

The Wage-Price Spiral: From Push to Shove

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“If workers begin to focus on the effect of higher commodity prices on their spending power, and regard the effect as permanent rather than temporary, then they may push up their wage demands. That could lock higher inflation into the system, giving central banks a devil of a job to bring it back down again.”

Commentary in the *Economist*, September 30, 2006, p. 88

“It is hardly an exaggeration to say that instead of being on a Gold Standard, we are on a Labour Standard.”

John Hicks writing in 1955, p. 391

One of the most fundamental macroeconomic questions is: how are wages determined?¹ The assumptions that underlie this question help to determine how economic evidence is interpreted and then how monetary and fiscal policy are set. Yet, these underlying assumptions are rarely explicitly or self-consciously acknowledged or examined. Our goal is to examine the evolution of one of these key underlying assumptions, the "wage-push" view of wage setting; or, in other words, to provide an intellectual and policy history of the concept.

In the period after World War II, there was increasing concern about creeping inflation in the U.S. and in other countries, with the anticipated “pent-up demand” resulting from wartime rationing and the rise of the trade union movement. Notions of wage-push inflation and wage-price spirals began to arise. The high point of those discussions came in the 1960s and 1970s and was manifested in such policies as the Kennedy-Johnson wage-price guideposts, the Nixon wage-price controls program, and the Carter wage-price guidelines. Abroad, “incomes policies” arose that sought to check inflation through regulations and tripartite (labor, management, government) accords. These programs – either implicitly or explicitly – focused on union wage settlements.

With the decline of unionization worldwide, such formal and informal programs ended in the 1980s. But macroeconomic thinking – or at least rhetoric – continues to show a residue of this earlier period, as the first quote above indicates. It is still commonplace for policy makers at the Federal Reserve and elsewhere to speak of workers “demanding” higher wages as labor markets tighten, i.e., to describe the labor market as if a bargaining process characterized wage setting. (Mitchell and Erickson 2005) Given this ongoing residue, it is important to ask where and how the notion of wage-push inflation and wage-price spirals originated. The answer gives us insight into the more general question of the basis and origin of persistent underlying assumptions regarding the wage setting process.

The Early Background

Each country has its own history. In the U.S., the government intervened in wage-price decisions during World War I – a brief episode because U.S. participation in the War was relatively brief. (Conner 1983; Rockoff 1984, pp. 43-84; Rockoff 2004) But after World War I, unionization declined. So there was little time for notions of workers pushing up wages through collective bargaining to be embedded in economic thinking. Indeed, before the Great Depression, the idea that workers had bargaining power was not widespread.

The Wagner Act of 1935, as explicitly described in its preamble, was based on the assumption that in a largely nonunion labor market, bargaining power was on the side of employers, not employees.² New Deal policy was aimed at “reflation” – a pushing up of wages and prices by various means – an objective that developed from the deflation that accompanied the Depression’s earlier years. Reflation was promoted by such diverse measures as National Recovery Act codes, fiddling with the official price of gold, the Wagner Act, farm price supports, and the minimum wage. There was a sense that if only prices and wages could go back to where they were in 1929 before the Depression began, that restoration would bring about a return to the prosperity of that earlier period.

But the New Deal was not always consistent in its objectives. The distinction between nominal and real wages was not clear. If both wages and prices were pushed up, real wages might decline. And since some of the impetus behind reflation was that higher wages would stimulate consumption, the nominal vs. real distinction presumably mattered.

In any event, after the cartel-like code arrangements of the 1933 National Industrial Recovery Act were voided by the U.S. Supreme Court, the administration moved toward antitrust enforcement. One of the concepts that arose from those efforts was that prices were “administered,” rather than competitively set, by large oligopolistic firms. Reports written for the Temporary National Economic Committee reinforced this idea, e.g. Wilcox (1940) At the time, this concept was not linked to inflation – indeed price rigidity (up or down) was thought to be a byproduct of administered pricing. The business community at the time viewed the Committee and its commissioned reports with great suspicion – the products of muddleheaded economists and social reformers. (Scoville and Sargent 1942) But the idea of pricing partly de-linked from market constraints lent itself later to the notion that administered prices were potential causes of inflation – or at least played some part in the inflation process.

Administered pricing tended to be accepted as a byproduct of big business by liberal economists such as John Kenneth Galbraith (1958, 1967), who did not think bigness by itself was a Bad Thing. Rather, enlightened public policy should deal with the consequences of bigness. But administered pricing by big business was also accepted as an unpleasant fact by those conservatives, such as George Stigler, who thought it was a deviation from the competitive ideal. As such, bigness and administered pricing should be combated through antitrust law. (Stigler in Mansfield 1964, p. 12)

A subcommittee of the Senate, headed by Estes Kefauver, kept the concept in the public spotlight in the late 1950s and early 1960s. And Gardiner Means, originator of the “administered” phrase in the 1930s, continued to write on the subject well into the 1960s.³ Means focused especially on the steel industry in his testimony and called for public hearings on price increases and an excess profits tax. He regarded some, but not all, of the steel price increases after the Korean War as due to increased union wage rates. Administered pricing was in effect linked to administered wage bargains.

World War II controls

In the period leading up to America's entrance into World War II, unionization had expanded, thanks to a combination of worker reaction to the Depression and a friendly political and legal climate. And during the War, the federal government - out of a concern for uninterrupted wartime production - indirectly fostered further unionization through its pressure on employers to avoid strikes and recognize unions. Union settlements were subject to an extensive wage-price controls program which lasted much longer than its World War I predecessor. Prices were to be set on a cost markup basis (Rockoff 1984, pp. 85-176; U.S. National War Labor Board 1948; Manning 1960)

The controls of World War II would leave a mark on labor relations and on notions of how wages were set. Of course, the existence of controls represented a shift from a policy concern about deflation to one of holding back inflation. And once controls came off in the postwar period, unionization did not decline as it had after World War I. So impressions drawn from the controls experience with union wage setting remained in vogue as collective bargaining evolved. There is some evidence that firms in the immediate aftermath of the War sometimes provoked or prolonged strikes to win price increases from the authorities. (Rockoff 1981, esp. pp. 127-128) Such behavior would reinforce the idea of an aggressive union winning a settlement after which prices rose.

Because wage controls in World War II were both extensive and in place for a long duration, a substantial caseload for the controls authorities developed. Bureaucratic resources could be economized for case processing if a system of case grouping and precedent were established. This need produced just such a result. An initial decision would be made and then other cases would be decided in a like fashion. That approach fostered the idea of patterns in wage setting and may have encouraged later pattern-following behavior. Since one decision - such as the "Little Steel formula" - led to others, the idea of a key wage settlement which many others would follow - an important component of the later wage-push notion - became part of the folklore of postwar wage setting.

The Immediate Postwar Period

As might have been expected, as the wartime wage controls were removed – and the accompanying no-strike pledge by unions dissolved – a wave of strikes occurred. These major strikes had two effects. In the political arena, they provided impetus for passage of the Taft-Hartley Act of 1947. But they also focused public attention on the settlements that came after the strikes. Dramatic strikes or potential strikes inevitably attract newspaper attention. Confrontations – such as President Truman vs. railroad union officials – were certainly newsworthy. News coverage in turn led to widespread dissemination of the terms of wage settlements, encouraging emulation. It was in this environment that the argument that unions would push up wages to the point of creating inflation began to flourish. (Lindblom 1949, p. 145) Eventually, the Truman administration would be prodded by a renewed wartime situation to re-impose wage-price controls. (Goodwin and Herren 1975, pp. 9-93)

Korean War Controls

The Korean War triggered a rush of panic buying – people remembered the consumer shortages and rationing of World War II – which eventually led the federal government to reestablish wage-price controls somewhat along World War II lines. Again, economizing on bureaucratic decision making suggested having precedent setting cases and grouping cases where possible. Thus, Korean War controls, as had their predecessor controls in World War II, fostered the notion of patterns and key settlements. Public attention to wage settlements and labor disputes was encouraged again by dramatic confrontations, notably President Truman's attempt to seize the steel industry in the context of a labor dispute. (The seizure was thwarted by the Supreme Court.) The idea that steel in particular was a key industry – a notion already suggested by the Little Steel formula of World War II – became still more entrenched and as will be seen below had important echoes during the Kennedy administration. (Rockoff 1984, pp. 177-199)

Bretton Woods

Although it was not seen as labor-connected at the time, in the waning years of World War II, a conference at Bretton Woods, New Hampshire in 1944, established a postwar international monetary system that was to last into the early 1970s. The major elements in the system were a fixing of exchange rates against the dollar and a fixing of the dollar's gold value at \$35 per ounce, a gold price that had been arbitrarily set by Roosevelt in 1934. (Mitchell 2000) Since the dollar became the key world currency, dollar devaluation against other currencies was not supposed to be an option. Therefore, limiting nominal American wages and costs would be crucial to maintaining the official value of the dollar relative to other currencies.

In addition, the gold guarantee would mean that if in the future there developed doubts about the willingness of the U.S. to avoid dollar devaluation, there could be a run on gold. The gold problem was exacerbated by the permanent fixing of the nominal price of gold in a world in which – as it turned out – the prices of most other things were rising. Such a situation would both discourage the flow of new gold from mining into the market and encourage use of gold for non-monetary commercial purposes as gold became relatively cheap.

