies seeking to identify changes in trend growth before and after crises reach a variety of conclusions.

Third, there is little agreement on the relative importance of the mechanisms through which major recession and financial distress may impact long-term growth potential. Some analysts emphasize the danger that investment will fail to recover because the return to capital will have fallen permanently as a result of the crisis and the misallocation of pre-crisis investment. Financing constraints will be tighter because bank balance sheets have been impaired, because borrowers have less collateral, and because of tighter regulation. Finance being harder to come by, there may be less investment in research and development and related activities that throw off positive externalities for growth. Other observers emphasize the pernicious effects of the policy uncertainty that inevitably arises in a crisis and its aftermath. The list goes on. Public debt loads will be higher in the wake of a crisis: this implies higher taxes and interest rates. Structural and hard core unemployment will rise, causing skill acquisition on the job to suffer. Labor force participation will be discouraged. The long-term unemployed will become demoralized and apathetic. Finally, there is the danger that, the problems that brought on the crisis not having been dispatched, instability may be back.<sup>2</sup>

In the remainder of this paper, I will argue that progress on determining whether growth potential been impaired will occur through research on

<sup>2</sup>This observation highlights another issue. In the wake of the crisis, the US will have to rebalance away from the production of housing in favor of merchandize and away from consumption in favor of net exports. A decline in the US real exchange rate that makes the country's merchandize exports more attractive to foreign consumers is a necessary part of this adjustment. That decline can occur either through a fall in US dollar prices (deflation) or depreciation of the dollar exchange rate; this way of putting it makes clear why American policy makers prefer a controlled depreciation of the dollar. The problem is that other countries are reluctant to see their currencies rise. At the time of writing, recovery in the other advanced economies is weak, making stronger currencies the last thing that they need. Emerging markets, for their part, are reluctant to abandon a model of export-led growth that has served them well. They see export-oriented manufacturing as a locus of learning by doing and productivity spillovers and worry that their competitiveness would be damaged by excessive real appreciation. But, absent nominal exchange rate changes, we will either see the same adjustment occur through other less desirable mechanisms (deflation in the US and/or a further acceleration of inflation in emerging markets), or else the US current account deficit will widen again. Since US indebtedness to the rest of the world cannot rise indefinitely (especially if the denominator of the foreign debt/GDP ratio is growing more slowly), sooner or later something will have to give, presumably in the form of a sudden sharp fall in the value of the dollar like that warned of by some observers before the crisis. This, however, is the subject of another paper.



specific mechanisms through which recession and financial distress affect growth capacity. I will suggest that historical evidence from earlier episodes like the 1930s, when the recession was deep, the crisis was global, and financial distress was pervasive, is a promising source of information on the issues at hand.

On the basis of this evidence, I will argue that there is little reason to think that the long-term growth potential of the advanced economies has been significantly impaired, at least insofar as such damage operates through the standard economic channels. Neither financing constraints, nor public debt burdens and structural unemployment was a binding constraint on long-term economic growth in the wake of the Great Depression. Insofar as the conclusions carry over, it is unlikely that they will be binding constraints today.

Rather, the operative constraint in the 1930s was fractionated, polarized politics that resulted in reactive policies. Where such policies predominated, they hindered the economy's adjustment to its new circumstances and depressed productivity growth. If one is concerned to avoid permanent damage from the crisis, this is the channel of which to beware.

The next section first elaborates my argument about the inconclusiveness of studies using aggregate data on GDP growth in an effort to determine whether growth potential is impaired by crises. The two subsequent sections then consider specific mechanisms through which crises may lead to secular growth slowdowns – damage to the financial system, increased public debt, heightened policy uncertainty, structural unemployment, and less spending on research and development – and tests them against data from the Great Depression. The penultimate section highlights the danger that the political polarization may prevent a constructive policy response. The final section concludes.

## LIMITS OF AGGREGATE EVIDENCE

To be clear, there is no disagreement about the existence of losses from financial crises in the form of output losses that are not made up subsequently. Recessions associated with crises are unusually severe.<sup>3</sup> This fact comes through not just in recent data but in historical experience, and it is even more clearly true of global financial crises than of isolated national events.<sup>4</sup> Even true believers in Zarnowitz's Law – that unusually deep

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<sup>3</sup> See for example IMF (2009).

<sup>4</sup> See Reinhart and Rogoff (2009) and Bordo and Landon-Lane (2010).



recessions are followed by unusually strong recoveries – do not argue that these output losses are fully made up subsequently. At best, growth resumes, following the crisis and recovery, at the same trend rate as before, but the level of GDP is now lower at each point in time than in the counterfactual with no crisis. In a graph with time on the horizontal axis and log GDP on the vertical axis, the new trend line is parallel to the old trend line but below and to its right. Worse still is if growth potential has been permanently impaired, in which case the new trend line is flatter and the gap between actual and counterfactual log GDP widens progressively over time.

But if there is a presumption in the literature, it is that permanent growth effects are minimal. Furceri and Mourougane (2009) find that a financial crisis lowers output by 1.5%–2.4% and that a severe crisis reduces output by 4%, but they find no evidence of it reducing the economy's subsequent capacity to grow. IMF (2009) similarly finds that there is no rebound to the pre-crisis trend but again concludes that in most cases the trend rate itself is not depressed in the medium term: growth resumes at the pre-crisis rate but from a lower level. OECD (2010) puts the OECD-wide decline in potential output due to the recent crisis at 3% but sees no evidence of the decline in potential rising over time. Haugh *et al.* (2009) look at the trend of labor productivity and total factor productivity (TFP) growth in the 10 years before and after crises and again conclude that there is little evidence of a downward shift.

