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# Review

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## In This Issue . . .

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The foreign exchange value of the dollar occupies an increasingly prominent place in the press, policy discussions and economic analyses. In these forums, debate has centered on whether floating exchange rates reflect the currencies' fundamental values or inefficient speculation. The efficiency of the foreign exchange market has been a contentious issue among economists throughout the modern floating rate era which began in 1973. The main debate centers on whether exchange rates contain a risk premium that reflects a currency holder's apprehension about the currency he purchases relative to the currency he sells. If there is no risk premium, the variation in exchange rates must reflect inefficiency in the market for foreign exchange.

In the first article of this *Review*, Kees G. Koedijk and Mack Ott review the role of the risk premium in foreign exchange markets and its relation to interest rate differentials between the economies involved. They then compare the results of two empirical examinations of the risk-premium-efficiency alternative which yield conflicting conclusions about the economic significance of the foreign exchange rate risk premium.

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The Employment Act of 1946 assigned to the federal government the official responsibility of achieving and maintaining a high level of employment. Over the past 40 years, monetary and fiscal policy have evolved into the primary tools of the government's stabilization policy. In the second article in this *Review*, Keith M. Carlson summarizes and examines fiscal policy to determine whether the direction of fiscal actions over the years generally has been consistent with the Employment Act. Using various measures, his study concludes that, during periods of recession and recovery, fiscal actions usually were stimulative and consistent with the Employment Act. During periods of high demand and inflation, however, fiscal actions tended to be inappropriately stimulative; however, these were generally wartime periods.



# Risk Aversion, Efficient Markets and the Forward Exchange Rate

*Kees G. Koedijk and Mack Ott*

**R**ISK is a characteristic of existence. Attempts to avoid it explain such arrangements as insurance, limited liability firms and diversification of investment portfolios. In recent years, risk aversion and the attendant premium for risk-bearing have been used increasingly to explain a stubborn paradox in the empirical exchange rate literature: the failure of the forward exchange rate to be an unbiased predictor of the future spot exchange rate.

In this article, we review recent economic analyses of the risk premium's role in foreign exchange markets. The starting point is an explanation of covered and uncovered interest parity and their relation to the risk premium. We then turn to a discussion of empirical tests of efficiency. In particular, we examine two recent papers that demonstrate the existence of the risk premium but differ in their conclusions about market efficiency: Fama (1984) and Frankel and Froot (1986).

## COVERED AND UNCOVERED INTEREST PARITY

Currencies are exchanged, spot and forward, in highly organized markets. The high volume of trade by

competitive, well-informed individuals suggests that the foreign exchange market fits Fama's (1970) definition of an efficient market: "A market in which prices always 'fully reflect' available information." An analysis of forward exchange market efficiency and the risk premium draws on market information as revealed by relations between interest differentials and exchange rates. These relations are called the covered and uncovered interest parity conditions.

Covered interest parity (CIP) relates the forward premium ( $F_t - S_t$ ) to the interest differential,

$$(1) \quad i - i^* = (F_t - S_t)\alpha$$

where

$i$  = log of 1 plus U.S. three-month T-bill interest rate,

$i^*$  = log of 1 plus foreign equivalent of T-bill rate,

$F_t$  = log of the forward exchange rate (dollars per foreign currency unit),

$S_t$  = log of the spot exchange rate (dollars per foreign currency unit),

$\alpha$  = annualizing factor — 12 divided by number of months in the forward contract.

The right-hand side of (1), which is the annualized forward premium on foreign currency, measures the rate of return in domestic currency on a covered

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exchange position — that is, a spot purchase of foreign currency offset by a forward sale. The equality with the differential between the domestic and foreign interest rate on the left-hand side is brought about by arbitrage: since the bonds are assumed to be default free in their respective currencies, a riskless excess return would be available if CIP did not hold.<sup>1</sup>

Because the forward rate is the present contractual dollar price of foreign currency for future delivery, the assumptions of market efficiency and no risk premium imply a second form of interest parity called uncovered interest parity (UIP). An expression for UIP can be obtained from the arbitrage condition which equates the expected change in the spot rate plus the premium for risk with the forward premium:

$$(2) \quad E_t[S_{t+k}] - S_t + P_t = F_t - S_t,$$

where

$E_t[S_{t+k}]$  = the expectation of the period- $t+k$  spot rate based on period- $t$  information,

$P_t$  = the risk premium for bearing the uncertainty of unexpected currency price changes.