However, at the time of Bretton Woods, neither a dollar problem nor a gold problem seemed on the horizon. In the early postwar period, the exchange rates set under the Bretton Woods system led to an undervalued dollar and a dollar shortage. As early as the late 1940s, there was debate over whether wage-push by U.S. unions would sufficiently reduce American competitiveness to relieve the shortage. (Kindleberger 1950, pp. 67-68) Of course, if that view were accepted, eventually the shortage would become a surplus as wage-push continued.

Much of the world's monetary gold supply had flowed into the U.S. in the run-up to World War II due to capital flight from Europe. Thus, it would be many years before there would turn out to be a dollar problem – often called the “balance of payments problem” - and a gold problem. But that time would come by the late 1950s.⁴ By then, the notion of wage-push relieving the dollar shortage had indeed become a fear that it was contributing to a dollar surplus.

Nonetheless, in the mid-1960s, there was still a sense that with more cooperation among major countries, the pain of adjustment in the U.S. to a more competitive world could be managed

without ending the Bretton Woods system. (Duesenberry 1966) A Brookings study in the early 1960s suggested that the competitive problem would resolve itself by the late 1960s. (Salant et al 1963) White House conversations indicate that the Brookings idea that a five-year correction was likely was accepted as plausible.⁵ However, adjusting to such competition could mean, as Galbraith put it, “restraint on prices and wages – effective management of the cost-push.” (Galbraith 1964, p. 262) The President’s Council of Economic Advisors (CEA) believed that the competitive problem could be resolved if creeping inflation in the U.S. could be kept below the rate of similar inflation in Europe.⁶

There were probably many economists in the 1960s who would have preferred flexible exchange rates – perhaps in place of policies of direct wage-price intervention. But they did not advocate such rates due to a sense that a shift to flexibility was politically a nonstarter. (Grubel 1964, esp. p. 703) The above-mentioned Brookings study preferred not to go to flexible rates but – at the same time – suggested that the existing Bretton Woods system was not satisfactory.⁷ If flexible rates were nonetheless adopted, the study suggested maintaining a continued link between the U.S. dollar and some other currencies such as the British pound. Another currency bloc, the report suggested, could form within Western Europe (an early version of the later Euro).

Conversion to the two-bloc currency system, essentially involving a dollar depreciation, would raise other inflation concerns. If wage-price spirals could be started by an upward shock to prices, dollar depreciation could itself worsen the inflation problem internally. The Brookings study did not take note of that possibility since it basically favored continued fixed exchange rates. But the collapse of the Bretton Woods system in the early 1970s, along with the collapse of its briefly-lived successor, the Smithsonian agreement, did create upward pressure on prices through dollar devaluation.

In short, international financial developments played a significant role in inflation concerns throughout the period when ideas of wage-push and wage-price spirals were in vogue. When maintenance of fixed rates was official policy, wage-price intervention was believed needed to reinforce the system. Later, when dollar devaluation and then floating rates became official policy, direct wage-price controls were seen as a needed accompaniment.

The Cold War

While the Cold War was not part of the theory of wage-push, it played a role in making the concept important. The view of the Soviet Union after it collapsed was of an economy that functioned poorly. That was decidedly not the view throughout most of the Cold War period. In the 1950s, the Soviet Union beat the U.S. into space with its Sputnik satellite. There were fears that the U.S. was growing slowly while the Soviets were catching up and would one day surpass the U.S. in per capita output. While Soviet shortages and rationing of consumer goods were well known in the U.S., more rapid output growth and advances in science in the Soviet Union were seen as a military threat. Confrontations were taking place on and off in Korea, Vietnam, Cuba, and elsewhere. Keeping up with the Russians was a major driver of U.S. economic policy. Economic growth was a defense imperative.

In terms of macroeconomic policy, the notion that the economy had to be kept soft to prevent inflation was seen as a constraint on U.S. economic growth. Meanwhile, the Soviets – with a command-and-control system and highly-touted five-year plans for growth – were not constrained by inflation. The rapid growth that seemed to be occurring in the Soviet Union led less-developed countries to emulate Soviet planning. Thus, unless the U.S. could find ways to speed up its own growth rate, it might lose the hearts and minds of residents of the Third World. (Campbell 1960, pp. 187-198)

The Eisenhower administration did not want to intervene directly in the U.S. economy to resolve the inflation vs. growth problem. But as will be seen below, it felt forced to inch in that direction. And just as the Kennedy administration pursued putting a man on the moon first as a Cold War objective, so, too, did Kennedy and his advisors view finding a way to grow fast without inflation as a top priority.

Finally, the analogy between the hot war of World War II and the Cold War that followed suggested that private patriotism could be marshaled to foster the war effort. Unions and business had generally gone along with the elaborate wage-price controls of World War II in the national

interest. From that perspective, there was nothing inappropriate about requesting similar cooperation in the Cold War context.

The Eisenhower years

As the first Republican administration in two decades, the Eisenhower administration was anxious to reduce governmental involvement in economic affairs. Thus, Korean War wage-price controls were quickly dismantled. There was debate about what to do with the Council of Economic Advisors which had played an activist and advocacy role under Truman. Eventually, a low-key CEA was recruited consisting initially of Arthur F. Burns of Columbia (chair), Neil Jacoby (UCLA), and Walter W. Stewart (Princeton). None of these individuals had a particular focus on labor issues and Stewart was reported in ill health and not very active. Jacoby explicitly referred to a need to have a “passion for anonymity” to be a member of the CEA, a stance that would preclude active intervention by the CEA in direct wage and price setting. (Jacoby 1956, p. 58)

In any case, although there was a bit of a wage and price bubble immediately after Korean War controls were lifted, inflation was not a major issue when Eisenhower took office; the period leading up to Korean controls with its anticipatory buying had already bid up prices. The 1954 CEA report noted that while inflation had not been completely halted, there was no “fuel” added to inflation in 1953. (U.S. President 1954, p. 39) In fact, there was initially much more concern with a possible post-Korean War recession – even a depression – by the new administration. And, indeed, there was a recession in the early Eisenhower period which concerned the CEA much more than the potential for inflation in the recovery. (Engelbourg 1980) Only later did the creeping inflation concern come to the fore.

An early sign of this concern appeared in the 1956 CEA report which called for “due restraint” by “business and labor.” (U.S. President 1956 p. 23) Exactly what that restraint entailed or how it might be measured was not elaborated. Also in 1956, member Jacoby published a book on the U.S. economy which he characterized as more inflation-prone than recession-prone. (Jacoby 1956, p. 27) So the inflation issue, specifically, how it could be the prices were rising in the face of a soft economy, was becoming more salient.

The 1957 CEA report was still more explicit, pointing to rising unit labor costs as a possible source of inflationary pressure. Unit labor costs rise when wages rise faster than productivity, so the beginning of a productivity rule for wages can begin to be seen in that report. This concept became yet more explicit in the statement by the President in the 1958 edition:

“There are critical questions here for business and labor, as well as for Government. Business managements must recognize that price increases that are unwarranted by costs, or that attempt to recapture investment outlays too quickly, not only lower the buying power of the dollar, but also may be self-defeating by causing a restriction of markets, lower output, and a narrowing of the return on capital investment. The leadership of labor must recognize that wages increases that go beyond over-all productivity gains are inconsistent with stable prices, and that the resumption of economic growth can be slowed by wage increases that involve either higher prices or a further narrowing of the margin between prices and costs. Government, for its part, must use its powers to help keep our economy stable and to encourage sound economic growth with reasonably stable prices.” (U.S. President 1958, p. v)

The President repeated his exhortation in 1959:

“Businessmen must redouble their efforts. They must wage a ceaseless war against costs... Leaders of labor unions have a particularly critical role to play, in view of the great power ledged in their hands. Their economic actions must reflect awareness that the only road to greater material well-being for the Nation lies in the fullest realization of our productivity potential and that stability of prices is an essential condition of sustainable economic growth.”

“The terms of agreements reached between labor and management in wage and related matters will have a critical bearing on our success in attaining a high level of economic growth with stable prices. It is not the function of Government in our society to establish the terms of these contracts, but it must be recognized that the public has a vital interest in them. Increases in money wages and other compensation not justified by productivity performance of the economy are inevitably

inflationary... They endanger present jobs by limiting markets at home and impairing our capacity to compete in markets abroad.” (U.S. President 1959, pp. v-vi)

Although these statements amounted to relatively strong words from a reluctant President, their efficacy was immediately in question. John T. Dunlop quipped that “a command to halt wage and price increases spoken by the President has no more effect on the tides of inflation than the word of King Canute confronting the rising waters of the English Channel.” (Dunlop in Myers 1959, p. 148)

The 1960 report reflected on the emergence of a dollar/gold problem that had been then arisen from the Bretton Woods system. And in its final report of 1961, the outgoing Eisenhower CEA, perhaps seeing that its successor would likely become more activist than Ike’s advisors had wished to be, noted that “it is important for labor and management to conduct their negotiations and settle their differences in a responsible manner and thus avoid inviting new Government controls and new limitations on their initiative.” (U.S. President 1961, p. 59) On the mind of those who authored the report was the major steel strike of 1959-60 which had involved a reluctant Eisenhower administration. The Eisenhower economists hoped instill civic responsibility into the wage-price process but not to mandate anything or even suggest anything numerically specific. (Gordon 1975, pp. 95-134)

Despite the concern over wage setting and inflation, in reviewing recent American economic history and policy, a group of ten MIT economists generally looked toward the 1960s with optimism. The economics profession had itself been professionalized, according to Paul Samuelson (1960 p. 47) and there was optimism about what economic experts could accomplish in macroeconomics. But there remained an important issue that needed resolution, according to Ralph Freeman (1960):

“The pressure of organized labor for higher wages has not made the task (of monetary policy) any easier. It is not certain how much unemployment would be necessary in order to dissuade the unions from making wage demands in excess of gains in labor productivity. Recent union activity, however, seems to indicate that this required amount of unemployment is greater than would be tolerated by the public.” (p. 88)

What to do? Harvard economist Alvin Hansen (1960) proposed that “the public should be represented at every important collective-bargaining table.” (p. 37) Columbia economist John M. Clark (1960) – writing for the American Bankers Association (!) - was not willing to go that far. But he did propose some kind of “voluntary” private commission with labor, business, and public representation that would educate wage and price setters in the need for responsible behavior. (pp. 61-67) Edward Chamberlin of Harvard (1958) argued that unions had too much power and that therefore dealing with that power through monetary and fiscal restraint missed the point. The objective should be “to diminish in some measure the degree of economic power in the hands of unions, so that the pressure (on wages) may be reduced at its source.” (p. 29) He was vague, however, on how that reduction should be accomplished.

