A RECONSIDERATION OF THE TWENTIETH CENTURY[1]

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[1] This article is a revised version of the lecture Robert A. Mundell delivered in Stockholm, Sweden, December 10, 1999, when he received the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel. The author is the C. Lowell Harriss Professor of Economics at Columbia University, New York, NY 10027.

By comparison with past centuries, the twentieth has produced extremes. Its earliest part was a benign continuation of the pax of the 19th century. But this calm before the storm was followed by World War I, communism, hyperinflation, fascism, depression, genocide, World War II, the atom bomb, and the Soviet occupation of Eastern Europe. There followed a period of comparative stability, punctuated by the balance of terror of the Cold War, the Nato Alliance, and decolonialism. Toward the end of the century the Cold War ended, the Soviet Empire was dismantled, democracy emerged in Eastern Europe, the *Pax Americana* flourished and the euro came into being. The clue to the 20th century lies in the links between its first and last decades, the "bookends" of the century.

In 1906, Whitelaw Reid, the US Ambassador to Britain, gave a lecture at Cambridge University with the title, *The Greatest Fact in Modern History*, in which the author, a diplomat, journalist and politician, was given as his subject, the rise and development of the United States![1] It cannot have been obvious then that the rise of the United States was the "greatest fact in modern history" but it was true that in a matter of only two centuries a small colony had become the biggest economy in the world. The first decade of the century hinted at what the last decade confirmed, viz., American preponderance. Forget the seventy-five years between 1914 and 1989!

An underlying theme of my lecture today is the role of the United States in what has been aptly called the "American century." I want to bring out the role of the monetary factor as a determinant of political events. Specifically, I will argue that many of the political changes in the century have been caused by little-understood perturbations in the international monetary system, while these in turn have been a consequence of the rise of the United States and mistakes of its financial arm, the Federal Reserve System.

The twentieth century began with a highly efficient international monetary system that was destroyed in World War I, and its bungled recreation in the inter-war period brought on the great depression, Hitler and World War II. The new arrangements that succeeded it depended more on the dollar policies of the Federal Reserve System than on the discipline of gold itself. When the link to gold was finally severed, the Federal Reserve System was implicated in the greatest inflation the United States has yet known, at least since the days of the Revolutionary War. Even so, as the century ends, a relearning process has created an entirely new framework for capturing some of the advantages of the system with which the century began.

The century can be divided into three distinct, almost equal parts. The first part, 1900-33, is the story of the international gold standard, its breakdown during the war, mismanaged restoration in the 1920's and its demise in the early 1930's. The second part, 1934-71, starts with the devaluation of the dollar and the establishment of the $35 gold price and ends when the United States took the dollar off gold. The third part of the century, 1972-1999, starts with the collapse into flexible exchange rates and continues with the subsequent outbreak of massive inflation and stagnation in the 1970's, the blossoming of supply-side economics in the 1980's, and the return to monetary stability and the birth of the euro in the 1990's. The century ends, however, with our monetary system in deficit compared to the first decade of the century and that suggests unfinished business for the decades ahead.

I. Mismanagement of the Gold Standard

The international gold standard at the beginning of the 20th century operated smoothly to facilitate trade, payments and capital movements. Balance of payments were kept in equilibrium at fixed exchange rates by an adjustment mechanism that had a high degree of automaticity. The world price level may have been subject to long-terms trends but annual inflation or deflation rates were low, tended to cancel out, and preserve the value of money in the long run. The system gave the world a high degree of monetary integration and stability.

International monetary systems, however, are not static. They have to be consistent and evolve with the power configuration of the world economy. Gold, silver and bimetallic monetary standards had prospered best in a decentralized world where adjustment policies were automatic. But in the decades leading up to World War I, the central banks of the great powers had emerged as oligopolists in the system. The efficiency and stability of the gold standard came to be increasingly dependent on the discretionary policies of a few significant central banks. This tendency was magnified by an order of magnitude with the creation of the Federal Reserve System in the United States in 1913. The Federal Reserve Board, which ran the system, centralized the money power of an economy that had become three times larger than either of its nearest rivals, Britain and Germany. The story of the gold standard therefore became increasingly the story of the Federal Reserve System.

World War I made gold unstable. The instability began when deficit spending pushed the European belligerents off the gold standard, and gold came to the United States, where the newly-created Federal Reserve System monetized it, doubling the dollar price level and halving the real value of gold. The instability continued when, after the war, the Federal Reserve engineered a dramatic deflation in the recession of 1920-21, bringing the dollar (and gold) price level 60 percent of the way back toward the prewar equilibrium, a level at which the Federal Reserve kept it until 1929.