Under the no-risk-premium hypothesis,

$$(3) \quad P_t = 0,$$

then, from (1), we have the second form of interest parity, UIP:

$$(4) \quad i - i^* = (E_t[S_{t+k}] - S_t)\alpha.$$

Comparing equation 4 with equation 1, UIP implies that the forward rate,  $F_t$ , which is observable to the market at time  $t$ , is equal to the market's forecast of the future spot exchange rate at time  $t+k$ . Note that uncovered interest parity is conditional upon the hypothesis of no risk premium; only if (3) holds will the annualized rate of the *expected* change in spot rate be equal to the current interest differential.

The risk premium,  $P_t$ , on buying a currency in the forward market is implicitly defined by equation 2. That is, individuals who do not want to bear the uncertainty of holding an open currency position buy forward currency to hedge this risk. As shown in the left-hand side of equation 2, the price these hedgers pay includes the risk premium, the price of insuring against this uncertainty. It is the difference between

the log of the forward rate and the log of the expected, but unobservable, future spot rate,

$$(5) \quad P_t = F_t - E[S_{t+k}].$$

For instance, if the risk premium is positive, speculators sell foreign currency forward at price  $F_t$  and expect to be able to buy the foreign currency spot at time  $t+k$  for  $E_t(S_{t+k})$ , profiting by doing so at rate  $P_t$  (annual rate  $\alpha P_t$ ). Note that, if the risk premium is not zero, the market actually can expect the dollar to depreciate, even though the observed interest differential and the forward premium indicate an appreciation of the dollar.<sup>2</sup>

### **Risk Premium or Market Inefficiency**

Current investigations of the relationship between the spot and forward exchange rates are premised on a widely documented finding: the simple no-risk-premium efficiency criterion, defined jointly by equations 2 and 3, has been refuted by many empirical studies. Using a variety of assumptions, data, time periods and estimation techniques, investigators have established three fundamental points:<sup>3</sup>

- 1) The forward exchange rate is not an unbiased predictor of the future spot rate.
- 2) The residuals obtained in a regression of spot exchange rates of their lagged forward rates frequently exhibit serial correlation.
- 3) There exist systems (filters) that permit profitable speculation in foreign exchange either through the purchase of foreign assets with offsetting forward exchange sales or buy and hold strategies.

<sup>2</sup>An example may clarify this relation among the premium, forward rate and expected future spot rate. Suppose the dollar-DM spot exchange rate is \$.5512/DM, the three-month forward rate is \$.5494/DM, and the expected future spot rate three months hence is \$.5556/DM. Since the risk premium is negative, the speculative position will be against the dollar rather than against the DM. The speculator (whose beliefs are represented by the expected future spot rate) would expect to make a profit by selling dollars forward and buying DM assets. After holding the DM assets for three months, the speculator anticipates selling the DM assets and using the proceeds to buy dollars. The speculative rate of profit — that is, the excess over a hedged, secure return — anticipated over the three months is, from equation 2, 1.12 percent or 4.49 percent on an annual basis:

$$\begin{aligned} -P_t &= \{[E_t(S_{t+3}) - S_t] - [F_t - S_t]\}^* 4 \\ &= \{[\ln(.5556) - \ln(.5512)] - [\ln(.5494) - \ln(.5512)]\}^* 4 \\ &= .0449 \end{aligned}$$

<sup>3</sup>These characteristics have been widely discussed. For the biasedness of forward rates, see Robichek and Eaker (1978), Levich (1979), Cumby and Obstfeld (1981), Hansen and Hodrick (1980) and Meese and Rogoff (1983). The serial correlation of errors has been noted by Hansen and Hodrick (1980) and Cumby and Obstfeld (1984). On the existence of profitable speculation through "filters" (obtained from lagged data) see Levich (1979), Bilson (1981) and Sweeney (1986).

<sup>1</sup>CIP has been supported in a variety of empirical investigations; see Clinton (1987) and Isard 1987, pp. 7–8.

Given the ample empirical evidence, most researchers accept the rejection of the simple no-risk-premium efficiency criterion; however, they remain divided on whether the existence of a risk premium or market inefficiency is responsible for this result.