In the period after Eisenhower, those identified with monetarism, such as Milton Friedman, denied a connection between inflation and administered pricing and/or collective bargaining. In their view, emergence of non-competitive wage or price setting could push up prices on a one-time basis but could not produce persistent inflation unless monetary policy so permitted. The problem for the monetarist argument was that a monetarist perspective did not preclude the notion that the needed monetary restriction would be associated with a “too” high level of unemployment. That is, the natural rate of unemployment – later known as the Non-Accelerating Inflation Rate of Unemployment or NAIRU and really a concept that originated with Friedman – might be higher in the face of administered wages and prices than under a more competitive regime. As monetarist Phillip Cagan acknowledged, the “evidence does not mean that unions and large corporations play no role in the inflationary process. But their role is not that of *initiators* of inflation.” (Cagan 1979 p. 23, italics added)

The Kennedy Dilemma

The incoming Kennedy administration had a handy, already-formulated doctrine of wage-push inflation and a growing dollar/gold problem. It also had to deliver on an election pledge to rejuvenate a sluggish economy, in part to keep up with the Russians who were perceived as outpacing the American growth rate. Unlike the Eisenhower administration, the notion that

government should avoid intervention in micro-level economic decision making was not a major belief of the Keynesian economists on whom the Kennedy administration would draw for advice.

On the other hand, Kennedy was anxious to pick people as advisors and cabinet members who would indicate that he was friendly to business. (Heath 1969) Republican Douglas Dillon, Eisenhower's Undersecretary of State, was picked as Treasury Secretary, for example.⁸ Robert McNamara, Kennedy's Secretary of Defense, was also a Republican and a former auto executive. The need to appeal to business took off the table any drastic changes in the Bretton Woods fixed exchange rate system, such as raising the price of gold or devaluing the dollar. Business viewed any departure from "sound money" as radical. But it wasn't just business. Even the AFL-CIO in early 1961 declared that "faith in the \$35-an-ounce gold price is vital."⁹

Given its orientation, the Treasury tended to be at odds with the Keynesians in the Council of Economic Advisors. The former tended to argue that there was a balance of payments problem as indicated by gold outflows and that an adjustment process was needed. In particular, the idea that the increase in dollar liabilities abroad was just a response to expanding needs for liquidity to finance world trade and investment was not the root of the problem. (Roosa 1964, esp. pp. 14-15) Such a view was not particularly compatible with a prescription for domestic economic stimulus. But Walt W. Rostow, who advised the President on defense and international issues, suggested that since the balance of payments would be a major problem, the President needed to cut a deal with the union leaders of the Steelworkers and the Auto Workers.¹⁰

The Kennedy administration became much more embroiled in specific union negotiations than had Eisenhower's, partly due to inflation concerns and partly due to fears of economic disruption due to strikes. There were also early attempts at enforcing anti-racial discrimination orders via a presidential executive order and via voluntary agreements applying to federal contractors. In short, although Kennedy wanted to project a business-friendly image, his various interventions in micro-level enterprise decisions tended to raise business anxieties.

The Tax Cut and Other Measures

Keynesian thinking naturally focused Kennedy's new CEA on the problem of unemployment. At the time, there was much public concern about "automation" as a source of job loss. Computers were making their early appearance in business and heightened these concerns. Popular films such as *Desk Set* (made in 1957) depicted even white-collar workers being displaced by computers.

Some observers argued that the unemployment rate was high due to "structural" factors such as automation. From that perspective, demand-enhancing remedies – such as the tax cuts pushed by Kennedy's economic advisors – would simply be inflationary. The Federal Reserve held that view. However, Fed staff accepted the notion that strikes in key industries such as steel could upset economic expansion either through output disruption or upward pressures on wages and prices. As one staff report noted in early 1962:

*"There seems to be universal agreement that the most important single threat to continued orderly recovery is the situation surrounding the expiration of the steelworkers' contract at mid-year. Not only the possibility of a prolonged strike but inventory accumulation in anticipation of either a strike or a substantial upward price adjustment could have a damaging effect on the unusually good balance which has marked the recovery to date."*¹¹

Federal Open Market Committee (FOMC) alternate member, Wilbur D. Fulton, president of the Federal Reserve Bank of Cleveland, agreed with this assessment. There would be upward pressure on prices even in the face of foreign competition.¹²

Within the executive branch, the Department of Labor – which would be the home of whatever "manpower" (training) initiatives might be adopted - favored the Fed's structuralist viewpoint.¹³ The CEA, however, was anxious to prove this view wrong since it had a Keynesian commitment to lower unemployment. It took 4% as the rate of unemployment below which structural problems might be inflationary and disputed the notion that automation had worsened structural unemployment.¹⁴ But since unemployment was well over 4% when Kennedy took office, structural issues were not the CEA's focus.

The CEA certainly did not oppose retraining programs and such and publicly endorsed them, although it was convinced that appropriate fiscal policy was the correct path to reducing unemployment.¹⁵ Indeed, the CEA was convinced that “fiscal drag” under the existing tax rates was producing lackluster economic conditions.¹⁶ In that area, the CEA and Fed staffs were in agreement. A staff report to the FOMC indicated that “it is an increasingly widespread conviction among economists, businessmen, labor leaders – and some Congressmen – that the size and structure of the Federal tax take is the culprit (for slow growth).”¹⁷ However, CEA economists downplayed the potential adverse effect of a stimulated economy on the dollar/gold problem with the rationale that an expanding U.S. economy would attract a capital inflow.¹⁸

CEA economists viewed the soft economy at the time the Kennedy administration took office as likely to reduce the immediate potential for wage-push. That seemed to be the consensus at the time; whether or not you believed in wage-push, the early 1960s were likely to be inhospitable to it if it actually existed. (Rees and Hamilton 1963) However, the CEA wanted to stimulate the economy and eventually did succeed in pushing a tax cut, passed in the early days of the Johnson administration. Indeed, the tax cut is now viewed as a central accomplishment of the Kennedy administration, despite its timing under Johnson.¹⁹

Because of the CEA’s focus on a tax cut to stimulate the economy, from the start it looked for a device that would target wage-push and administered price setting when that threat materialized in the future.²⁰ Inflation was not just a worry by itself. As the gold-dollar problem began to look increasingly intractable, the idea of improving U.S. export and import-competing competitiveness became more and more a concern. One reason a tax cut was favored over monetary ease as a stimulus was a sense that monetary ease would encourage increased capital outflows and worsen the gold/dollar problem.²¹ Eventually, a host of ad hoc financial measures were taken to deal with balance of payments concerns.

In 1963, an interest equalization tax was enacted at the request of the President to discourage foreigners from borrowing in the U.S. (Maines 1965) But even if foreigners were discouraged from borrowing, the tax could not prevent American multinational firms – financial and otherwise –

from lending or investing abroad. So voluntary capital movement controls were created in 1965 that later became mandatory.²²

There was, of course, a parallel between voluntary wage-price guideposts and voluntary limits on capital outflows. Efforts were made to have military purchases at bases abroad made in the U.S., even if foreign supplies were cheaper. Foreign aid dollars were tied to purchases in the U.S. by the aid recipients. And eventually, in the latter days of the Johnson administration, a two-tier gold system was introduced which separated private and official markets for gold (and let the former have a price above \$35). Given this background of receptiveness toward ad hoc arrangements, it is not surprising that an ad hoc arrangement evolved for dealing with wage-push inflation and wage-price spirals.

The Wage-Price Guideposts

The Kennedy-Johnson guideposts combined the Eisenhower productivity rule (nominal wages should not rise faster than productivity) with a more explicit empirical rule based on the measured trend in national productivity growth. It also paralleled thinking among British economists who suggested some kind of wage policy – perhaps administered through an entity that would tabulate a non-inflationary wage adjustment standard based on national productivity trends. (Wilson 1961, esp. pp. 261-275) John Sheahan's 1967 history of the guideposts' evolution and decline tells the story in detail. (See also Barber [1975] and Cochrane [1975].) But the key point is that the guideposts represented the first attempt at active direct intervention of government into wage-price decisions in what – initially at least – was a peacetime economy.

Kennedy was apparently initially reluctant to accept the guideposts concept. Some staff members of the CEA were also not keen on the notion. But ultimately the President approved the initial version of the guideposts conditional on the support of Secretary of Labor Arthur Goldberg.²³ It appears that Goldberg was not keen on the guideposts – but he went along with the economists. His view was officially stated as opposing formal wage-price controls and that the looser guideposts approach was a way of avoiding controls.²⁴

Generally, labor relations types, such as William Simkin, director of Kennedy's Federal Mediation and Conciliation Service, had doubts about the "practicality" of the guideposts.²⁵ However, even before the first official guideposts statement, CEA Chair Walter Heller asked AFL-CIO president George Meany if regular meetings between CEA and AFL-CIO economists could be arranged.²⁶ The CEA was intent on cajoling organized labor to cooperate in an anti-inflation effort.