It was in this milieu that the rest of the world, led by Germany, Britain and France, returned to the gold standard. The problem was that, with world (dollar) prices still 40 percent above their prewar equilibrium, the real value of gold reserves and supplies was proportionately smaller. At the same time monetary gold was badly distributed, with half of it in the United States. In addition, uncertainty over exchange rates and reparations (which were fixed in gold) increased the demand for reserves. In the face of this situation would not the increased demand for gold brought about by a return to the gold standard bring on a deflation? A few economists, like Charles Rist of France, Ludwig von Mises of Austria and Gustav Cassel of Sweden, thought it would.

Cassel(1925) had been very explicit even before Britain returned to gold:

"The gold standard, of course, cannot secure a greater stability in the general level of prices of a country than the value of gold itself possesses. Inasmuch as the stability of the general level of prices in desirable, our work for a restoration of the gold standard must be supplemented by endeavours to keep the value of gold as constant as possible...With the actual state of gold production it can be taken for certain that after a comparatively short time, perhaps within a decade, the

present superabundance of gold will be followed, as a consequence of increasing demand, by a marked scarcity of this precious metal tending to cause a fall of prices..."

After gold had been restored, Cassel pursued his line of reasoning further, warning of the need to economize on the monetary use of gold in order to ward off a depression. In 1928 he wrote:

"The great problem before us is how to meet the growing scarcity of gold which threatens the world both from increased demand and from diminished supply. We must solve this problem by a systematic restriction of the monetary demand for gold. Only if we succeed in doing this can we hope to prevent a permanent fall of the general price level and a prolonged and world-wide depression which would inevitably be connected with such a fall in prices."

Rist, Mises and Cassel proved to be right. Deflation was already in the air in the late 1920's with the fall in prices of agricultural products and raw materials. The Wall Street crash in 1929 was another symptom, and generalized deflation began in 1930. That the deflation was generalized if uneven can be seen from the percentage loss of wholesale prices in various countries from the high in 1929 to September 1931 (the month that Britain left the gold standard): Japan, 40.5; Netherlands, 38.1; Belgium, 31.3; Italy 31.0; United States, 29.5; United Kingdom, 29.2; Canada, 28.9; France, 28.3; Germany, 22.0.

The dollar price level hit bottom in 1932 and 1933. The highlights of the price level from 1914 to 1934 are given in Table 1:

Figure 1. Wholesale Prices, 1914-33

Year	1930 = 100	*Year*	1930 = 100
1914	78.4	1924	113.5
1915	80.5	1925	119.7
1916	98.9	1926	115.7
1917	135.9	1927	110.5
1918	152.0	1928	112.1
1919	160.3	1929	110.1
1920	178.7	1930	100.0
1921	113.0	1931	84.3
1922	111.9	1932	75.3
1923	116.4	1933	76.2

Source: Wholesale Price Index, Bureau of Labor Statistics. Adapted from Table 21 in Jastram (1982: 206).

For decades economists have wrestled with the problem of what caused the deflation and depression of the 1930's. The massive literature on the subject has brought on more heat than light. One source of controversy has been whether the depression was caused by a shift of aggregate demand or a fall in the money supply. Surely the answer is both! But none of the theories—monetarist or Keynesian—would have been able to predict the fall in the money supply or aggregate demand in advance. They were rooted in short-run closed-economy

models which could not pick up the gold standard effects during and after World War I. By contrast, the theory that the deflation was caused by the return to the gold standard was not only predictable, but was actually, as we have noted above, predicted.

The gold exchange standard was already on the ropes with the onset of deflation. It moved into its crisis phase with the failure, in the spring of 1931, of the Viennese Creditanstalt, the biggest bank in Central Europe, bringing into play a chain reaction that spread to Germany, where it was met by deflationary monetary policies and a reimposition of controls, and to Britain, where, on September 21, 1931, the pound was taken off gold. Several countries, however, had preceded Britain in going off gold: Australia, Brazil, Chile, New Zealand, Paraguay, Peru, Uruguay and Venezuela, while Austria, Canada, Germany and Hungary had imposed controls. A large number of other countries followed Britain off gold.

Meanwhile, the United States hung onto to the gold standard for dear life. After making much of its sensible shift to a monetary policy that sets as its goal price stability rather than maintenance of the gold standard, it reverted back to the latter at the very time it mattered most, in the early 1930's.