These same studies, however, emphasize the heterogeneity of country experiences, reflecting the heterogeneity of crises and of how effectively they are managed. Haugh *et al.* (2009) find a sharp downshift in labor and TFP growth rates between the 10 years before and after the onset of the Japanese crisis. They find negative effects around the time of the Nordic crises of the early 1990s when they limit the comparison to the 5 years before and after the event. IMF (2009) points to cases in which there is evidence of lower employment and a lower capital/labor ratio following crises. In these episodes, TFP growth typically recovers from the low levels plumbed during the crisis, but not entirely.

As noted, the limitation of these analyses – and the difficulty of knowing what to generalize from them – is the difficulty of measuring the pre-crisis trend rate of growth. Crises often follow booms that bias upward estimates of the pre-crisis trend. Some authors, Krugman (2010) for example, dispute the implication: they argue that there is nothing wrong with using data from the pre-crisis boom and estimating the trend on the basis of peak-to-peak interpolation. The boom, in this view, may affect what is being produced (in the most recent case, more housing and financial services, fewer other goods and services) but not the economy's capacity to produce.



Others who see the boom as pushing investment and capacity utilization beyond sustainable limits will not be convinced. Their approach is therefore to estimate the pre-crisis trend excluding the years preceding the crisis. In IMF (2009, p. 125), the Korean economy around the time of the 1997 financial crisis is used to illustrate this approach. First, a trend line is fit to output growth between 1987 and 1994. The 3 years immediately preceding the crisis are omitted from this trend calculation on the grounds that the economy may have been expanding unsustainably during the pre-crisis boom. This pre-crisis trend is then compared to post-crisis growth in the period 1998–2004. The two lines – the extrapolation of pre-crisis output and actual post-crisis output – first evolve in parallel but subsequently show signs of diverging, as if the capacity of the economy to grow was permanently impaired.

This Korean example inadvertently illustrates the problem with the methodology. After more than two decades of rapid growth, the Korean economy's capacity to grow was already declining in the late 1980s.<sup>5</sup> The labor force began expanding more slowly. The pool of underemployed labor in agriculture had been drained. Slower growth was a natural corollary of economic maturity. But this fact was disguised by the unsustainable investment binge of 1990–1997, which the country's large conglomerates financed by issuing debt and raising their leverage to ultimately dangerous heights. The investment/GDP ratio rose from the 30% typical of the 1970s and 1980s to nearly 40% before returning to its customary 30% following the crisis. Much of the additional investment in the intervening period was of dubious utility and productivity – this was when the chaebol branched into unrelated businesses far removed from their core competencies.<sup>6</sup> The implication is that the trend rate of growth prior to the crisis is over-estimated even when the 3 immediate pre-crisis years are excluded; hence the extent of any post-crisis decline in the trend is also exaggerated.

Note that this is the opposite of the illustration in the introduction, where a relatively recent acceleration in the potential rate of growth causes the pre-crisis trend to be underestimated and post-crisis damage to be understated. Either way, mechanical calculations yield misleading results. It seems unlikely, therefore, that analyses of aggregate data can succeed in resolving the issue. Rather, determining whether long-term growth potential has been

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<sup>5</sup> If one mechanically uses statistical methods to pinpoint the break in the trend, the computer places it in 1989 – midway through the period when the authors of the IMF fit a single linear trend. See Eichengreen *et al.* (2011).

<sup>6</sup> Businesses that they often liquidated subsequent to the crisis. On explanations for the over-investment phenomenon in Korea in this period, see Lee and Wong (2003).



impaired will require studying the specific mechanisms through which financial crises affect the economy over time.

## FINANCIAL DISTRESS

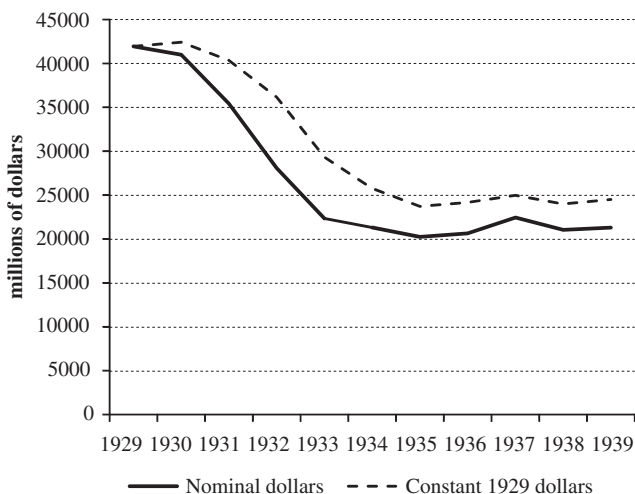
When one considers specific mechanisms through which a financial crisis may affect the growth potential of the economy, the obvious place to start is impairment of the financial system. Weakly capitalized banks will be reluctant to lend. Having been burned in the crisis, they will adopt tighter lending standards. Aspiring borrowers, having suffered balance sheet damage, will have less collateral and be less credit worthy. More stringent regulation adopted in response to the crisis requires financial institutions to hold more capital and liquid assets and to otherwise restrain their lending. The more limited supply of bank credit will mean a higher cost of capital. The lesser availability of finance will mean less investment. This effect is most likely to be felt by smaller, younger firms (start-ups) that are disproportionately the source of innovation and employment growth in normal times, that cannot expand on the basis of internal funds, and that find it difficult to tap securities markets.<sup>7</sup>

In the Great Depression, the evidence of a persistent slump in bank lending is overwhelming (Figures 1 and 2), but evidence of a persistent impact on investment and growth is weak. First, to the slow recovery of lending: in part this reflected balance-sheet problems. Using state-level data, Calomiris and Mason (2003) show that banks with less capital and more real-estate assets in their portfolios (and therefore more losses due to foreclosures) grew their loans more slowly in the 1930s. In part, it reflected the flight from risk and scramble for liquidity by all banks. Calomiris and Wilson (2004), analyzing individual bank data, find that banks curtailed their lending and shifted into holding more liquid, less risky assets (primarily cash and treasury securities) following depositor runs in 1931–1933.<sup>8</sup> Banks cut the share of loans in their portfolios not just by limiting new lending but by allowing existing loans to run off as they matured. In 1934–1940, FDIC-insured commercial banks held as much as 30% of their assets in cash, 37% in treasury bills and other liquid securities, and only 28% in loans (FDIC, 2008).