Initially, the productivity discussion was left vague in terms of an actual number, although a table in the first Kennedy CEA report indicated that the postwar trend was about 3% per annum. (U.S. President 1962, p. 186) The report noted that productivity trends displayed a cyclical element which should be ignored, i.e., that short-term productivity movements could be erratic. It also noted that the notion that real wages rise at the same rate as productivity was based on a constancy of labor's relative share of national income, although its discussion on that point was oblique.²⁷ Prices should be stable in industries where productivity growth matched the national rate. Having engendered a controversy in its initial guideposts statement, the next annual CEA report simply made reference to its earlier statement without further elaboration. (U.S. President 1963, pp. 85-86)

Rather than continue to make vague allusions to productivity trends, the Kennedy CEA produced a numerical estimate of the trend – a 5-year moving average - at 3.2% per annum in its 1964 report. And while enumerating various exceptions, that number effectively became the guidepost for that year's wage settlements. Prices were – as earlier - to be cost-based. They should be stable in industries whose productivity growth rates were equal to the national rate. (U.S. President 1964, pp. 112-120) By early 1964, concern at the Fed about the consequences of union settlements – already reached and to be negotiated – became more specific. An FOMC staff report referred to negotiations in trucking, glass, apparel, farm equipment, nonferrous metals, meatpacking, and autos. It noted that both labor and management were disparaging the guideposts.²⁸

A Labor-Management Advisory Committee functioned at various levels of intensity during the guideposts period starting at the outset of the Kennedy administration, where these evolving notions were discussed.²⁹ Even before the initial guideposts were announced, the CEA indicated publicly that one role for the Committee would be "to promote sound wage and price policies."³⁰

And in an early meeting with the Committee, the President noted that “our competitive position abroad is affected by the wage-price structure here at home, so this is most important in national survival.”³¹

Although one of the major clashes that developed was over steel prices – described below – even that episode was based on the notion that a steel price increase would undermine the administration’s perceived success on the wage front. Thus, the steel crisis, although about a price increase, seemed based indirectly on its impact on wage-push in the future. If steel prices rose, the thinking went, the Steelworkers union would push up wages in response. Other unions would soon follow.

The Steel Crisis

On the eve of the first public announcement of the wage-price guideposts, an independent group of collective bargaining experts – with George Schultz as staff director – came out against any formulas for wage settlements. Yes, there was a problem of inflation and, yes, inflation could hurt the balance of payments. But such issues might be dealt with by having the President call a low-key annual conference of labor and management leaders to discuss economic developments. Ultimately, inflation should be controlled by monetary and fiscal policy, however. (Independent Study Group 1961. pp. 112-122) The recommendations were vague enough that later members of the group could line up on both sides of the guideposts debate. Member Robert M. Solow, for example, generally supported the guideposts and member John T. Dunlop generally opposed them.

As noted, the steel industry had settled a lengthy strike – with intervention by the Eisenhower administration (including a Taft-Hartley 80-day injunction) - in 1959-1960. A new union agreement was reached in early 1962, shortly after the release of the 1962 CEA report which included the first statement of the wage-price guideposts. The agreement was relatively moderate, reflecting the soft economy of that era and concerns over job security and automation. In addition, administration officials, as well as the President, had been having conversations in the White House with Roger Blough, chair of U.S. Steel, on the balance of payments problem and other general economic concerns.³²

Secretary of Labor Arthur Goldberg, who had come out of the Steelworkers union, felt that earlier steel labor agreements in the 1950s had inadvertently led to excessive price increases. These increases, in turn, were undermining the industry's international price competitiveness.³³ The CEA was also concerned that price increases in U.S. manufactures, including steel, were harmful to exports.³⁴

It was initially thought that the moderate 1962 labor contract would obviate any pressure for a steel price increase. When a steel price increase was subsequently announced, Secretary of Labor Arthur Goldberg prepared to resign, feeling that he had persuaded major unions to be "responsible" on the understanding that business would reciprocate. (McConnell 1963, pp. 86-87) The result of the announced price increase was an angry response by the President as well as various background feelers to steel executives. What the public was aware of, however, was the strong statement by the President, which tied the increase to everything from the nascent Vietnam War to the economic impact.

"In this serious hour in our nation's history, when we are confronted with grave crises in Berlin and Southeast Asia, when we are devoting our energies to economic recovery and stability, when we are asking reservists to leave their homes for months on end, and service men to risk their lives – and four were killed in the last two days in Vietnam – and asking union members to hold down their wage requests, at a time when restraint and sacrifice are being asked of every citizen, the American people will find it hard, as I do, to accept a situation in which a tiny handful of steel executives whose pursuit of private power and profit exceeds their sense of public responsibility can show such utter contempt for the interest of 185 million Americans." (Reprinted in Mansfield 1964, p. 87)

In short order, some producers peeled away from the initial announcement by U.S. Steel and the price increase was rescinded. Many in the public were favorably impressed with the President's tough stance. Even poet Robert Frost declared, "Oh, didn't he do a good one!" (Hoopes 1963, p. 189) However, much controversy ensued in the aftermath. And a year later, when the steel industry – having learned not to announce a general price increase – instead raised prices on

selective items, the Kennedy administration essentially acquiesced. But White House conversations suggest a continued preoccupation with steel by the President and policymakers, despite this acquiescence. There was concern that Presidential prestige would be undermined if the President again demanded a rollback and the industry did not agree.³⁵

Viewed from the hindsight of the 21st century, the centrality attributed to steel may seem odd. But Roosevelt had his Little Steel formula, Truman had his run in with steel during the Korean War, and Eisenhower had to deal with a lengthy steel strike. Kennedy was not the last president to intervene in a steel wage or price decision. Johnson was actively involved in a labor dispute in the industry in 1965. (McManus 1967, pp. 1-7) As the 1965 steel negotiations approached, the Fed was nervous about the inflation impact which a staff member termed “the big question” for cost trends.³⁶ There was hope, however, that the problem could be limited to a price creep emanating from the metals sector, rather than a full blown inflation.³⁷

Steel appeared especially important because of its input-output connections with other industries, because its wage negotiations were regarded as a key settlement, and because of concern about world competition that was beginning to cut into the market for American steel (with the implications for gold flows and the balance of payments).³⁸ Early in his administration, Kennedy had asked Goldberg whether it would be possible to have management and labor in steel agree to a wage and price freeze. The President also asked Goldberg if the Steelworkers could be persuaded to forego a deferred wage increase under the contract reached in 1960, and was again told there could be no such agreement. Goldberg told him on both occasions that such deals were not possible and suspected the CEA and the Treasury had planted the ideas.³⁹

But – as noted - however central steel may have appeared in the 1960s, the President did not make a fuss when steel raised prices selectively the year following the confrontation. The CEA was not happy with the 1963 increases but felt that they could have been worse and that steel was showing some restraint. (Heath 1975, pp. 105-6) The business community was particularly upset by the Presidential intervention in steel. A later business taskforce under President Johnson – while endorsing in loose terms the idea that wages were costs that affected international competitiveness – did not endorse the guideposts.⁴⁰

End of the Guideposts

The 1965 statement of the guideposts left the 3.2% wage guideline unchanged. But it urged “the public” to question wage settlements or price increases that seemed to exceed the standards. (U.S. President 1965, pp. 108-110) In 1966, the 5-year moving average of productivity increase crawled up to 3.3% and the CEA expected that during 1966, it would rise still further. However, rather than boost the wage standard, the CEA took the position that the true long-term rate was still in the 3.0-3.3% range and that the upward move in the five-year standard was excessively influenced by the uptick in the business cycle. It suggested the earlier 3.2% guidepost should remain in place. (U.S. President 1966, pp. 88-93) As might be expected, this seeming change in the measuring stick was not gladly accepted by organized labor. At the FOMC, William F. Treiber – First Vice President of the New York Fed - noted that “labor leaders have indicated that they will push for wage increases without regard to the guidelines recommended by the Administration. There is more and more concern over the prospect of inflation.”⁴¹

Ironically, by 1966, there was enough demand pressure to create an ongoing labor shortage – suggesting that wages could be rigid (or slowly adjusting) upward. (Ross 1966; Mitchell 1989) Ultimately, however, demand pressures throughout the economy sank the guideposts during the later Johnson years. In particular, a wage settlement by the Machinists in the airline industry in 1966 both undermined presidential prestige – union members rejected an initial settlement reached with heavy White House involvement – and wounded the guideposts fatally. (Sheahan 1967, pp. 57-60)

Given the airline debacle, the 1967 CEA report blamed rising unit labor costs due to tight labor markets (wages rising faster than productivity and the guideposts) for the rise in inflation. But the report did not either raise the wage standard or suggest that there still was one. It instead generally urged moderation. (U.S. President 1967, pp. 77-86, 119-134) According to a staff report at the Fed, “the character of current collective bargaining activity bodes ill for future business costs and industrial prices.”⁴²

The 1968 CEA report basically repeated the 1967 concerns but indicated that direct controls would not be appropriate because these would entail “a vast administrative apparatus.” It also indicated an expansion of the early warning approach. (U.S. President 1968, pp. 119-128) In its final 1969 report, the outgoing Johnson CEA illustrated the dilemma with a price-inflation version of the Phillips curve. The Johnson’s last presidential message in that report called for restraint and avoidance of mandatory controls. (U.S. President 1969, pp. 10-12, 95)

Drawing Diverse Lessons

The inability of the wage-price guideposts to prevent inflation acceleration in the later Johnson years led some observers to question the use of any kind of government intervention in private wage and price decisions. Even before the Johnson years, there were signs that the relation between the AFL-CIO and the CEA was deteriorating.⁴³ The CEA played with the idea that wage and price setters should be asked (voluntarily) to explain their decisions publicly, although it did not ultimately go that route.⁴⁴ It did create an “early warning system” to “keep the President informed of industry situations that threaten to overstep the bounds of responsible price and wage making.”⁴⁵ That idea re-emerged under President Ford.