Instead of pumping liquidity into the system, it chose to defend the gold standard. Hard on the heels of the British departure from gold, in October 1931, the Federal Reserve raised the rediscount rate in two steps from 1_ to 3_ percent dragging the economy deeper into the mire of deflation and depression and aggravating the banking crisis. As we have seen, wholesale prices fell 35 percent between 1929 and 1933.

Monetary deflation was transformed into depression by fiscal shocks. The Smoot-Hawley tariff, which led to retaliation abroad, was the first: between 1929 and 1933 imports fell by 30 percent and, significantly, exports fell even more, by almost 40 percent. On June 6, 1932, the Democratic Congress passed, and President Herbert Hoover signed, in a fit of balanced-budget mania, one of its most ill-advised acts, the Revenue Act of 1932, a bill which provided the largest percentage tax increase ever enacted in American peacetime history. Unemployment rose to a high of 24.9 percent of the labor force in 1933, and GDP fell by 57 percent at current prices and 22 percent in real terms.

The banking crisis was now in full swing. Failures had soared from an average of about 500 per year in the 1920's, to 1,350 in 1930, 2,293 in 1931, and 1,453 in 1932. Franklin D. Roosevelt, in one of his first actions on assuming the presidency in March 1933, put an embargo on gold exports. After April 20, the dollar was allowed to float downward.

The deflation of the 1930's was the mirror image of the wartime rise in the price level that had not been reversed in the 1920-21 recession. When countries go off the gold standard, gold falls in real value and the price level in gold countries rise. When countries go onto the gold standard, gold rises in real value and the price level falls. The appreciation of gold in the 1930's was the mirror image of the depreciation of gold in World War I. The dollar price level in 1934 was the same as the dollar price level in 1914. The deflation of the 1930's has to be seen, not as a unique "crisis of capitalism,"as the Marxists were prone to say, but as a continuation of a pattern that had appeared with considerable predictability before—whenever countries shift onto or return to a monetary standard. The

deflation in the 1930's has its precedents in the 1780's, the 1820's and the 1870's.

What verdict can be passed on this third of the century? One is that the Federal Reserve System was fatally guilt of inconsistency at critical times. It held onto the gold standard between 1914 and 1921 when gold had become unstable. It shifted over to a policy of price stability in the 1920's that was successful. But it shifted back to the gold standard at the worst time imaginable, when gold had again become unstable. The unfortunate fact was that the least experienced of the important central banks—the new boy on the block—had the awesome power to make or break the system by itself.

The European economies were by no means blameless in this episode. They were the countries that changed the status quo and moved onto the gold standard without weighing the consequences. They failed to heed the lessons of history—that a concerted movement off, or onto, any metallic standard brings in its wake, respectively, inflation or deflation. After a great war, in which inflation has occurred in the monetary leader and gold has become correspondingly undervalued, a return to the gold standard is only consistent with price stability if the price of gold is increased. Failing that possibility, countries would have fared better had they heeded Keynes' advice to sacrifice the benefits of fixed exchange rates under the gold standard and instead stabilize commodity prices rather than the price of gold.

Had the price of gold been raised in the late 1920's, or, alternatively, had the major central banks pursued policies of price stability instead of adhering to the gold standard, there would have been no Great Depression, no Nazi revolution and no World War II.

II. Policy Mix Under the Dollar Standard

In April 1934, after a year of flexible exchange rates, the United States went back to gold after a devaluation of the dollar. This decreased the gold value of the dollar by 40.94 percent, raising the official price of gold 69.33 percent to $35 an ounce. How history would have been changed had President Herbert Hoover devalued the dollar, three years earlier!

France held onto its gold parity until 1936, when it devalued the franc. Two other far-reaching events occurred in that year. One was the publication of Keynes' *General Theory*; the other signing of the Tripartite Accord among the United States, Britain and France. One ushered in a new theory of policy management for a closed economy; the other, a precursor of the Bretton Woods agreement, established some rules for exchange rate management in the new international monetary system.

The contradiction between the two could hardly be more ironic. At a time when Keynesian policies of national economic management were becoming increasingly accepted by economists, the world economy had adopted a new fixed exchange rate system that was incompatible with those policies.