But, did the limited availability of bank credit slow the recovery? Between 1933 and 1937 the US economy grew by more than 8% a year. There was

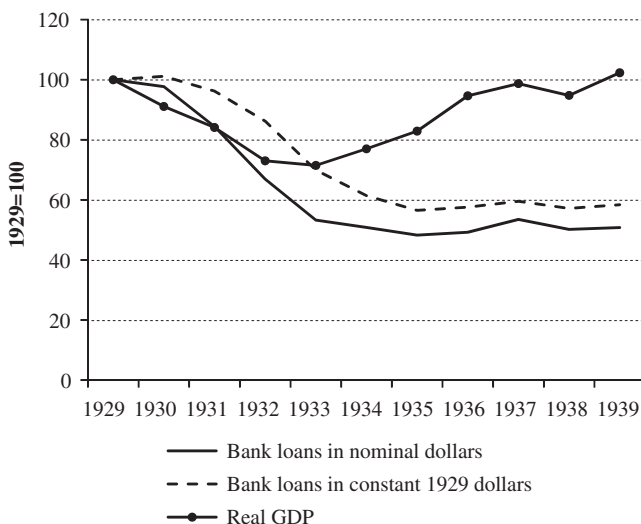
<sup>7</sup> Thus, Robb and Robinson (2009) show that start-ups rely on bank credit for their financing needs to an unusual extent, all the high-profile attention notwithstanding.

<sup>8</sup> Their sample of banks is for New York City.



**Figure 1:** US Bank Loans Outstanding

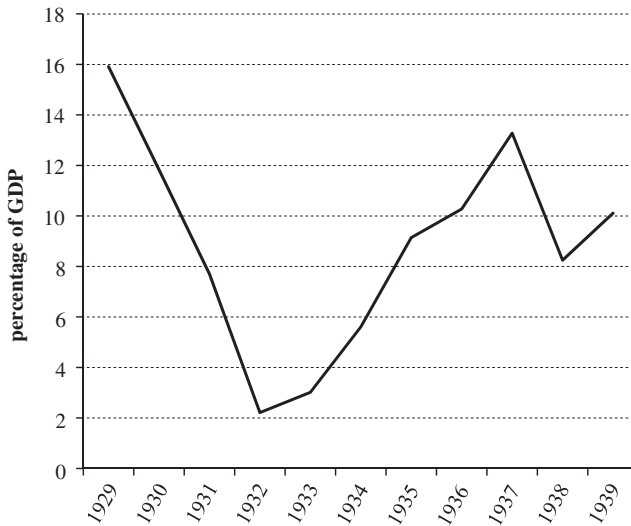
Sources: Board of Governors of the Federal Reserve System, *All Bank Statistics 1896–1955*; Global Financial Data; and Angus Maddison, ‘Statistics on World Population, GDP and Per Capita GDP, 1–2006 AD’ (March update)



**Figure 2:** US Bank Loans Outstanding and Real GDP

Sources: Board of Governors of the Federal Reserve System, *All Bank Statistics 1896–1955*; Global Financial Data; and Angus Maddison, ‘Statistics on World Population, GDP and Per Capita GDP, 1–2006 AD’ (March update)





**Figure 3:** US capital spending as a percentage of GDP

Source: Historical Statistics of the United States: Millennium Edition online, Table Ca74-90

also a reasonable recovery of investment in the 1930s. (See Figure 3) A pair of survey by the National Industrial Conference Board found only limited evidence of borrowing difficulties.<sup>9</sup> In 1932 (when the problem was presumably at its peak), 86% of the responding industrial firms indicated either no borrowing experience or no difficulty in obtaining bank credit. It could be, of course, that the large number of respondents reporting no recourse to bank credit reflected the depressed circumstances of the time (no demand meaning no investment plans).<sup>10</sup> Alternatively, many firms may have been intent on deleveraging as a way of reducing their vulnerability to financial disturbances (analogous to the argument sometimes made nowadays that the slow growth of bank lending reflects not the weakness of the banks but the reluctance of firms and households to borrow).<sup>11</sup>

In the 1932 survey, the firms reporting difficulty in borrowing were disproportionately small.<sup>12</sup> Since, in normal circumstances, these small firms

<sup>9</sup> See National Industrial Conference Board (1932) and Kimmel (1939).

<sup>10</sup> The two occasions that saw upticks in loans outstanding were 1939 and 1940–1941, which were the only times in the 1930s when late 1920s levels of capacity utilization were reached and a substantial number of firms felt compelled to borrow for capacity expansion (Weiland, 2009).

<sup>11</sup> See Koo (2009).

<sup>12</sup> A substantial fraction of the firms in question reported that they would not have experienced comparable difficulties in more normal financial-market conditions. The 1939 study concluded that



and start-ups are disproportionately the source of innovation, this observation does not bode well for productivity growth. But the 1930s were not normal circumstances; I return to this below.

In the aftermath of the recent crisis, OECD (2010) estimates that two-thirds of the fall in potential output will reflect a higher cost of capital, which will reduce the capital/labor ratio. However, it assumes that the increase in the cost of capital will be 150 basis points, which seems like a large number. The Institute of International Finance (2010), in analyzing the impact of more stringent capital and liquidity requirements, assumes very large increases in bank lending rates and concludes that these could reduce global GDP by as much as 3% between 2010 and 2015.<sup>13</sup> Other analysts, such as the Bank for International Settlements, dispute not just the magnitude but the existence of these effects, putting the upper bound in terms of cumulative growth impact at less than 1%.<sup>14</sup> One suspects that if there are long-term effects from more limited credit availability, these will come from the stricter application of existing regulations at the national level more than from new capital standards promulgated in Basel. And one suspects that the major impact will be on more credit-intensive activities and sectors rather than the growth of the economy as a whole.