However, believers in the importance of wage-push and wage-price spirals at the time simply argued that there would need to be groping toward a better process of intervention. As John Kenneth Galbraith put it:

“(W)hile their may be difficulties, and interim failures or retreats are possible and indeed probable, a system of wage and price restraint is inevitable in the industrial system... (N)either inflation nor unemployment are acceptable alternatives.” (1967, p. 259)

Galbraith noted in a footnote that while in the 1950s he had believed that the needed unemployment rate to contain inflation could be made palatable through adequate unemployment compensation, he no longer so believed. (1967, p. 259) Others rationalized the guideposts effort as an attempt at “education, persuasion, (and) creation of a climate in the public mind to encourage exercise of long-run self interest.” (Heller 1966, p. 47) Robert Solow (1966, pp. 57-59) argued that while one

could not prove that wage-push played a role in the inflation process, it was enough to observe that inflation began before all slack was rung out of the economy to show that something along the lines of the guideposts was needed. Others, ranging from free marketeers - opposed to any interventions - to supporters of collective bargaining as a private, voluntary institution remained unhappy with the guideposts as a policy model. (Shultz and Aliber 1966)

Towards the end, the guideposts were denounced by the AFL-CIO as letting profits rise without control and by business (especially steel) as deviating from market principles.⁴⁶ Neil Jacoby, a former member of the early Eisenhower CEA, viewed the initial guideposts statement in 1962 as potentially of use as an educational device but the later interventions as improper. That opinion was about as much as more conservative economists would allow. (Meany, Blough, and Jacoby 1967)

However, the fact that the guideposts episode ended in an undermining of presidential authority without a long-term payoff led the incoming Nixon administration initially to eschew any type of direct intervention. The first Nixon CEA report indicated that guideposts and similar programs abroad had at best temporary effects and would not be utilized by the new administration. (U.S. President 1970, pp. 23-25) Ultimately, however, Nixon went further into direct wage-price intervention than either Kennedy or Johnson and much further than Eisenhower. And Neil Jacoby – despite his views that the guideposts had little utility - ended up as one of the members of the Pay Board, the wage controls agency under Nixon.

The Nixon Controls

Given the centrality of the Bretton Woods system in constraining the Kennedy-Johnson administrations, it is not surprising that the Nixon administration ended that system. As Solow and Tobin later put it, “it took a Republican President to devalue the dollar as it did, for similar reasons, to make friends with Red China.” (Solow and Tobin 1988, p. 13) It was more surprising, however, that Nixon imposed wage-price controls at the same time, given his administration’s earlier stance on such interventions. He could have just ended Bretton Woods.⁴⁷

President Nixon was given a virtual blank check to impose wage-price controls by a Democratic Congress in 1970 on the political calculation that he wouldn't do so. (Friedelbaum 1974, esp. pp. 38-39) The calculation was that inflation would be an important issue in the 1972 presidential election and the Democrats could charge that the president had the authority to do something about inflation but chose not to do so. When the President announced on television on August 15, 1971 that he was freezing wages and prices for 90 days (after which some new controls would emerge), that he was severing the remaining link between gold and the dollar, that exchange rates would float until some new international monetary system was negotiated, and that he was imposing a temporary tariff on all imports, the congressional bluff was called.⁴⁸ (Weber 1973)

Although Nixon certainly received advice that imposing controls was a Bad Thing, the fact was that many economists of that era had mixed opinions about the decision. First, there was the example of the foreign incomes policies, some of which might be interpreted as at least having temporary effects. Although in competitive markets, price controls tend to produce shortages, such shortages had not marked the experiments with European incomes policies. Apparently, product markets that were not purely competitive could be restrained to a degree. A case could be made that imperfect product markets, where some level of monopoly power existed (price above marginal cost), modest restraint would not trigger a shortage. (Mitchell 1969) Finally, it might be argued that if inflation had an inflation expectations component, and if controls lowered those expectations, a less painful adjustment to lower inflation could be achieved than through pure austerity.

After the 90-day freeze, the Nixon program went through various phases and finally petered out in 1975 under President Ford (although oil price controls lingered). By that time, the program had been battered by the mid-1970s oil price shock, further devaluation of the dollar when the Smithsonian Agreement on exchange rates (successor to Bretton Woods) fell apart, and demand pressures. (Weber and Mitchell 1978; Kraft and Roberts 1975; U.S. Office of Economic Stabilization 1975; Rockoff 1984, pp. 200-233)

The high point of the Nixon controls program was Phase II, which lasted from late 1971 until early 1973. Under Phase II, the program was remarkably similar to the Kennedy-Johnson guideposts. It was different in three significant ways, however.

First, as noted, it was a mandatory – not voluntary – program with legal sanctions for violations. Second, although the wage guideline was set in relation to productivity growth (assumed at the time to have about a 3% per annum trend), the target price inflation rate was not zero as under Kennedy, but something around 3%. The initial Phase II guideline for wages was 5.5%. But exceptions implemented for benefits (such as pensions and healthcare) by the Pay Board – the wage controls agency - effectively raised the total labor compensation standard to 6.2%. (Unit labor costs would rise at about 3.2% per annum if compensation rose by 6.2% and productivity rose by around 3%. If prices rose with unit labor costs, the price target was thus implicitly about 3.2%.)

Third, the Pay Board was tripartite, with union, business, and public representatives. CEA economists did not run the show. If AFL-CIO president George Meany found the Kennedy-Johnson guideposts distasteful, he was even more angry about the composition of the Pay Board. Nonetheless, the AFL-CIO was represented on the Board initially, although eventually there was a labor walkout and only the unaffiliated Teamsters remained.⁴⁹

Although the wage regulations were applicable to relatively small employers as well as large ones, the Pay Board's focus was on major collective bargaining settlements. So the notion, as under Kennedy-Johnson, was that key settlements influenced wages more generally and that rising wage costs – really rising unit labor costs – would be reflected in pricing. The price rules were basically cost markups.

Up to the Nixon controls, information about incomes policies had primarily flowed from Europe and elsewhere to the U.S. where it influenced American policymakers. (Edelman and Fleming 1965; Ulman and Flanagan 1971) However, the Phase II controls appeared sufficiently successful initially so that they were consciously emulated in other countries, notably Canada and Britain. And even when the Nixon program finally was terminated, the notion of remaining aloof from notable wage and price developments remained politically unacceptable. The Ford administration created a Council on Wage and Price Stability which issued periodic “inflation alerts.” At one point, the Ford administration promoted the wearing of WIN buttons (for Whip Inflation Now), a

much-derided effort at promoting civic responsibility (à la Eisenhower) among wage and price setters.

The Carter Guidelines

When the Carter administration took office, the constraint of maintaining a fixed exchange rate had been removed by the end of the Bretton Woods and the subsequent but short-lived Smithsonian system. However, fixed exchange rates tend to restrain measured price inflation to the extent that currency depreciation is ruled out. Absent fixed exchange rates, an uptick in domestic inflation is potentially reinforced by depreciation which raises prices set in world markets as calculated in local currency. The Cold War was still raging. And the economy was coming out of steep recession occasioned by the first oil shock.

The Carter administration, inadvertently perhaps, put in place the monetarist doctrine in the Federal Reserve in the person of Fed Chair Paul Volcker who, under Reagan, would ultimately disinflate the U.S. economy in the 1980s. But it also went back to the Kennedy-Johnson notion of intervention in wage-price decisions through moral suasion rather than mandates. In the Carter years, the resulting program was referred to as “guidelines” rather than “guideposts” and its locus of operation was in the Council of Wage and Price Stability rather than the CEA.

At one point, the administration sought to reinforce its wage guideline of 7% with “real wage insurance,” a proposal that would protect workers from inflation via tax credits but only in employee units that remained within the standard. (Mitchell 1980a) Various such tax-based proposals were circulating among academics at the time along with other schemes such as tradable wage increase permits. (Okun and Perry 1978) Basically, the economics profession was struggling to come up with something new as the effects of stagflation were increasingly felt.

Congress never went along with implementation of real wage insurance, but the proposal illustrated that the centrality of wage setting remained evident in the Carter program, as it had in previous administrations. Officials made it clear in public statements that they retained the idea of key union settlements that would set patterns for others. (Mitchell 1980b, p. 191) A Pay Advisory

Committee was set up to support the guideline program. Meanwhile, the one residue of the Nixon controls – remaining price controls on petroleum – contributed to shortages and long lines at gas stations, an episode which – along with general inflation, stagflation, and the Iranian hostage crisis – led to the denial of a second term for Carter by Ronald Reagan. With that election came the end of the Carter guidelines. (U.S. Joint Economic Committee 1982)

When the Reagan administration took office, the Council of Wage and Price Stability was immediately discontinued. And under Reagan and thereafter, no anti-inflation attempts at formal or informal intervention in wage and price setting were attempted.⁵⁰ Finally, of course, under Reagan, union membership not only eroded as a percent of the workforce but fell absolutely, accompanied by a wave of union concession bargaining (pay freezes and cuts). Thus, it became progressively implausible that union wage settlements were contributing to inflation and needed to be checked by direct intervention of government.