In the new arrangements, which were ratified at Bretton Woods in 1944, countries were required to establish parities fixed in gold and maintain fixed exchange rates to one another. The new system, however, differed greatly from the old gold standard. For one thing, the role of the United States in the system was asymmetric. A special clause allowed any country the option of fixing the price of gold instead of keeping the exchange rates of other members fixed. Because the dollar was the only currency

tied to gold it was the only country in a position to exercise the gold option. There thus came into being the asymmetrical arrangements in which the United States fixed the price of gold whereas other countries fixed their currencies to the dollar. Another difference of the new system from the old was that not even the United States was on anything that could be called a full gold standard. The dollar was no longer in the old sense "anchored" to gold; it was rather that the world price level, and therefore the real price of gold, was heavily influenced by the United States. Gold had become a passenger in the system.

Was a new system created at Bretton Woods? From the early planning it seemed that this would be the case. The British and American plans both contained provisions for a world currency: John Maynard Keynes had his "bancor," and Harry Dexter White had his "unitas." But these forward-looking ideas were soon buried. No doubt the Americans came to believe that a world currency would clip the wings of the dollar. There was not therefore a Bretton Woods "system" but rather a Bretton Woods "order" outlining the charter of a system that already existed.

World War II brought a repetition of the monetary imbalances of World War I. The devaluation of the dollar and gathering war clouds in Europe made the dollar a safe haven and the recipient of gold to pay for war goods. The United State sterilized the gold imports and imposed price controls. It was therefore able to run deficits without going off gold. Because gold was still "overvalued" in this era of "dollar shortage,"interest rates remained incredibly low. By 1945, the public debt had soared to 125 percent of GDP.

At the end of the war, the U.S. price level doubled as a result of the end of price control, the unleashing of pent-up demand and the expansionary monetary policies of the Federal Reserve System that continued to support the bond market. The postwar inflation halved the real value of the public debt, increased tax revenues as a result of "bracket creep" in the steeply-progressive income tax system (which rose to 92.5 percent), halved the real value of gold and eliminated its overvaluation. After further inflation during the Korean War and the onset of steady "secular" inflation, gold became undervalued.

Meanwhile, Germany and Japan, in the aftermath of their paper-money inflations, under the auspices of the U.S. occupation authorities, had currency reforms in which 10 units of old money were exchanged for 1 unit of new currency; both reforms took place in 1948, with the exchange rate for Germany set at DM 4.2 = $1, and for Japan at ¥360 = $1. The exchange rates later proved to undervalue German and Japanese labor and the two economies performed spectacularly in the post-war period, fulfilling their destiny of overtaking Britain and France as the second and third largest economies in the world.

Until the 1960's, U.S. macroeconomic policy was based more on closed-economy principles than on the requirements of an international monetary system. Monetary and fiscal policy were directed at the needs of internal balance and the balance of payments was all but ignored. In 1949 the United States had peaked at over 700 million ounces of gold, more than 75 percent of the world's monetary gold. Gold losses began soon after, but the effect of these sales on the money supply was sterilized by equivalent purchases of government bonds by the Federal

Reserve System. The gold losses were at first looked upon as a healthy redistribution of the world's gold reserves but toward the late 1950's they were recognized as dangerous.

The Federal Reserve System was required to keep a 25 percent (reduced from 40 percent in 1945) gold cover behind its currency and deposit liabilities. If gold reserves fell below this level, interest rates would have to be raised. If the fall in gold reserves reached the level of required reserves, the United States would be forced to take account of its balance- of- payments constraint like any other country. The problem of the appropriate mix for monetary and fiscal policy came to the foreground during the administration of President John F. Kennedy, who took office in 1961.

At this time I played a part in the story. Newly arrived in the Research Department at the International Monetary Fund(IMF)in the fall of 1961, I was asked to look into the theoretical aspects of the monetary-fiscal policy mix. The main problem in this post-Sputnik era was sluggish growth and subpar employment in the United States in contrast to Europe and Japan (precisely the reverse of the situation today), and a now worrisome balance of payments deficit. Three schools of thought had emerged. Keynesians, led by Leon Keyserling, the first Chairman of the Council of Economic Advisers, pushed for easy money and an increase in government spending. The Chamber of Commerce argued for fiscal constraint and tighter money. The Council of Economic Advisers, following the Samuelson-Tobin "neo-classical synthesis," advocated low interest rates to spur growth and a budget surplus to siphon off excess liquidity and prevent inflation.

In my analysis, I showed that none of the above policies would work, and would lead the economy away from equilibrium. The correct policy mix was to lower taxes to spur employment, and tighten monetary policy to protect the balance of payments. My paper was circulated by the IMF to its members in November 1961 and published in *IMF Staff Papers* in March 1962.