## **PUBLIC DEBT**

Another plausible channel through which crises can lead to slower growth is by leaving an overhang of public debt. Reinhart and Rogoff's (2009) stylized fact, based on experience in 13 post-World War II financial crises, is that the real value of public debt roughly doubles in the 3 years following onset.<sup>15</sup> The increase is due to a combination of lower tax revenues, reflecting output losses, and increases in public spending taken in response to the crisis. Higher debt burdens imply higher future taxes and higher interest rates, other things equal, pointing to lower levels of investment and slower rates of growth.<sup>16</sup>

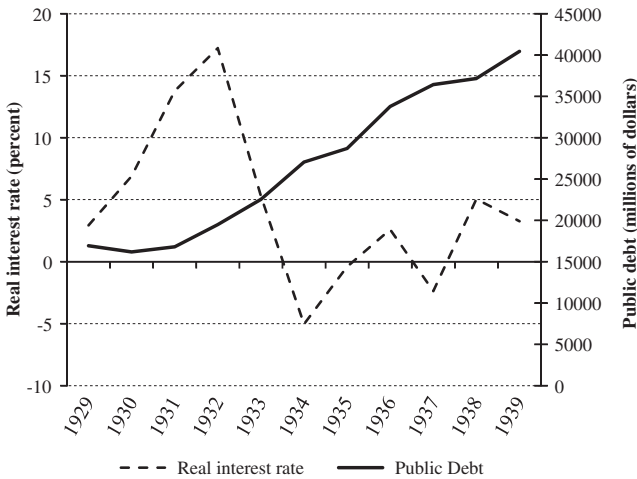
the majority of loan refusals reflected changes in the instructions given loan officers ('bank policy') and not the condition of the borrowing firm or its industry.

<sup>13</sup> In other words, it could reduce growth by as much as a fifth.

<sup>14</sup> See Bank for International Settlements (2010). In any case, there has been agreement since the earlier Institute of International Finance analysis (for better or worse) on scaling back proposed increases in capital and liquidity requirements and delaying their implementation for as long as 7 years.

<sup>15</sup> The precise increase averages 86%.

<sup>16</sup> With the deficit currently running at 10% of national income, the US debt/GDP ratio is now reaching the 90% threshold where the authors argue that these growth-reducing effects kick in with a vengeance.



**Figure 4:** US Public Debt and Real Interest Rates

Source: Board of Governors of the Federal Reserve System, 'Banking and Monetary Statistics 1914–1941'; Global Financial Data; Maddison, A. (2009) 'Statistics on World Population, GDP and Per Capita GDP, 1–2006 AD' (March update); public debt kindly provided by Carmen Reinhart and Kenneth Rogoff

The 'other things equal' caveat is a big one. The argument that government deficits leading to higher levels of debt crowd out private investment and depress growth operates mainly through higher interest rates, and there is less than abundant evidence of upward pressure on interest rates in the United States and other advanced economies at the moment.<sup>17</sup> Deficit spending directed at recapitalizing a weak banking system and stabilizing economic activity, by restoring confidence, may do more to encourage investment than depress it. The debt ratio may also rise insofar as the economic conditions are depressed and deflationary (that is to say, for other reasons). Slow growth may cause heavy indebtedness rather than the other way around.

The 1930s is again an obvious battleground for the competing schools. The US public debt/GDP ratio more than doubled from 17% in 1929 to 40% in 1933–1937. This was certainly a period of depressed capital formation: stocks of both equipment and structures were lower in 1941 than they had been in 1929. But it was not a period of high interest rates; as in recent years precisely the opposite was true. (See Figure 4) Arithmetically, the main factor behind the rise in the debt ratio was the fall in nominal GDP by nearly 50% between 1929 and 1933. The swing in the federal government deficit as a

<sup>17</sup> Greece is a different story, but the contrast is, presumably, instructive.



percentage of Gross National Product between 1929 and 1933 was a relatively modest 4%; this is telling us that the rise in indebtedness was mainly driven by the fall in GDP, not the other way around.

## **POLICY UNCERTAINTY**

Thus, those seeking to argue that government policy discouraged investment and otherwise impaired the environment for growth must look elsewhere. In the literature on the 1930s, as in the recent period, they look to the possibility that policy uncertainty increased the option value of waiting. Friedman and Schwartz (1963) argue that business confidence was weakened by uncertainty about the implications of new regulatory measures for the business environment: they cite, among other regulatory interventions, the Securities Act of 1933, the Securities Exchange Act of 1934, and the Glass-Steagall Act of 1933. Higgs (1999) is the definitive modern exponent of this point of view, arguing that ‘pervasive uncertainty among investors about the security of their property rights in their capital and its prospective returns’ depressed private investment from the mid-1930s all the way up to World War II. His list of problematic policies is long. He points to tax policy (the Wealth Tax of 1935, a tax on incorporate dividends, increases in estate and gift taxes, increases in surtaxes on high incomes, and a graduated surtax on corporate earnings), and the tax increases imposed under the guise of ‘closing loopholes’ in the 1937 Tax Act. He points to the abrupt reversal of some of these measures by the Congress in 1938–1939. He points to the uncertain consequences of the National Labor Relations Act, creation of the Temporary National Economic Committee in 1938, uncertainty about the enforcement of antitrust laws by the Department of Justice, and new regulation of securities markets by the Securities and Exchange Act. In arguments that anticipate recent criticism of President Obama for his allegedly anti-business rhetoric, he points to Roosevelt’s criticism of business as creating a more uncertain business climate.