Why has it been so difficult to test for the presence of a risk premium? The answer is that while, in general, we do not have actual *ex ante* expectations data, we assume that foreign exchange market participants are rational in their decisions, including their pricing of risk. Hence, the expectation of the future spot rate is equal to its actual, subsequently observed value plus a random error and, perhaps, a risk premium. Consequently, whenever the observable value of  $F_t - S_{t+k}$  is different from zero, there is *ex post* evidence on the existence of a risk premium or market inefficiency or both, *but no direct evidence bearing on which*.<sup>4</sup>

The empirical difficulties in assessing the presence of a risk premium from simple calculations of  $F_t - S_{t+k}$  can be gathered from chart 1. In this chart, we have plotted the so-called *ex post* or rational expectations risk premium,  $F_t - S_{t+k}$  (annualized), for the dollar/deutsche mark exchange rate from January 1976 through June 1985. As is evident, it is difficult to show that the forward rate systematically underpredicts or overpredicts the future spot rate. When long periods of time are considered, the average prediction error of the forward exchange rate is close to zero. Fortunately, however, two direct tests for the presence of a risk premium in the foreign exchange market have emerged from the literature.

## TWO TESTS OF EFFICIENCY AND RISK PREMIA

Recently, two studies of exchange rates have offered tests that separate the rational expectations hypothesis and the existence of a risk premium. These papers use different methods, time periods and data sets, and they arrive at different conclusions about the relative importance of the risk premium and expectation errors.

<sup>4</sup>Of course, this is conditional on expectations being rationally formed. Even so, unforeseen events transpiring between time  $t$  and  $t+k$  may result in  $F_t - S_{t+k} \neq 0$ . Such unforeseen events, dubbed "news" by Frenkel (1981) explains some variation in  $F_t - S_{t+k}$  due neither to a risk premium nor nonrational expectations; however, news should not result in biased expectations since *unforeseen* events must have an expected mean of zero.

The first paper is Fama's (1984) article, which assesses the relative variability of the risk premium and forecast errors during 1973–82. Fama concludes that the risk premium explains more of the variance than the forecast error does. Furthermore, he also finds that the risk premium and the expected (but unobserved) future spot rates are negatively correlated.

The second paper, Frankel and Froot (1986), uses the median response from survey data of foreign exchange traders' expectations of future spot rates.<sup>5</sup> Their study, primarily covering 1981–85, finds a risk premium varying between 3 percent and 10 percent depending on the currency observed. Thus, they are able to test directly the rational expectations hypothesis and to estimate the proportion of the forward rate error that can be ascribed to forecast error and to risk premia.

Their findings concur with Fama's in two respects — the risk premium is significant and negatively correlated with the expected future spot rate — but diverge in terms of the relative variances of forecast errors and risk premia:

In all three surveys, the errors exhibit unconditional bias of a sign opposite to estimates of the risk premium from the survey data. The premia are large in absolute value, and are statistically different from zero. We can reject the hypothesis that systematic unconditional mistakes made by the forward rate in predicting the future spot rate are due entirely to a failure of rational expectations. But at the other extreme, the hypothesis that the forward rate prediction errors can be explained by the risk premium alone is also rejected. Expected depreciation is more variable than both the forward discount and the risk premium. The first finding corroborates Fama's (1984) conjecture that expected depreciation and the risk premium are negatively correlated. The second finding rejects the hypothesis that the variance of expected depreciation is less than the variance of risk premium . . . .<sup>6</sup>