Developments in Academia

The development of the academic literature on wage-push inflation and wage-price spirals, as already noted, played a part in the implementation of the various public policies we have described. It is not clear, however, that a full theory of these processes ever developed during the period when wage-push and wage-price spirals were most accepted and influential in guiding policymakers. As a concept, wage-push clearly was triggered by the rise of unions as a major economic entity in the 1930s and afterwards. The idea may have been reinforced by the observation that labor's share of national income rose in the post-World War II period relative to its percentage in the pre-Depression era. (Kravis 1959) Unions appeared to be effective in raising wages and even labor's share of the national economic pie. A substantial literature developed involving estimating the impact of unions on the union-nonunion wage differential.

In addition, the idea of wage-push was reinforced by the literature – mentioned earlier – that described incomes policies abroad. Those countries with incomes policy inevitably had strong union movements and generally involved some type of tripartite accord. Wage-push as an idea abroad faded from prominence as unions outside the U.S. declined in the 1980s and beyond. The

comparative literature – which had once reinforced U.S. ideas of wage-push – thus moved away from reviews of incomes policy, albeit with a lag, as unionism eroded in Europe and Australia.

Another strand in wage-push thinking and academic research came from macroeconomics and the rise of econometrics. This strand was partly the product of the macro concern about creeping inflation and the difficulty of achieving full employment. But it was also made possible by the increase in access to computers which made empirical work and regression analysis easier to conduct.

A need for a model of dynamic wage setting and inflation more generally came from the gap in Keynesian theory on the subject. Especially as imported into the U.S., Keynesian theory had a knife-edge property. If there was a gap between actual output and full-employment output (the latter greater than the former), there was no (demand) inflation. Nominal wages were generally assumed rigid downward so surplus labor did not necessarily trigger wage declines.⁵¹ If output pushed above the full employment level, then wages and prices would climb.

The observation that in fact inflation might develop even where output was below the full employment level created a need for a theory of how that might occur as well as an empirical need for wage and price equations that would predict the process. In addition, efforts began to estimate the full employment level of national output so that a judgment could be made about the level at which classical demand inflation should be expected. For example, the first CEA report of the Kennedy administration estimated a shortfall of \$40 billion (about 7%) in actual GNP relative to the potential (full employment) level. (U.S. President 1962, pp. 49-53)

Administered Prices and Wages

A simple theory of wage-push depicts monopoly unions as unconstrained by antitrust laws and public condemnation. To make wages rather than prices the active agent, oligopolistic prices can be taken sticky and sluggish, i.e., reacting to costs with a lag. So wages are pushed up and then followed by cost-plus pricing. Patterns in union contracts within industries lessen the likelihood that management will resist union demands since the competitive disadvantage of conceding big

wage increases is lessened by emulation. (Mason 1957, pp. 176, 195) Wages are taken out of competition between competing firms.

As a byproduct of union growth, there had been much expansion in the industrial relations literature and many institutionally-oriented labor experts undoubtedly perceived the labor market in this fashion. Ross' well-known treatise on union wage behavior (1948), emphasizing union decision making as a political process somewhat unhinged from economic factors, lent itself to such interpretations when applied at the macro level. "Coercive comparisons" could lead one union's wage increase to be emulated by others, a story of key settlements and patterns.

Of course, even a wage-push story did not necessarily mean that all inflation was of that type. There could still be inflation from excess demand. So textbooks of that era tended to dichotomize inflation as either the old type (demand) or the new type, with the different types occurring in different periods. The authors of these textbooks could be more cautious in their professional writings than in the books themselves. (Reynolds, 1959, pp. 433-437; Reynolds 1960) But the less-qualified textbook descriptions may have been more influential on policy than the qualified analyses.

However, from an economics viewpoint the difficulty with a theory of inflation based on wages and prices set in circumstances other than perfect competition is that even pure monopolies have profit-maximizing prices. It has always been difficult to model unions as maximizers because it is unclear exactly what they should be maximizing. Maximizing wage rates, employment, or the wage bill (wage x employment) on reflection makes no special sense. But in neither the product market nor the labor market does less than perfect competition imply a continuous rise in prices or wages. Rather, there should be an optimum price or wage. What that price or wage may be is determined by demand conditions and – at the macro level – monetary and fiscal policy.

The key point is that simple theory does not translate noncompetitive wages or prices into *continuously rising* wages and prices. There may be episodes in which the wage or price setters grope (upwards) for the optimum level and those episodes would look like wage-push inflation or a wage-price spiral. But such episodes would be temporary, not continuous. (Adelman 1961) Thus,

those who propounded continuous models tended to rely on some kind of accommodating monetary policy once what might have been a temporary inflation occurred. Or they assumed downward nominal wage or price rigidity – presumably based on money illusion. On the assumption that some sectors of the economy will have positive demand pressure, while prices can't fall in others, the average of all prices will tend to rise. (Bronfenbrenner and Holzman 1963)

There were studies suggesting that immediately after the Korean War, shifts in demand had caused inflation in some sectors while rigidity in wages and prices elsewhere had put a floor on other prices. (Schultze 1959; Bowen and Masters 1964) It was easier to rationalize downward nominal wage rigidity than price rigidity, but either one could produce a “ratchet effect” that would lead to upward creep in prices.⁵² (Cartter and Marshall 1967, p. 377) A variation of the sectoral story was that industries with high productivity gains were non-competitive and preferred for various reasons to pass the gains into wages rather than lower prices. Low productivity-gain industries would then emulate the wage increases out of fear of worker discontent. (Kuhn 1959) On the other hand, there were those who argued that ultimately any form of wage-push or wage-price spiral or cost-push inflation had ultimately to be sustained by some form of accommodating demand policy. (Gallaway 1958)

Another strand in the literature focused on a kind of contest between wage setters (so active wage setting was assumed) and price setters (assumed to be oligopolists with pricing discretion), essentially over the portion of the “pie” each interest would receive. (Eckstein 1964) This approach had the potential for instability and wage-price spirals and could be incorporated into later thinking about the inflation process. We will return to this concept below.

Empirical Work

While computers were creating national fears of job displacement through automation, they were also enabling econometric work to flower. Job opportunities for econometricians, at least, were enhanced. In particular, at the macro level, estimating Phillips curves in wage and price variants became *à la mode*. Until computers came along, running a simple regression – let alone a multiple regression – was a time-consuming task involving a mechanical desk calculator. The original

Phillips curve – a relation between wage inflation and unemployment – was applied to Britain. But Americans were soon at work estimating their own curves, although some of the earliest work was more a matter of scatter diagrams and hand-drawn guesstimates of where the U.S. Phillips curve was located. (Samuelson and Solow 1960) Whole dissertations were based on the concept. (Perry 1966)

The Phillips curve contained only one independent variable – unemployment – and thus the concept was criticized on the grounds that there might be other variables that could affect wage inflation. (Bowen 1960, p. 224) However, with the new computers, plausible variables could be added easily. Thus, for example, if you thought that productivity or profits had an effect on wage change, you could simply add them and do so with vary lag structures. (Kuh 1967) Wage change and price change equations could be developed so that the wage-price process could be modeled. (Bodkin 1966) Prices could be assumed determined by unit labor costs (so both wages and productivity played a part) and other costs, along with a measure of demand pressure. (Eckstein and Fromm 1968)

As time went on, however, those researchers engaging in econometric work began to discover that seemingly innocent and reasonable changes in specification could produce markedly different results – enough to make their estimates’ policy relevance uncertain. (Rees and Hamilton 1967) And there were other problems of data availability. Much of the early work was confined to average hourly earnings in manufacturing (excluding benefits) simply because that series was most readily obtained from the Bureau of Labor Statistics. Even at the time, manufacturing accounted for a distinct minority of the workforce.

Manufacturing, however, was a center of high-profile collective bargaining contracts in such industries as autos and steel. Wage-push stories depended on key settlements – presumably the high profile ones – that would then spill over into other industries and sectors. The idea of such key settlements was certainly part of the industrial relations folklore of the period. Some empirical support was given for the idea in an empirical study of wage setting by Eckstein and Wilson (1962). They examined wage “rounds” in manufacturing over 1948-1960 and found that the key settlements were based on unemployment and profits and that other sectors then followed the keys.

However, later work suggested that the seeming uniformity of wage settlements within the key sector was a result of similar profit movements within the industries that made up that sector. (Ripley 1966)

While such work no longer is a mainstay of professional economic journals, at the time it was viewed as important and pathbreaking. And despite the theoretical objections to the Phillips curve that later emerged, modified Phillips curves are still routinely found in economic forecasting models, although the later critiques may be factored into the specifications. In the 1960s, however, the relatively new field of wage and price equation estimation was applied to the guideposts controversy. Specifically, George Perry (1967) found that wages had risen more slowly than forecast during the guideposts period and that the effect was particularly concentrated in industries that were most visible (and vulnerable to government pressure).