Arguments hinging on the existence of perceived uncertainty and an unobservable hostile-to-business climate are intrinsically difficult to test, notwithstanding the depressed level of investment that is their alleged consequence. Higgs looks at time variation in investment and in the composition and policies of the Roosevelt Administration. He argues that 1938 saw a significant change in the makeup of the Roosevelt Administration, with the replacement of dedicated New Dealers by pro-business men, together with a stronger Conservative Coalition opposing the New Deal after the 1938 congressional election; this was followed by a substantial rise in gross private



**Figure 5:** US capacity utilization  
*Source:* Streever (1960)

investment in 1939 and again in 1940. But the rise in investment is equally attributable to other factors, such as recovery from a 1937–1938 recession that was widely attributed to the Fed’s decision to raise reserve requirements.

Fortunately for us, an earlier paper by Mayer and Chatterji (1985) looks directly at the impact of policy shocks and other variables on industrial equipment orders and investment in non-residential structures. The authors construct dummy variables for the major policy innovations and shocks of the period and find no evidence that it was these as opposed to other plain-vanilla determinants of investment like the cycle that drove investment spending.

An alternative hypothesis is that investment will recover fully only once capacity utilization returns to normal levels. This was the explanation for the less-than-complete recovery of investment of the original historian of US capacity utilization in the 1930s (Streever, 1960). Capacity utilization in US industry fell from 83% in 1929 to 42% in 1932; at its peak in 1937 it just matched the 1929 level of 83% before falling back again in 1938 and 1939. A level of 83% does not suggest inadequate capacity; this is more-or-less normal levels of utilization by second-half-of-20th-century standards. Moreover, the 1929 level was also down considerably from the earlier part of the decade (See Figure 5).<sup>18</sup>

<sup>18</sup> Another possibility is that investment is depressed in the post-crisis period not so much by the crisis itself as the nature of the pre-crisis investment boom. Residential construction will remain depressed in the wake of a housing boom that leaves the residential sector overbuilt. Investment will



The bulk of the evidence, then, suggests that the failure in the 1930s of investment to recover more fully reflected not crowding out or policy uncertainty but the continuing low level of capacity utilization. The latter was a legacy of the singular depth of the slump. It was something that solved itself eventually – in the event, with the intervention of World War II. This suggests that, with growth and with time, there is no reason why investment cannot again recover to pre-crisis levels.

## STRUCTURAL UNEMPLOYMENT

Another worry is that a rise in structural unemployment will reduce labor input and efficiency. It is harder to grow when you have to retrain construction workers and hedge fund managers to work as welders and nurses, as will be the case when the economy is undergoing structural change – including when it is rebalancing away from unsustainable activities that boomed before the crisis. The mismatch between skills supplied and demanded will then constrain the growth of employment. Firms may not be able to find workers with the requisite training and experience. One currently hears complaints from manufacturing firms of a shortage of, *inter alia*, machinists – see Bowers (2010). Similarly, workers lacking the skills and experience demanded may find it more difficult to find their way out of a crisis. The outward shift in the Beveridge Curve starting in 2009 Q2 (Federal Reserve Bank of Atlanta, 2010) is at least superficially consistent with this view.<sup>19</sup> More generally, there is evidence that unemployment is concentrated to an unusual extent in the current recession among individuals previously with long-term jobs who are now faced with the challenge of finding new jobs in different sectors.

be less productive and slower to recover insofar as complementary investments made before the crisis embody an economic structure and expectations that no longer prevail. To continue with the case of housing, new investment is more costly insofar as prior encumbrances (how the land was subdivided, for what uses it was zoned) are difficult to change, and when existing structures have to be demolished in order for new ones can be built. Field (2009a) suggests that such encumbrances (excessive sub-development, poorly planned infrastructure investment) depressed the construction sector all through the 1930s. Developers wishing to build multiple units within a subdivision had to incur heavy costs to reassemble subdivided acreage (something complicated by the sheer difficulty of tracking down the individual plot owners), demolish inappropriate improvements, and adapt preexisting site hookups and street layouts. One is reminded, inevitably, of recent arguments about the difficulty of replacing McMansions with green housing.

<sup>19</sup> More detailed analyses by Dowling *et al.* (2010) and Weidner and Williams (2010) suggest that the natural rate of unemployment has risen by 1.5% to 2.8% points since the onset of the crisis purely as a result of the mismatch problem.



Similar complaints about shortages of qualified machine-shop and tool-room workers were voiced in the midst of high unemployment in the 1930s (Allen and Thomas, 1939). Motor vehicle manufacturers in Oxfordshire complained that Welsh coalminers lacked both the skills and attitudes required of productive factory workers (Heim, 1983). Regional labor market problems and geographical disparities are similarly evident in the recent recession, accentuated by housing market declines which leave homeowners with negative equity hesitant to sell and by exceptional distress in traditionally vibrant areas like California and Florida which have traditionally absorbed workers from declining regions.<sup>20</sup> More generally, mismatch is a theme in studies of the British labor markets in the 1930s (see for example, Booth and Glynn, 1975). Dimsdale *et al.* (1989) develop an empirical measure of the extent of mismatch in interwar Britain, summing the absolute value of the change in the shares of total employment across 27 industries.<sup>21</sup> They show that a high level of mismatch moderates the downward pressure on real wages normally exerted by a rise in the number of unemployed workers, in turn limiting employment and output growth in their model.<sup>22</sup>