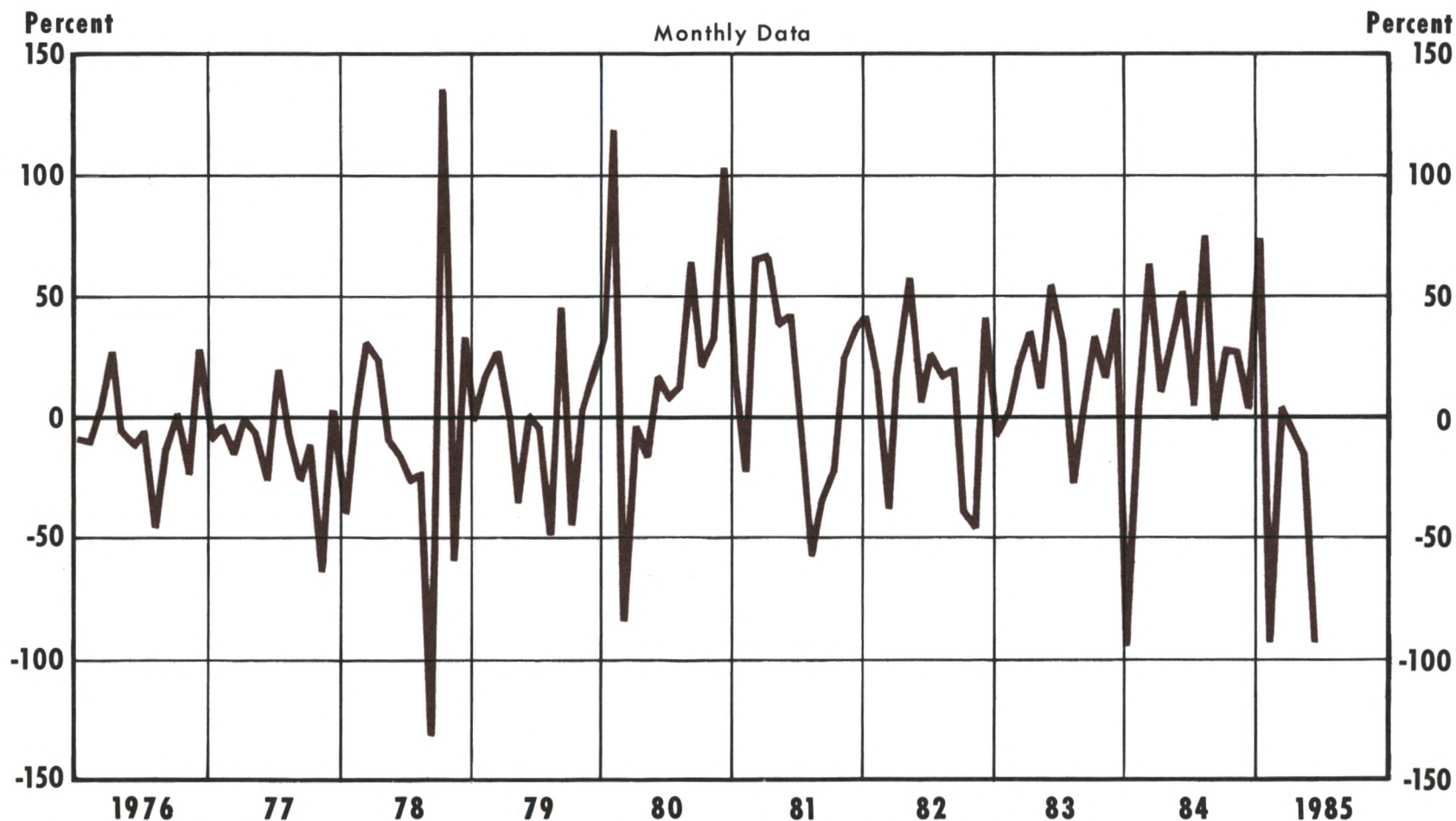
<sup>5</sup>Frankel and Froot used three different surveys: Money Market Services (MMS), Inc., biweekly January 1983–October 1984, weekly 1984–86, polled an average of 30 currency traders or economists at major international banks; The Economist Financial Report every six weeks June 1981–December 1985 conducted telephone interviews with currency traders at 14 leading international banks; finally, Amex Bank Review 1976–85 annually surveyed 250–300 central and private bankers, corporate officers and economists. In each case, respondents were asked for exchange rate forecasts at various horizons for the pound, mark, Swiss franc, yen and (except for MMS) French franc. Details of these surveys can be found in the data appendix of Frankel and Froot (1987), p. 151.

<sup>6</sup>Frankel and Froot (1986), p. 29. Originally, this negative correlation was presented by Fama (1984) as a puzzle; however, as shown in Hodrick and Srivastava (1986), it is perfectly consistent with the intertemporal asset pricing model of forward exchange markets.

Chart 1

# The Ex Post Risk Premium<sup>[1]</sup>

Dollars per Deutsche Mark



[1] The annualized difference between the log of the forward rate and the log of a one-month lead of the observed spot rate.

## ***Assessing the Divergent Findings of Fama and Frankel-Froot***

The two papers, which use very different methodologies, concur in the statistical significance of a risk premium, but are in dispute about its *economic* significance. On the one hand, Fama's paper, as well as others whose research has followed his lead, asserts that the risk premium accounts for most of the forward rate error.<sup>7</sup> An implication is that the efficiency of forward exchange markets is not refuted. A corollary of this implication is that, since foreign exchange trading is not subject to biased forecasts, policy intervention in foreign exchange markets cannot be justified on the existence of destabilizing and misguided speculation.