Not surprisingly, Perry's results brought forward alternative explanations of why wage settlements might have been retarded during the guideposts period. (Anderson 1969; Throop 1968; Wachter 1969) By then, however, more time had passed and Perry's updated results showed that the retarding effect disappeared at around the time the guideposts effectively evaporated. (Perry 1969) At least some of those economists who had been involved in the formulation of the guideposts were convinced of the guideposts' (temporary) effectiveness by this coincidence in timing.⁵³

The Natural Rate Critique

The Phillips curve concept never had a solid theoretical base. It provided an empirical wage equation and – assuming wage costs were passed into prices – an inflation equation for forecasting models. In 1968, Milton Friedman's critique of the concept introduced the notion of the natural rate of unemployment. In essence, the argument was that price inflation might temporarily lower the real wage (assuming a nominal wage lag), thus inducing increased employment and a lowering of the unemployment rate. So in the short run it would look as if higher inflation would lower unemployment.

But the seeming tradeoff between inflation and unemployment would end when wages caught up and the real wage was restored. The usual way in which this outcome was phrased was in terms of a bargaining model, a reflection of the union focus of the time. The hoodwinked workers would eventually “demand” catch-up wage increases in the standard telling, once they realized prices had risen. (Note the language suggesting worker bargaining.) In any event, the economy would be left with the original unemployment rate along with the increased inflation rate. Thus, in the long run, there would be no tradeoff.

It is now commonly stated that the experience of stagflation in the 1970s proved that the Friedman critique was correct. High unemployment and inflation could occur simultaneously. However, the Friedman critique assumed that internal demand sparked the inflation and temporarily fooled workers. It did not assume such exogenous impacts as OPEC oil shocks and dollar devaluation which characterized the 1970s and would shove up prices in just about any realistic model. The fact that stagflation persisted after the shocks seemed instead to suggest the old wage-price spiral idea. Prices rose exogenously, wages were pushed with a lag as a result, and then a spiral occurred which required high unemployment to bring it under control.

There is less incompatibility between a wage-price spiral model and the Friedman critique than is often supposed. Friedman’s “natural rate” was later renamed the Non-Accelerating Inflation Rate of Unemployment or NAIRU. Phillips curve-type empirical equations could be modified to have a long-run NAIRU. But the idea of shifting the Phillips curve to the left using guidelines or controls simply morphed into the idea of lowering the NAIRU by direct intervention. Thus, both the Nixon controls and the Carter guidelines followed general acceptance of the NAIRU concept.

In essence, if the labor market tries to set the real wage W/P and the product market tries to set a real markup over costs, in the aggregate P/W , one target ratio must be the inverse of the other target ratio for stability. (Target W/P must be the inverse of target P/W .) A strong economy (with a low unemployment rate) tends to raise both target ratios. A weak economy (with a high unemployment rate) tends to reduce both target ratios.⁵⁴ There will thus be a unique unemployment rate – the NAIRU - that brings about compatibility in the sense that both markets achieve their targets. (Mitchell and Zaidi 1992)

But this simple model leaves aside the dynamic determinants of wages set in the labor market and prices set in the product market. It could be aggressive wage push in the former and administered pricing in the latter. It could be competition in both. Or it could be something else. In short, the now widely-used NAIRU concept is compatible with any wage-price process. What has changed is the nature of the labor market; it is no longer plausible that unions – which represent less than a tenth of total private employment – are generators of inflation.

Conclusion

What ultimately killed the formal use of the wage-push or wage-price spiral approach was not the NAIRU theory - or any other theory - but instead was union erosion. The wage-push approach had been tied to unions and collective bargaining, where large groups of workers (through their representatives) could be credibly understood to “demand” such things as higher wages through significant bargaining power. With the rapid pace of union membership decline in the early 1980s, followed by erosion relative to the overall workforce thereafter, it became progressively difficult to tie inflation to unions, and thus to worker demands. It was additionally argued by the 1990s that increased globalization reduced the pricing discretion of even large domestic firms. So administered pricing as a source of inflation also lost its appeal.

However, a residue of wage-push remained in the rhetoric of macroeconomics and may still influence macro policymakers at the Federal Reserve and elsewhere. There still is a tendency, as our lead quote illustrates, to speak of workers “demanding” pay increases or refusing to “accept” drops in real pay – language of a collective bargaining system that now covers a small fraction of private-sector workers in the U.S. By documenting the original logic behind such beliefs, while noting that they are pure artifacts of bygone institutions, we can better understand why the residue persists.

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Endnotes

¹ We thank the staff of the Kennedy Presidential Library in making documents and recordings available including the declassification of several boxes of material.

² The preamble includes the statement: “The inequality of bargaining power between employees who do not possess full freedom of association or actual liberty of contract and employers who are organized in the corporate or other forms of ownership association substantially burdens and affects the flow of commerce, and tends to aggravate recurrent business depressions, by depressing wage rates and the purchasing power of wage earners in industry and by preventing the stabilization of competitive wage rates and working conditions within and between industries.” (29 U.S.C. §§ 151-169, Section 1.[§151.]

³ Means’ congressional testimony is summarized in Means (1959). See also Means (1962) which contains some material from the 1930s as well as the author’s later thinking.

⁴ There was a considerable debate as to how to measure the balance of payments problem. Arguments were made that the favored definition of the Department of Commerce, known as the Lederer balance, was not a good indicator. It essentially put short-term liabilities of the U.S. “below the line” so that an inflow and equal outflow of short term capital (or lending long and borrowing short) would show up as a deficit. For purposes of this analysis, we can simply view the international financial problem of the U.S. as an excess supply of dollars at the official exchange rate that had to be bought up by official institutions (central banks and treasuries). The various balances proposed during the fixed exchange rate period attempted to measure the risk that such an excess supply would occur as well as whether it was currently occurring. See Cooper (1966), Kenen (1964), Kindleberger (1969), and Gordon (1963).

⁵ White House tape 76, reels 1 and 2, contain references to a 5-year correction of the balance of payments.

⁶ Address of Walter Heller to the White House Conference on National Economic Issues, May 21, 1962. (CEA Box 1, Kennedy Presidential Library.)

⁷ The problem was that the dollar was the reserve currency in the system, and thus expansion of trade and investment required that more dollar reserves be held abroad. But the ratio of dollars to gold would then rise, causing speculation that the \$35/ounce price would have to be raised. In turn, that expectation would lead to a run on the dollar and into gold. Gold could not be the reserve because its supply depended on such factors as new mining. Various plans in the 1960s, notably the “Triffin Plan,” called for the creation of some kind of international reserve currency by the International Monetary Fund. The Brookings study did not specifically endorse the Triffin Plan, but did suggest some kind of expanded role for the IMF. A limited move in that direction was made in the late 1960s at the IMF with the creation of Special Drawing Rights. However, the Bretton Woods system came to an end before that regime could have much impact.

⁸ Dillon thought he would be the chief financial advisor when Kennedy asked him to serve. He was asked by Kennedy about the appointment of Walter Heller as chair of the CEA but did not know who Heller was. The fact that the CEA under Eisenhower had limited influence may have led Dillon to suppose that the same would be true under Kennedy. See oral history interview of Douglas Dillon by Dixon Donnelly, July 30, 1964, available from Kennedy Presidential Library.

⁹ Statement of the AFL-CIO Economic Policy Committee of February 1, 1961, contained in Seymour Harris Box 1, Kennedy Presidential Library.

¹⁰ Oral history interview of Walt W. Rostow by Richard Neustadt, April 11, 1964.

¹¹ The National Archives contains transcripts of Federal Open Market Committee (FOMC) meetings. The statement was made by staff economist Guy E. Noyes at the FOMC meeting of January 9, 1962, p. 5.

¹² FOMC meeting transcript of January 9, 1962, p. 47.

¹³ James Tobin reported that the Labor Department had a structuralist perspective. See Oral History with Walter Heller, Kermit Gordon, James Tobin, Gardner Ackley, and Paul Samuelson by Joseph Pechman, August 1, 1964. Secretary of Labor Arthur Goldberg was reported by his undersecretary to be very concerned about automation and job displacement. See oral history interview with Millard Cass by William W. Moss, July 14, 1970.

¹⁴ Memo from Robert Solow to the CEA, March 14, 1961. (Kermit Gordon Box 30, Kennedy Presidential Library.)

¹⁵ See, for example, the CEA’s statement to the U.S. House Subcommittee on Unemployment and the Impact of Automation, April 27, 1961. (Kermit Gordon Box 28, Kennedy Presidential Library.)

¹⁶ The argument was delicate. As time went on, statements that economic performance under Kennedy was lackluster were politically difficult and gave ground to Republican critics. The CEA argued that performance was more lackluster under Eisenhower than under Kennedy. See memo of Hyman H. Bookbinder, August 30, 1962. (Kermit Gordon box 34, Kennedy Presidential Library.)

¹⁷ Report of staff economist Daniel H. Brill to the FOMC, January 8, 1963, p. 8.

¹⁸ Address by Walter W. Heller at Hamline University, November 1, 1963. (CEA Box 1, Kennedy Presidential Library.) Note that an expanding U.S. economy would stimulate imports so the overall impact on the dollar/gold situation might have easily been seen as negative.

¹⁹ The Civil Rights Act – also ultimately passed under Johnson – became another major priority for Kennedy. Because he was pushing both bills strongly in 1963, the potential for horse trading occurred with southerners in Congress threatening to withhold support for the tax bill. See Tax Cut Proposal transcripts of White House conversations, vol. III, available from the Kennedy Presidential library, conversations of September 30, 1963.