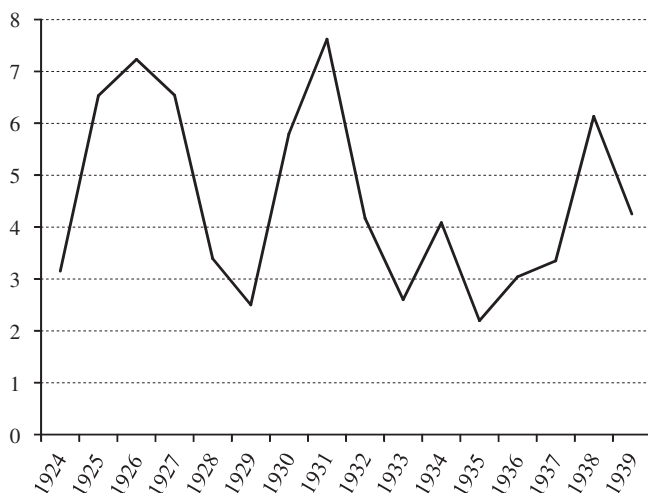
Figure 6 displays their mismatch index (the sum of absolute changes in the shares of total employment across 27 industries as described in the previous paragraph). Not surprisingly, it is procyclical, rising with the onset of the slump in the early 1930s, falling when recovery commences in 1932, and then rising again sharply with the 1937–1938 slowdown. With capital goods industries hit especially hard in the slump, it is not surprising that the dispersion of employment growth rates moved so strongly with the cycle.<sup>23</sup>

<sup>20</sup> On this, see Katz (2010).

<sup>21</sup> Data taken from British Labour Statistics.

<sup>22</sup> The alternative interpretation, now largely discredited (on this, see Hatton, 1985 and Eichengreen, 1987), is that generous unemployment benefits discouraged search activity. One hears today the same argument that the extension of unemployment benefits has shifted up the level of unemployment for any level of vacancies. But Federal Reserve Bank of Atlanta (2010) shows that even making a generous adjustment for this factor is not enough to eliminate the shift in the Beveridge curve. There is an analogous set of arguments for the US, centering on New Deal policies (Cole and Ohanian, 2004) for which this author does not hold much brief.

<sup>23</sup> A further notable feature of the series is the relatively high level of mismatch in the mid-1920s, this being a period when commentators referred to the international competitive difficulties of Britain's old industries (the so-called staple trades): textiles, coal, and iron and steel, and shipbuilding. The literature on the interwar period emphasized spatial as well as industrial mismatch, pointing to the much higher unemployment rate in 'Outer' than 'Inner' Britain as an additional dimension of mismatch that slowed labor-market adjustment (Inner Britain being London, the Southeast, the Southwest, and the Midlands). Even adjusting for differences in industrial composition, some regions displayed persistently higher unemployment rates (Hatton, 1986). This suggests that the problem was more than just the fact that some industries are more cyclically sensitive than others.



**Figure 6:** Measure of mismatch or turbulence for the United Kingdom  
Source: British Labour Statistics, Historical Abstract 1886–1968, Table 114

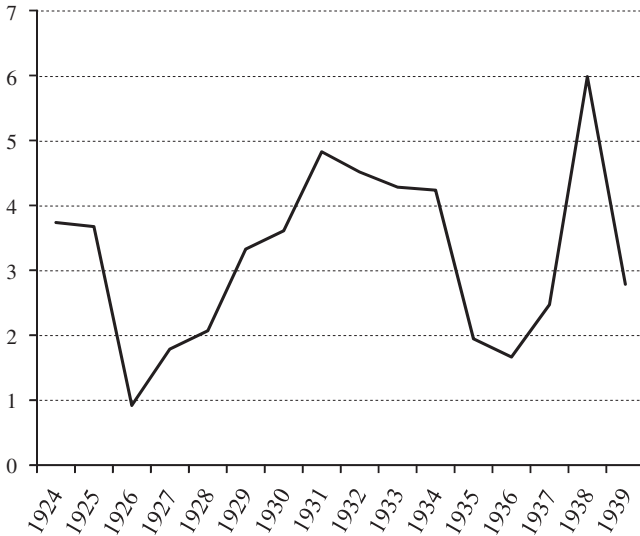
But the other striking feature of the figure is that the mismatch index falls quickly and sharply with recovery after 1931. Evidence of structural unemployment dissolves, it would appear, with the recovery of aggregate demand. This suggests that present-day evidence of structural unemployment will similarly dissolve in the face of economic growth.

Figure 7 shows the analogous mismatch index for the United States, constructed from data from Table Ba814-840 of *Historical Statistics of the United States*. Again, the pattern is strongly procyclical. Compared to the United Kingdom, the peak in the 1930s is later, reflecting the fact that the first full year of recovery is 1934. Once again, however, evidence of persistent structural unemployment dissolves in the face of economic recovery.

Then there are worries about hysteresis due to the concentration of joblessness among a hard core of long-term unemployed. There is some evidence that unemployment in the current cycle is concentrated among a hard core of long-term unemployed to a greater extent than in the preceding recessions.<sup>24</sup> The same was true of the 1930s. Woytinsky (1942) describes the US unemployed as subject to two very different patterns, pointing to ‘the existence of two contrasting groups among the unemployed: persons who have a fair chance of reemployment in the near future, and those who remain

<sup>24</sup> See Leonhardt (2010). At the time of writing, the share of the unemployed out of work for more than 27 weeks was nearly double that of any other post-World War II recession.





**Figure 7:** Measure of mismatch or turbulence for the United States

*Note:* The mismatch ( $M$ ) is calculated as the sum of the (absolute) changes in the percentage share of total employment for all industries.

$$M = \sum_i \|\Delta e_i\|, \text{ where } e_i \text{ is the percentage share of total employment in industry } i$$

*Source:* Historical Statistics of the United States: Millennium Edition online, Table Ba814-830

out of jobs for considerable periods of time'.<sup>25</sup> Jensen (1989) estimates that structural and hard core unemployment accounted for fully half of US unemployment in 1935 and an even higher fraction of the total in subsequent years.<sup>26</sup> Crafts (1987) similarly documents the exceptionally high incidence of long-term unemployment in 1930s Britain.