In contrast, the findings of Frankel and Froot assert that, although the risk premium is statistically significant, it is smaller (in absolute value and variability) than the forward rate forecast errors made by the surveyed traders, economists and corporate officers of international banks. Moreover, they find that the expectations of these surveyed traders are systematically biased, that their speculative activity is excessive and that the risk premium is without economic significance:

The data continue to reject statistically the hypothesis of rational expectations ... in favor of the alternative of excessive speculation... Put differently, even after allowing for measurement error, it is still not possible to reject the hypothesis that *all the bias consists of repeated expectational errors made by survey respondents, and that no positive portion of the bias can be attributed to the survey risk premium.*<sup>8</sup>

These disparate findings require some resolution. Besides the different statistical methodologies used, there are two fundamental differences between their analyses. First, the two papers use different data sets for their empirical tests: Fama's study covers data observed at four-week intervals from August 1973 through December 1982, while Frankel-Froot's data are of varying frequency over primarily 1981–85.<sup>9</sup> Fama's sample covers nine exchange rates, including the six that Frankel-Froot examine. Second, the Frankel-Froot study uses survey data rather than the *ex post* market observations for the expectation proxy. This

creates some problems of interpretation, as Frankel-Froot recognize.<sup>10</sup> While the measurement errors can be statistically addressed, there are three economic differences between survey opinion and market actions that warrant consideration in weighing the conflicting results of Fama and Frankel and Froot.

Survey responses may deviate from market expectations first because a single observation rather than a weighted average forms the datum. That is, Frankel-Froot use the median response to represent the typical market agent. In contrast, when expectations are deduced from market actions (actual portfolio positions or changes in position), the expectations of every active agent are included in a composite average with the weights being asset holdings or changes in asset holdings. This population-weighted, distribution-based expectation may differ considerably from the median proxy, especially if the tails of the expectation distribution contain the beliefs of the agents making the largest purchases. If differences of opinions as well as changes in information move markets, then median survey responses will offer incomplete guides to market expectations.

A related, but slightly different aspect of the difference between survey and market data is that the latter is substantiated by action. Surveys are frequently misleading in that agents are not disciplined in their responses by having to take positions that risk wealth. Put differently, actions speak louder than words, or talk is cheap.

Finally, the survey responses may not be expected values but rather modal values — the most likely values — or, perhaps, risk-adjusted expectations. For example, Frankel-Froot (1986) describe each of their three data sets in about the same form as the Money Market Services (MMS) survey:

Every two weeks from January 1983 to October 1984, MMS spoke by phone with an average of 30 currency traders or currency-room economists at major international banks. Respondents were asked for their expectations of the value of the pound, mark, Swiss franc and yen against the dollar in two weeks and three months time. From October 1984 to February 1986, MMS conducted its survey every week, asking for expectations one week and one month into the future (p. 4).

For normally distributed future spot rates, such ambiguity would not matter since mode and mean are equal; if the distributions are asymmetric, however,

<sup>7</sup>For example, see Hodrick and Srivastava (1986), Frenkel (1986) and Boothe and Longworth (1986).

<sup>8</sup>Frankel and Froot (1986), p. 28, emphasis added.

<sup>9</sup>Frankel-Froot do report some earlier data (1976–78), but the bulk of their tests are on data from the 1980s.

<sup>10</sup>Frankel-Froot (1986), p. 4.

mode and mean are unequal.<sup>11</sup> Consequently, the respondents' interpretations become important, and changes in the median respondent, the identity of the responding institutions or their spokesman makes the interpretation of survey expectations even more problematic.

Since these are unavoidable properties of survey data, they cloud the interpretation of survey-based findings. The other two possible sources of the disparity between the findings — different data and different time periods — can be tested. For Fama's study, reestimation of the model will determine whether, over the latter period on the same data, his results still diverge from those of Frankel and Froot. Thus, in the next section, we reestimate Fama's model over a period including the 1981–85 period and use the same data source as Frankel and Froot.<sup>12</sup>