It gradually came to be realized that the policies of the Kennedy administration were not working: the wrong policy mix had produced increasingly disequilibrating effects: a steel strike, a stock market crash, and stagnation. At the end of 1962, Kennedy announced a reversal of the policy mix, with tax cuts to spur the economy and interest rates to protect the balance of payments. Legislative delays meant that the tax cut had to wait until the summer of 1964 but its anticipation positioned the economy for the great expansion of the 1960's.

The adoption of my policy mix helped the United States to achieve rapid growth with stability. It was not intended to and could not solve the basic problem of the international monetary system, which stemmed from the undervaluation of gold. Nevertheless the problem of the U.S. balance- of- payments was intricately tied up with the problem of the system. With very little excess gold coming into the stocks of central banks from the private market, and the US dollar the only alternative component of reserves, the U.S. deficit was the principal means by which the rest of the world was supplied with additional reserves. If the United States failed to correct its balance of payments deficit, it would no longer be able to maintain gold convertibility; on the other hand, if it corrected its deficit, the rest of the world would run short of reserves and bring on slower growth or, worse, deflation. The last scenario hinted

at a repetition of the problem of the interwar period.

Two basic solutions were consistent with preserving the system. One solution was to raise the price of gold. The founding fathers of the IMF had put a provision in the IMF Articles of Agreement for dealing with a gold scarcity or surplus: a change in the par values of all currencies, which would have changed the price of gold in terms of all currencies and left exchange rates unchanged. In the 1968 election campaign, candidate Richard M. Nixon chose Arthur Burns as his emissary on a secret mission to sound out European opinion on an increase in the price of gold. It turned out to be favorable and Burns recommended prompt action immediately after the election. Nothing, however, came of it.

The other option was to create a substitute for gold. This course was in fact adopted. In the late summer of 1967, international agreement was reached on an amendment to the IMF articles to allow the creation of Special Drawing Rights (SDRs), gold-guaranteed bookkeeping reserves made available through the IMF, with a unit value equal to one gold dollar, or 1/35 of an ounce. Somewhat less than SDR 10 billion were allocated to member countries in 1970, 1971 and 1972, but they proved to be inadequate—too little and too late--to meet the main problems of the system.

On August 15, 1971, confronted by requests for conversion of dollars into gold by the United Kingdom and other countries, President Nixon took the dollar off gold, closing the "gold window" at which dollars were exchanged for gold with foreign central banks. The other countries now took their currencies off the dollar and a period of floating began.

But floating made the embryonic plans just forming for European monetary integration more difficult, and in December 1971, at a meeting at the Smithsonian Institution in Washington, D. C., finance ministers agreed on a restoration of the fixed exchange rate system without gold convertibility. A few exchange rates were changed and the official dollar price of gold was raised but the act was almost purely nominal since the United States was no longer committed to buying or selling gold.

The world thus moved onto a pure dollar standard, in which the major countries fixed their currencies to the dollar without a reciprocal obligation with respect to gold convertibility on the part of the United States. But U.S. monetary policy was too expansionary in the following years and, after another ineffective devaluation of the dollar, the system was allowed to break up into generalized floating in the spring of 1973. Thus ended the dollar standard.

What lessons can be learned from the second third of the century? One is that the policy mix has to suit the system. Another is that a gold-based international system cannot survive if war-related inflation makes gold undervalued and the authorities are unwilling to adjust the gold price and create a sufficient quantity of gold substitutes. A third lesson is that the superpower cannot be disciplined by the requirements of convertibility or any other international commitment if it is at the expense of vital political objectives at home; the tail cannot wag the dog. A fourth lesson is that a fixed exchange rate system can work only if there is mutual agreement on the common rate of inflation. Europe was willing to swallow the fact that the dollar was not freely convertible into gold in the 1960's, but when U.S. monetary policy became incompatible with price stability in the rest

of the world (and in particular Europe), the costs of the fixed- exchange- rate system were perceived to exceed its benefits.

A final lesson is that political events, and in particular the Vietnam War soured relations between the Atlantic partners and created a tension in the 1960's that can only be compared with the pall cast over the international system by disputes over reparations in the 1920's. Fixed-exchange- rate systems work better among friends than rivals or enemies.

III. Inflation and Supply-Side Economics

With the breakdown of the system, money supplies became more elastic, accommodating not only inflationary wage developments but also the monopolistic pricing of internationally traded commodities. Each time the price of oil was raised in the 1970's, the Eurodollar market expanded to finance the deficits of oil-importing countries; from deposits of $223 billion 1971 they would explode to $2,351 billion in 1982(International Monetary Fund, IMF International Statistic Yearbook, 1988 p. 68).