The pernicious effects of long-term unemployment are well known. Skills acquired on the job atrophy when off it. Individuals experiencing long-term unemployment tend to become demoralized and apathetic.<sup>27</sup> An influential 1933 study by Paul Lazarsfeld and associates of the Austrian town of Marienthal painted this picture in detail, as did a 1938 study of England by the Pilgrim Trust.<sup>28</sup> Crafts (1987) cites commentary from the 1930s to this effect

<sup>25</sup> Woytinsky (1942), p. 67.

<sup>26</sup> He reports for cities like Buffalo that the share of the unemployed who had been out of work 1 year or more rose from 9% in 1929 to 21% in 1930 to 43% in 1931 to 60% in 1932 and 68% in 1932; the share of the male labor force in this condition rose from 0.5% in 1929 to 20% in 1932.

<sup>27</sup> Machin and Manning (1998) provide survey evidence from 1990s Europe that individuals' self-worth deteriorates as a result of unemployment.

<sup>28</sup> *Marienthal* was banned by the Nazis soon after publication, and all extant copies were burned. The republication is Jahoda *et al.* (1972). In the psychological effects in particular, see



for the United Kingdom from both private commentators and policy authorities.<sup>29</sup>

The long-term unemployed may also become stigmatized in the eyes of employers. Jensen (1989, p. 556) writes of the long-term unemployed in the United States and United Kingdom in the 1930s that '(e)mmployers distrusted their job qualifications; they would not hire them for any reason at any wage'. This problem particularly afflicted older workers: 'Some entry into the hard core resulted ... when middle-aged workers became, at age 45 or 50, "too old" '.

Together, these mechanisms imply a decline in the efficiency of labor utilization and in growth capacity, underscoring the damage to growth potential from long-term unemployment.

## TECHNOLOGICAL PROGRESS

Another worry is that technological progress may slow as a result of the crisis. Research and development, especially by small firms and startups, is sensitive to the availability of bank funding, as noted above. R&D has a long lead time, which means that the effects of financial disruptions can be persistent.

Nabar and Nicholas (2009) observe that there was a drop in R&D activity in the early 1930s due to the depth of the economic collapse and tighter financial constraints.<sup>30</sup> But this history also points to the possibility of a more positive outcome. Rather than being depressed as the previous perspective would suggest, TFP growth in the 1930s in the United States was unusually fast. Between 1929 and 1941, TFP growth ran at an annual average compound rate of growth of 2.3%, faster than in the first two decades of the century, faster than in the 1920s, faster than during World War II, and faster than in the second half of the 20th century.<sup>31</sup>

The external effects of capital deepening cannot explain this, as noted: net stocks of both equipment and structures did not rise over the period. The

Eisenberg and Lazarsfeld (1938). A companion study for the modern period is Fryer and Fagan (2003).

<sup>29</sup> George Orwell described the effect in *The Road to Wigan Pier*: 'It is only when you lodge in streets where nobody has a job, where getting a job seems about as probable as owning an aeroplane and much less probable than winning 50 pounds in the Football Pool, that you begin to grasp the changes that are being worked out in our civilization'.

<sup>30</sup> And also because of the perceived rise in uncertainty associated with the structural transformation of the economy. At the same time, they provide evidence that firms were able to learn about the nature of these shifts and redirect their R&D investments by the late 1930s.

<sup>31</sup> By Field's (2006) calculations, TFP growth averaged 1.08% in 1900–1919, 2.02% in 1919–1929, 2.31% in 1929–1951, 1.29% in 1941–1948, 1.90% in 1948–1973, 0.34% in 1973–1989, and 0.78% in 1989–2000.



phenomenon was not simply mis-measurement of labor input: while there was probably some tendency for firms to retain their most skilled and productive workers in the downturn, the fact that both 1929 and 1941 were business cycle peaks suggests that the contribution of this factor was limited. Rather, there was a fundamental reorganization of operations in a variety of industries. The example given in Field (2009b) is the railroads, which suffered from severe financial shocks (Schiffman, 2003), a depressed economy, and competition from road (and nascent air) transport. Managers fought back by figuring out how to use their labor and capital more efficiently, through *inter alia* more efficient scheduling and continuous utilization of freight cars, changes in staffing practices, and so forth.

Field refers to this as the 'adversity effect': to survive in the face of adverse demand conditions, firms have to figure out how to cut costs and raise efficiency. Koenders and Rogerson (2005) present a model that predicts (or rationalizes) this behavior. In their framework, firms invest in internal reorganization at the cost of diverting resources from more immediate uses. In periods of high economic activity, organizations postpone structural changes to take advantage of more immediate opportunities. In periods of low activity, they do the opposite.

While Koenders and Rogerson do not apply it to the 1920s and 1930s, their framework has two implications consistent with that historical experience. One is a continued high unemployment rate following the shock: once immediate opportunities dissipate and the firm turns to reorganization, it is less likely to hire because reorganization is less labor intensive than current production. The second is that the effects in question will be stronger following a long expansion like that of the 1920s. The longer the expansion, during which the firm will have focused on production rather than reorganization, the larger will be the backlog of potential structural changes. Looking at post-1964 experience, Koenders and Rogerson show that the longer the preceding expansion, the more jobless but also efficiency enhancing is the subsequent recovery. 1921–1929 was the longest unbroken expansion in US history up until the expansion of the 1991–2001 (the case that motivates their study); hence the same logic plausibly applies.