## FAMA'S TEST FOR A VARIABLE RISK PREMIUM, AN EXTENSION

Fama's (1984) test for a variable risk premium decomposes the forward premium ( $F_t - S_t$ ) into its two components: the expected change in the spot rate [ $E(S_{t+1} - S_t)$ ] and the risk premium [ $P_t$ ] as shown in equation 2. Fama then considers two regressions using the forward premium as the explanatory variable and each of the two components of the forward premium — the forward rate error,  $F_t - S_{t+1}$ , and the *actual* change in the spot rate,  $S_{t+1} - S_t$  — as dependent variables:

$$(6) \quad F_t - S_{t+1} = a_1 + b_1(F_t - S_t) + e_{1t},$$

<sup>11</sup>That is, when distributions are not symmetric, the different statistics that survey respondents might interpret as "expectations" will be widely divergent. When distributions of future spot exchange rates are symmetric, the mean and mode (most likely future exchange rate) are the same. Also, the odd moments of a symmetric distribution are zero, so that skewness could not influence a survey respondent's answer. If distributions are asymmetric, however, the mean and mode will diverge and nonzero skewness (the third moment of the distribution) influence the risk premium and, hence, the survey response. For example, consider two alternative distributions for the DM one month in the future:

- I. *Symmetric Distribution (likelihood)*  
\$.667 (10%), \$.606 (80%), \$.545 (10%).
- II. *Asymmetric Distribution (likelihood)*  
\$.667 (20%), \$.606 (80%)

In each distribution, the mode is \$.606, which is also the mean of I but, the mean of II is \$.618. Thus, the statistic that respondents report as their expected value matters for distribution II, but does not matter for distribution I.

<sup>12</sup>Frankel and Froot (1986) use spot and forward exchange rate data from DRI, while Fama (1984) uses data from Harris Trust National Bank of Chicago. In the results reported in tables 1 and 2, we use DRI data.

and

$$(7) \quad S_{t+1} - S_t = a_2 + b_2(F_t - S_t) + e_{2t}.$$

In these regression equations,  $b_2$  estimates the accuracy of the forward premium in predicting the actual change in the spot rate, whereas  $b_1$  reveals the risk premium component of the forward premium. Since the premium and forward rate errors may have non-zero covariance, the coefficients in (6) and (7) cannot be used directly to measure the proportion of variation due to risk and forecast errors, but the difference between them does provide some information.<sup>13</sup>

The difference between the two estimated coefficients,  $(b_1 - b_2)$ , provides statistical evidence on the proportional importance of variation in the risk premium vs. variation in the rational future spot rate forecast error as sources of variation in the forward premium. Specifically, if  $b_1 - b_2$  is positive and statistically significant, most of the variation in forward premium is due to variation in the risk premium.<sup>14</sup> Conversely, if  $b_1 - b_2$  is negative and statistically significant, most of the variation is due to variation in the expected change in the exchange rate. Finally, if  $b_1 - b_2$  is not significant, it is not possible to draw any conclusions about the source of variation.

<sup>13</sup>As shown in Fama (1984), p. 21, by assumption of rational expectations,

$$b_1 = \frac{\text{cov}(F_t - S_{t+1}, F_t - S_t)}{\sigma^2(F_t - S_t)} \\ = \frac{\sigma^2(P_t) + \text{cov}(P_t, E_t(S_{t+1} - S_t))}{\sigma^2(F_t - S_t)}$$

and

$$b_2 = \frac{\text{cov}(S_{t+1} - S_t, F_t - S_t)}{\sigma^2(F_t - S_t)} \\ = \frac{\sigma^2(E_t(S_{t+1} - S_t)) + \text{cov}(P_t, E_t(S_{t+1} - S_t))}{\sigma^2(F_t - S_t)}$$

Since the covariance term appears in the  $b_1$  and  $b_2$  regression coefficients, neither  $b_1$  nor  $b_2$  can be used by itself to assess the relative contribution of risk or forecast error to the forward premium; however, since they have a common denominator,  $\sigma^2(F_t - S_t)$ , the difference between  $b_1$  and  $b_2$ , which does not contain this term in the numerator, can be used to provide evidence about the proportional contribution of risk and forecast error,

$$b_1 - b_2 = \frac{\sigma^2(P_t) - \sigma^2(E_t(S_{t+1} - S_t))}{\sigma^2(F_t - S_t)}.$$

<sup>14</sup>The standard error of  $b_1 - b_2$  is twice the common standard error of  $b_1$  and  $b_2$ : Since (6) and (7) imply that  $b_1 + b_2 = 1$ , by definition of the variance of  $b_1 - b_2$

$$\sigma(\hat{b}_1 - \hat{b}_2) = [E(\hat{b}_1 - b_1 - (\hat{b}_2 - b_2))^2]^{1/2} \\ = [E(\hat{b}_1 - b_1 - (1 - \hat{b}_1) + (1 - b_1))^2]^{1/2} \\ = 2\sigma(b_1).$$