Inflation in the United States had now become a major problem. It had taken twenty years, from 1952 to 1971, for U.S. wholesale prices to rise by less than 30 percent. But after 1971, it took only eleven years for U.S. prices to rise by 157 percent! This mainly peacetime inflation was greater than the war-related inflations from World War II (108 percent over 1939-48), World War I (121 percent over 1913-1920), the Civil War (118 percent over 1861-1864) or the War of 1812 (44 percent over 1811-1814). The greatest inflation in U.S. history since the War of Independence took place after the United States left gold in the decade after 1971.

That inflation in the 1970's was worldwide can be seen from the price indexes of the G-7 countries in Table 2, noting the index values for 1971 in comparison with the standard base of 100 in 1980. Only in Germany did consumer prices in the decade of the seventies fall short of doubling. In Italy and the United Kingdom, prices more than tripled. The breakdown in monetary discipline was worldwide, engulfing all the G-7 countries and to an even greater extent most of the rest of the world.

Table 2. Consumer Prices in G-7 Countries, Selected Years 1950-98

Country	*1950*	*1971*	*1980*	*1985*	*1990*	*1998*
United States	29.2	49.1	100	130.5	158.5	197.8
Japan	16.3	44.9	100	114.4	122.5	134.4
United Kingdom	13.4	30.3	100	141.5	188.7	243.6
Germany	39.2	64.1	100	121.0	129.4	144.8
France	15.6	42.1	100	157.9	184.2	213.7
Italy	13.9	28.7	100	190.3	250.6	346.3
Canada	28.4	47.5	100	143.0	177.9	203.7

Source:*IMF International Financial Statistics*,(International Monetary Fund, various years).

In the United States, three back-to-back years of two-digit inflation (1979-81) created a crisis situation. The price of gold hit $850 an ounce in early 1980, and

silver went to $50 an ounce. On March 14, 1980, President Jimmy Carter announced his new program: an oil import fee, and credit controls. The plan was a disaster and real output plummeted in the second quarter. In December 1980, a month after the presidential elections, the prime interest rate hit a record of 21.5 percent! The United States seemed to be on the brink of financial disaster.

Gone were the days when, with David Ricardo, economists could think of money as a "veil." The existence of big government and progressive income taxes guarantees non-neutrality. One route was through the fiscal system. With steeply progressive tax rates, rising from zero to 70 percent at the federal level, and up to 85 percent counting state and local taxes, inflation was pushing taxpayers into higher and higher tax brackets even at unchanged real incomes. Taxes had to be paid on interest receipts even though the bulk of the high interest rates represented inflation premiums. Soaring tax revenues coupled with government's high marginal propensity to spend led to an increasing share of government in the economy. No wonder the stock market hated inflation!

Supply-side economics began as a policy system alternative to short-run Keynesian and monetarist demand-side models. It was based on a policy mix that delivered price stability through monetary discipline, and economic stimulation of employment and growth through the tax and regulatory systems. It was partly a continuation of my work on the policy mix in the early 1960's. In the spring of 1974 I presented a paper at a conference on global inflation in Washington, an excerpt of which was reported (Rowland Evans and Robert Novak, 1981 p. 63) as follows:

"While the Ford administration was insisting that only a tax increase could fight inflation, Mundell argued that an immediate $10 billion *reduction* was essential to avoid even bigger budget deficits fueled by "stagflation," the lethal combination of inflation and stagnation inherited from Nixon by Ford..."

With my arrival at Columbia University in the fall of 1974, a "club" of what later would become dubbed as "supply-siders" met from time to time at a Wall Street restaurant to discuss economic policy and particularly what to do about the rising inflation and unemployment. The conclusion was that cuts in marginal tax rates were needed to create output incentives to spur the economy, and tight money would produce price stability. The need for tax cuts and tight money became more urgent as inflation increased in the late 1970's and inflation, via "bracket creep," was pushing taxpayers into ever-higher income tax brackets. Within a short time, a political convert, Jack F. Kemp, Congressman from Buffalo, parlayed the ideas into a bill calling for a 30 percent tax cut, most of which would be enacted in a sweeping 23 percent tax cut spread over three years, followed by an indexing of the tax brackets for inflation. In the election campaign of 1980, Kemp was a candidate for the presidency but bowed out after Ronald W. Reagan agreed to incorporate the Kemp-Roth bill in his agenda for the economy. After Reagan's election, the first phase of the new policy mix was introduced with the Economic Recovery Act of 1981.