There are hints that what was true of railroads in the 1930s was also true, broadly speaking, of the manufacturing sector. As factories were idled, firms had more opportunity to adapt factory layout and raw-material flow to the availability of the small electric motors that became available in the 1920s. More firms adopted the modern personnel management practices pioneered by a handful of large enterprises in preceding years.<sup>32</sup> More firms set up in-house research laboratories to develop new methods and products; in a

<sup>32</sup> See Jacoby (1985).



period when overall employment was stagnant, total R&D employment in US manufacturing rose from 6,274 in 1927 to 10,918 in 1933 and 27,777 in 1940, despite double digit unemployment (Mowrey, 1982). With less pressure to push product out the door, more time and effort could be devoted to commercializing new technologies like neoprene and nylon. Firms could experiment with new materials like plastics and alloy steels. They could experiment with instrumentation capable of saving both capital and labor. They could invest in new chemical processes for extracting minerals and processing agricultural materials.<sup>33</sup>

These examples of technologically progressive firms in the 1930s are disproportionately large ‘Chandlerian’ firms in a position to pioneer the commercialization of complex technologies, able to build in-house research labs and personnel departments, and in a position to reorganize large existing factories to take advantage of electric motors. These were not the kind of small firms and start-ups most heavily impacted by the limited availability of bank credit (see above). The question for our time, of course, is whether small or large firms will be the locus of innovation and productivity growth going forward.

## **POLICY AND POLITICS**

Crises can also catalyze efficiency enhancing public-policy initiatives. It can be argued that the economic and financial crisis of the early 1930s catalyzed a whole host of economic policy changes that limited instability and set the stage for faster and more successful growth. Those of us who live in the San Francisco Bay Area and rely on the San Francisco-Oakland and Golden Gate Bridges cannot help but recall that the federal government contributed to the build-out of the road network and otherwise financed growth-friendly infrastructure investments in the depressed conditions of the 1930s. Government dealt with threats of financial instability through the adoption of deposit insurance and other bank regulatory measures. The Federal Reserve Act of 1935 centralized monetary policy decision making at the Board, preventing disagreements between regional reserve banks from again immobilizing central bank policy. Social welfare policies from unemployment insurance to social security were put in place, ensuring a fair sharing of the burden of adjustment and providing the social foundations for the post-World War II golden age of economic growth.<sup>34</sup>

<sup>33</sup> Field (2006), p. 216.

<sup>34</sup> See Bordo *et al.* (1998). The reader will have noted that that this is the opposite of how the policy response of the 1930s is characterized by the regime-uncertainty school. The two views can



The recent literature suggests that certain kinds of economies are most likely to respond in efficiency enhancing ways to economic and financial crises.<sup>35</sup> These are economies with cohesive, stable, centrist political systems that are able to equitably share out the costs of adjustment, compensate the losers, and facilitate rather than resist adjustment. The United States, which adopted not just unemployment insurance and Social Security but also the Reciprocal Trade Adjustment Act, was evidently able to do just that.

But other countries, such as the United Kingdom, were less successful. The response of British TFP growth to the crisis of the 1930s, in both the short and longer terms, was decidedly less positive.<sup>36</sup> Broadberry and Crafts (1990, 2003) show that many of the policies put in place in the 1930s – import restraints, the absence of an effective anti-trust policy, and the heavy regulation of public utilities, for example – created enduring obstacles for productivity growth. As they put it, ‘The response of British industry to the Depression of the 1930s was a further retreat from competition, a process already well under way from the depressed conditions of the 1920s. There was a substantial increase in concentration, brought about primarily by a merger boom during the 1920s ... Furthermore ... the 1930s saw the introduction of a General Tariff.’<sup>37</sup> In the absence of competition, rent seeking by cloistered management became pervasive. Rather than systematically restructuring, industries like cotton textiles and iron and steel were cartelized and protected from foreign competition to avoid further short-term falls in employment. For a quarter of a century, political control then swung back and forth between a hard-line Labor Government and equally hard-line Conservatives. Politics were fractionalized and fragmented. There was little serious talk of burden sharing. Policy was stop-go. Not until the 1980s was the legacy of the interwar Depression finally cleared away.

These observations about political structure are not reassuring about the growth prospects of the United States today. Is its political system, with strong inter-party competition and checks on the executive, conducive to a positive response to the crisis? Or have there been changes in American politics that have rendered the political system more polarized and less capable of mounting a coherent response to the crisis?

probably be reconciled in practice. Policy reforms that are supportive of growth in the longer run can still heighten uncertainty in the short run, making immediate post-crisis recovery more difficult. It is not inconceivable that both effects resulted from the Great Depression.

<sup>35</sup> See inter alia Tomassi (2004) and Cavallo and Cavallo (2008).

<sup>36</sup> See Matthews *et al.* (1982).

<sup>37</sup> Broadberry and Crafts (1990), p. 603.



## CONCLUSION

This analysis of impacts of the Great Depression on the long-term growth potential of the advanced economies highlights the following points. First, the impact of weak bank balance sheets and increased risk aversion on the part of lenders in the wake of the Depression was mainly felt by smaller, younger firms. But with large firms enjoying access to other sources of funding and retained earnings growing reasonably strongly after 1933, it is hard to conclude that this had a first-order impact on capital spending or output growth. Second, there is little evidence that increased public debt or policy uncertainty had major effects in depressing investment. Third, while there was extensive structural and long-term unemployment in the 1930s, this also declined relatively quickly once sustained recovery set in. Fourth, the crisis was also an opportunity, as firms used the downtime created by the Depression to reorganize and modernize their operations in ways that boosted productivity growth. But creating a policy environment where they had an incentive to do so required political compromise of a sort that can be difficult given the polarizing effects of financial crises.

Mark Twain is alleged to have once said ‘History does not repeat itself, but it does rhyme’.<sup>38</sup> There is no certainty, in other words, that the impact on long-term growth potential of the 2007–2009 financial crisis will be the same as the impact of the Great Depression. Indeed, the more carefully policy makers study Depression experience and the more successfully they avoid the errors of their predecessors, the more likely it is that the aftermaths of the two crises will differ.

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<sup>38</sup> Twain scholars have disputed the accuracy of the attribution.



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