²⁰ Kennedy was sensitive to Republican charges during the election campaign that he would be fiscally irresponsible. The CEA viewed itself as in the middle between fiscal conservatives in the administration at the Treasury and old New Dealers who thought any spending was good. See Oral History with Walter Heller, Kermit Gordon, James Tobin, Gardner Ackley, and Paul Samuelson by Joseph Pechman, August 1, 1964.

²¹ The financial community supported the idea of a tax cut rather than monetary ease. See the address of Charles E. Walker, executive VP of the American Bankers Association of October 9, 1962. (Kermit Gordon box 24, Kennedy Presidential Library.)

²² There was at the time a sense within the economics profession that free trade was more important than free mobility of financial capital. See Snider (1964).

²³ See the oral interview of Kermit Gordon and Walter W. Heller by Joseph A. Pechman, July 20, 1965.

²⁴ Address by Goldberg to the White House Conference on National Economic Issues, May 21, 1962. (Kermit Gordon Box 41, Kennedy Presidential Library.)

²⁵ Oral interview of William Simkin by John F. Stewart, February 21, 1967. Simkin let it be known that in its role as a settler of labor disputes, his agency would not be an enforcer of the guideposts. Oral interview of William Simkin by William W. Moss, October 29, 1969.

²⁶ Letter of Heller to Meany, October 6, 1961. (Kermit Gordon Box 24, Kennedy Presidential Library.)

²⁷ The added complication that arises when the deflator for wages – typically the Consumer Price Index (CPI) - is not the same as the deflator for output was not discussed at all.

²⁸ FOMC meeting transcript of March 3, 1964, report of staff economist Alfred R. Koch, p. 50. At a later meeting, William F. Treiber, First Vice President of the Federal Reserve Bank of New York, also fretted that given the AFL-CIO's opposition to the guideposts, a "wage-price push" was threatening. See transcript of meeting of May 26, 1964, p. 20.

²⁹ Even before the guideposts were officially announced, the CEA viewed the Advisory Committee as a method "to promote sound wage and price policies." (Statement of the CEA to the U.S. Joint Economic Committee, March 6, 1961, Kermit Gordon box 35, Kennedy Presidential Library.)

³⁰ Statement of the CEA to the U.S. Joint Economic Committee, March 6, 1961. (CEA Box 1, Kennedy Presidential Library.)

³¹ Remarks of the President to Labor-Management Advisory Committee, March 21, 1961. (AFL-CIO Microfilm Reel 3, Kennedy Presidential Library.)

³² The conversations on August 9, 1962 involving Blough appear in Volume I of the Tax Cut Proposal transcripts of White House conversations.

³³ Oral interview of Kermit Gordon and Walter W. Heller by Joseph A. Pechman, July 20, 1965, available from the Kennedy Presidential Library.

³⁴ Richard N. Cooper fitted a simple line to data on the share of U.S. exports in world exports and U.S. export prices to foreign export prices. The line suggested that higher relative U.S. prices cut the percentage share. Memo of Cooper to CEA member Kermit Gordon of September 11, 1962. (Gordon box 24, Kennedy Presidential Library.)

³⁵ White House tapes 80, reel 1-3, and 81, reels 1 and 2.

³⁶ Report of staff economist Alfred R. Koch to the FOMC meeting of April 13, 1965, p. 16.

³⁷ Report of staff economist Daniel H. Brill to the FOMC meeting of June 15, 1965, pp. 24-25. Brill noted that a "disturbing" union settlement in aluminum might set a pattern for steel.

³⁸ In the various input-output tables produced by the Department of Commerce between 1947 and 1967, primary metals and fabricated metal products accounted for between 17 and 20 cents of every dollar of output of machinery except electrical, between 11 and 18 cents of each dollar of electrical equipment, 15 and 18 cents of every dollar of transportation equipment and ordnance, and between 15 and 16 cents of each dollar of construction (direct requirements). See U.S. Bureau of the Census (1975), Part 1, pp. 272-283. Iron and steel accounted for under 2% of total private payroll employment in 1960 and all of primary metals a bit over 2%. So the direct impact of steel in broad price indexes had to be small. The notion that wage increases in steel would spill over into other industries, however, would enlarge the expected impact of such increases.

³⁹ Oral history interview of Arthur J. Goldberg by Daniel P. Moynihan, August 19, 1964.

⁴⁰ Report to the President of the United States from the Task Force on Programs to Improve the World-Wide Competitiveness of American Business, November 14, 1964. (Jack N. Behrman Box 1, Kennedy Presidential Library.)

⁴¹ FOMC transcript for meeting of March 22, 1966, p. 33.

⁴² FOMC transcript for meeting of July 18, 1967, statement of staff economist Alfred R. Koch, p. 45.

⁴³ A memo from N.J. Simler of May 28, 1963 to the CEA noted complaints by the AFL-CIO's chief economist that unions felt neglected when CEA members spoke mainly to business groups. Attendance of union officials at the Labor-Management Advisory Committee meetings was apparently tailing off. An earlier memo from Simler to the Council of November 8, 1962 noted explicit friction over the guideposts and over a desire by union officials to concentrate the proposed tax cut on lower-income persons. (Kermit Gordon box 37, Kennedy Presidential Library.) The CEA took the position that while in Europe incomes policies were really wages policies, in the U.S. the program was truly balanced. (Address by John P. Lewis to Business Research Advisory Council's Seminar on Wage Statistics in the American Economy, May 22, 1963, CEA Box 1, Kennedy Presidential Library.) But by 1964, the AFL-CIO's Executive Council stated that the guideposts were unfair because they lacked controls of prices and profits. The CEA, in response, pointed to the price side of its guideposts. (The AFL-CIO statement of May 19, 1964 and the CEA's response of the next day can be found in Kermit Gordon Box 41, Kennedy Presidential Library.)

⁴⁴ Memo from Gardner Ackley to Walter W. Heller, December 11, 1963. (Kermit Gordon box 41, Kennedy Presidential Library.)

⁴⁵ Replies of the CEA to Questions Submitted by the Honorable Thomas B. Curtis," hearings of the U.S. Joint Economic Committee, January 23, 1964. (CEA Box 1, Kennedy Presidential Library.)

⁴⁶ George Meany, president of the AFL-CIO, seemed to blame the CEA for the guideposts and considered his relation with Kennedy to be good. As a senator, Kennedy, from Meany's viewpoint, had been a friend to organized labor during the passage of the Landrum-Griffin Act of 1959, a law aimed at corruption and undemocratic practices within unions. (See oral history interviews of George Meany by Arthur J. Goldberg, July 16, 1964 and August 18, 1964.) Both Meany and Goldberg managed to avoid the topic of the guideposts. Meany's positive perspective on Kennedy after the assassination may have been a case of *de mortuis nil nisi bonum*. Goldberg himself reported that Meany viewed Kennedy as a naïve liberal who relied too much on intellectuals for advice. See Oral history interview of Arthur J. Goldberg by Daniel P. Moynihan, June 25, 1964.

⁴⁷ The decision to embark on wage-price controls may have been influenced by the uncertainty over what exchange rate regime would follow Bretton Woods. Ultimately, the Smithsonian system re-established fixed exchange rates, albeit with a devalued dollar. But that system lasted only a little more than a year before also being unilaterally terminated by Nixon.

⁴⁸ It might be noted that Herbert Stein, then a member of the Council of Economic Advisors and later CEA chair, had favored at least considering dollar devaluation as early as 1960. (Stein 1960)

⁴⁹ The Board was reduced after the walkout from 15 to 7 members: 5 public members and a business representative to balance the Teamsters. Meany's initial distaste for the Board can be found in his statement of November 18, 1971, "The Nixon Pay Board: A Stacked Deck." (Kermit Gordon box 62, Kennedy Presidential Library.)

⁵⁰ Reagan did have a high-profile confrontation with the air traffic controllers union in 1981. That confrontation was not related to inflation but rather was designed to keep airlines flying in the face of a strike. Subsequent observers argued that this confrontation led to a decline in union power nationally, and thus played some role in the disinflation of the economy. Whatever the merits of that view, it was a post-event interpretation.

⁵¹ Obviously, it was well known that during decline into the Great Depression nominal wages had fallen. Data on the distribution of wage changes (up or down) were limited to the union sector in the post-World War II period. But such data, cited by the new CEA in its first report, showed that wage cuts in that sector were negligible despite the episodes of a soft economy in the postwar period. (U.S. President 1962, p. 178)

⁵² A popular theory of rigidity on the price side was the idea of a kinked demand curve created by oligopoly. The kinked demand curve developed in the 1930s along with other aspects of the administered price concept. (Sweezy 1939) One criticism of the kinked demand curve idea was that it could be overridden if an industry simply developed a process of price leadership (or engaged in other tacit or not-so-tacit) collusion. See Stigler (1947).

⁵³ Walter Heller declared that "no amount of econometrics can convince me that the guideposts didn't have any significant effect in slowing down the resumption of cost-push." See the oral interview of Kermit Gordon and Walter W. Heller by Larry J. Hackman and Joseph A. Pechman, September 14, 1972. Heller was chair of the CEA when the guideposts were formulated. It is notable that Secretary of the Treasury Dillon, who tended to view the CEA as composed of overly-theoretical academics, believed that the guideposts had restrained both wages and prices. See oral history interview with Douglas Dillon by Seymour Harris, August 18, 1964.

⁵⁴ About 4 million union workers in the early 1960s were estimated to be covered by escalator clauses linked to the CPI. (U.S. Joint Economic Committee 1961, p. 26) Thus, for that segment of the union sector, the real wage was at least partly protected. (Escalators often did not provide 100% inflation protection, depending on the precise formula used.)