Meanwhile, the Federal Reserve, under the chairmanship of Paul Volcker, at long last woke up and tightened monetary policy. After a steep, but short, recession, the economy embarked on one of its longest-ever expansions at the same time that inflation was increasingly

brought under control. The new policies shifted the Phillips curve downward and to the left, allowing unemployment and inflation to decrease at the same time.

There was a sequel to the tax cut, the arms buildup, the policy of disinflation and Reagan's landslide reelection. The Tax Reform Act of 1986, the second phase of the supply-side revolution, lowered the marginal tax rate in the highest tax bracket to 28 percent, the lowest top marginal rate since 1932. The 1982-90 expansion was the second longest up to that time and, along with the arms buildup, helped to convince the leaders of the Soviet Union to leave Eastern Europe free to choose its own system.

Growth continued until the nine-month downsizing recession of 1990-91, which probably cost President George H. W. Bush reelection. Expansion resumed in the spring of 1991 and continued at least until the end of the decade, making the combined period 1982-2000 the greatest expansions in the history of any country. Over the period no less than 37 million new jobs were created! The Dow- Jones Average soared from below 750 in the summer of 1982 to over 11,000 by the turn of the century.

Meanwhile, the withdrawal of the Soviet Union from Eastern Europe—itself, as already noted, partly due to the success of supply-side economics--made unification of Germany possible and brought with it renewed impetus for European monetary and political integration. The fiscal spending associated with German spending on its new states gave a jolt to the exchange-rate mechanism(ERM) of the European Monetary System (EMS). A few countries left the exchange- rate mechanism, and others opted for devaluation within it. Nevertheless, by January 1, 1994, the European Monetary Institute came into being, and, by the middle of 1998, so did its successor, the European Central Bank. On January 1, 1999, the euro was launched with eleven members. A new era in the international monetary system was unfolding.

The introduction of the euro redraws the international monetary landscape. With the euro- upon its birth the second most important currency in the world,- a tri-polar currency world involving the dollar, euro, and yen came into being. The exchange rates among these three islands of stability will become the most important prices in the world economy.

The creation of the euro will doubtless lead to its widespread adoption in Central and Eastern Europe as well as the former CFA franc zone in Africa and along the rim of the Mediterranean. Expansion of the wider euro area—counting not only currencies entering with an enlargement of the European Union, but also currencies fixed to the euro—will eventually give it a transactions area larger than that of the United States and will, inevitably, provoke countervailing expansion of the dollar area in Latin America and parts of Asia. Other currency areas are likely to form, adapting to local needs the example of Europe. But stability for the near future will be best assured by stabilization with one of the "G-3" areas.

The 1970's was a decade of inflation, but the 1980's was a decade of correction and the 1990's a decade of comparative stability. The experiment with flexible exchange rates in the 1970's started off as a disaster, from the standpoint of economic stability, but nevertheless, it set in motion a learning mechanism that would not have taken place in its absence. The lesson was that inflation, budget deficits, big debts and big

government are all detrimental to public well-being and that the cost of correcting them is so high that no democratic government wants to repeat the experience. Consequently virtually all of the developed OECD countries had drastically reduced budget deficits and whittled inflation rates down to those of the pre-1914 international gold standard.

In many respects economic performance in the 1990's compares well with that of the first decade of the century. Prudent finance then as now produce similar effects. But in two respects our modern arrangements—I am trying to avoid the word "system"--compares unfavorably with the earlier system: the current volatility of exchange rates and the absence of a global currency.

The volatility of exchange rates is especially disturbing among countries each of which have achieved, according to local definitions and indexes, price stability. The volatility therefore measures real- exchange- rate changes and involves dysfunctional shifting between domestic and international-goods industries and aggravates instability in the financial markets.

How much flexibility is good? If we think of the euro as the "ghost of the mark" could we look at past variations in the mark-dollar rate as an augur of the dollar-euro rate in the future? Between 1971 and 1980 the mark doubled against the dollar, to $1 = DM1.7; between 1980 and 1985, it halved, to $1 = DM 3.4; between 1985 and the crisis of 1992, it more than doubled, to $1 = 1.39; and it has since fallen to $1 = DM 1.9. The mark-dollar rate has fluctuated up and down by more than 100 percent, a mountain of volatility that would make the ERM crisis of 1992 seem like a little hillock. Comparable movements of the dollar-euro rate would crack Euroland apart.

Nor does looking at the yen-dollar rate give us more comfort. The dollar has gone down from 250 yen in 1985 to 79 yen in 1995, and then it went up to 148 yen in 1998 (with forecasters expecting it to hit 200!), and down to 105 yen in early 2000.

The twentieth century will not see fixed exchange rates again among the G-3. But it is entirely possible that a new international monetary system will emerge in the twenty-first century. Convergence of inflation rates has become remarkable, better than that associated with parts of the Bretton Woods era, comparable to the gold standard itself, as Table 3 shows:.

Table 3. Inflation Rates Among the Big Three

	1995	1996	1997	1998	1999		
					I	II	III
United States	2.8	2.9	2.3	1.6	1.7	2.1	2.3
Japan	-0.1	0.1	1.7	0.6	-0.1	-0.3	0.0
Euro Area*	1.8	1.5	1.8	1.0	0.8	1.0	1.1

Source: IMF *International Financial Statistics*, January 2000, 57.

*Germany cost-of-living index for 1995-98, the European Monetary Union Index of Consumer Prices for 1999.

It may seem a long way off, but I believe that given such the degree of inflation convergence some sort of monetary union of the three areas would not be impossible. The same conditions would result from a three-currency fixed-exchange- rate system with agreement over a common inflation rate and a fair distribution of seigniorage. If such a fixed-exchange- rate arrangement among countries that had converged is conceivable, it would not be such a far step toward a reformed international monetary system with a world money of the kind initially proposed back in the days of Bretton Woods.

To conclude this section, what lessons can we take from the last third of the twentieth century? One is that flexible exchange rates, at least initially, did not provide the same discipline as fixed rates.

A second is that the costs of inflation are much higher in a world with progressive income tax rates.

A third is that the need for, and means of, attaing monetary stability can be learned. A fourth is that the policy mix can shift the Phillips curve.

Experience breeds its own reaction: Plato the inflationist gave birth to Aristotle, the hard-money man. The reaction in the 1980's gave a boost to central bank independence. Governments forced into the Maastricht mold had to cut back on spending growth as well as deficits. Supply-side economics pointed to one of the mechanisms for strapping down ministers of finance.

One lesson, however, has yet to be learned.. Flexible exchange rates are an unnecessary evil in a world where each country has achieved price stability.

IV. Conclusions

It is time to wrap up the century in some conclusions. A first conclusion is that the international monetary system depends on the power configuration of the countries that make it up. Bismarck once said that the most important fact of the nineteenth century was that England and America spoke the same language. Along the same lines, the most important fact of the twentieth century has been the rise of the United States as a superpower. Despite the incredible rise in gold production, Gresham's Law came into play and the dollar elbowed out gold as the principal international money.

The first third of twentieth century economics was dominated by the confrontation of the Federal Reserve System with the gold standard. The gold standard broke down in World War I and its restoration in the 1920's created the deflation of the 1930's. Economists blamed the gold standard instead of their mishandling of it and turned away from international automaticity to national management. The Great Depression itself let to totalitarianism and World War II.

The second third of the twentieth century was dominated by the contradiction between national macroeconomic management and the new international monetary system. In the new system, the United States fixed the price of gold and the other major countries fixed their currencies to the convertible dollar. But national macroeconomic management precluded the operation of the international adjustment mechanism and the system broke down in the early 1970's when the United States stopped fixing the price of gold and the other countries stopped fixing the dollar.

The last third of the twentieth century started off with the destruction of the international monetary system and the vacuum sent officials and academics into a search for "structure." In the 1970's the clarion call was for a "new international monetary order" and in the 1990's a "new international monetary architecture." The old system was one way of handling the inflation problem multilaterally. Flexibility left each country on its own. Inflation was the initial result but a learning mechanism educated a generation of monetary officials on the advantages of stability and by the end of the century fiscal prudence and inflation control had again become the watchword in all the rich and many of the poor countries.

Today, the dollar, the euro and yen have established three islands of monetary stability,which is a great improvement over the 1970's and 1980's. There are, however, two pieces of unfinished business. The most important is the dysfunctional volatility of exchange rates that could sour international relations in time of crisis. The other is the absence of an international currency.

The century closes with an international monetary system inferior to that with which it began, but much improved from the situation that existed only two-and-a-half decades ago. It remains to be seen where leadership will come from and whether a restoration of the international monetary system will be compatible with the power configuration of the world economy. It would certainly make a contribution to world harmony.

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