Table 1

### Tests of Stability of Regression Estimates of Fama's Equations During Subperiods 1976.01–85.06

	F-Statistics for Tests of Subperiod Breaks						
	All Subperiods				Pairs of Subperiods		
	B,D,S	B + D,S	B + S,D	B,D + S	B,D	B,S	D,S
Belgium	4.11*	0.11	3.04✓	3.14*	3.97*	1.14	0.91
Canada	0.67	0.09	0.46	0.51	0.49	0.23	0.19
France	2.52✓	0.04	2.10	1.74	2.75✓	0.47	0.65
Germany	5.07**	2.46✓	1.98	1.85	2.54✓	3.21*	2.95✓
Italy	2.41✓	0.26	1.84	1.45	2.20	0.61	0.87
Japan	1.15	0.95	0.27	0.05	0.18	1.01	1.12
Netherlands	3.36*	2.71✓	0.56	0.41	0.65	2.95✓	2.81✓
Switzerland	1.46	0.56	0.37	1.33	0.86	1.14	0.16
United Kingdom	5.56**	4.60*	0.07	2.60✓	1.05	5.20**	2.80✓

NOTE: Subperiods are denoted by Before (B), During (D), and Since (S) the 1979.10–82.09 subperiod of U.S. monetary aggregate targeting. Subperiods tested are separated by commas; plus indicates inclusion. Significance levels are indicated by \*\* for 1 percent, \* for 5 percent, ✓ for 10 percent.

### Fama's Specification Estimated by Subperiods, 1976–85

One possible reason that different sample periods (Fama, 1973–82; Frankel-Froot, 1981–85) yield different results is that the structure of markets may have changed during or between these periods. Economists have argued that the so-called peso problem makes the 1973–76 period difficult to interpret.<sup>15</sup> Others have argued that the development of foreign exchange markets, learning curve behavior of agents and the evolution of floating exchange rate policy are other reasons why subperiods may differ in structure.<sup>16</sup> In particular, several authors have presented evidence that a change in the monetary regime in the United States during the last quarter of 1979 may have caused a structural change.<sup>17</sup> Consequently, we have estimated Fama's model, equations 6 and 7, over all combinations of the three subperiods of 1976.01–1985.06:

before (B), during (D) and since (S) the interval of monetary aggregate targeting, 1979.10–1982.09.<sup>18</sup>

F-statistics for tests of these structural breaks over the 1976–85 period against the null hypothesis of no breaks are reported in table 1. These Chow tests are used to determine the proper estimation subperiods to be reported in table 2. As the first column of table 1 indicates, Canada, France, Italy, Japan and Switzerland do not reject the full-period structural stability hypothesis, and their regression estimates in table 2 are for the undivided full period, indicated by B + D + S. Belgium, Germany, the Netherlands and the United Kingdom reject the null hypothesis at the 5 percent level or better, and their regression estimates are reported by the appropriate subperiods.<sup>19</sup>

Table 2 reports the regression estimates of (6) and (7) for the nine currencies whose structures were examined in table 1. Overall, the b1 – b2 test reported in the

<sup>15</sup>The peso problem refers to the devaluation of the Mexican peso which was anticipated throughout the 1973–76 period and which occurred in early 1976. More generally, it refers to any anticipated exogenous event that does not occur within the sample period. See Krasker (1979) and Isard (1987).

<sup>16</sup>See Isard (1987).

<sup>17</sup>For example, see Ott and Veugelers (1986) and Frenkel (1986).

<sup>18</sup>The later starting date also avoids the peso problem; see Krasker (1979).

<sup>19</sup>Interestingly, the data for none of the countries supported the alternative hypothesis that the Before and Since subperiods were the same. Germany and Belgium provided evidence that all three periods were dissimilar, while the Netherlands and the United Kingdom indicated that the Before and During subperiods were similar but jointly different from the Since subperiod.

Table 2

### Estimation Results for Fama's Tests: Significance of Variable Risk Premium in Forward Rate Errors

Country	Subperiod <sup>1</sup>	Regression Coefficients and Standard Errors						Summary Statistics			Risk Premium Test <sup>2</sup>
		a1	b1	a2	b2	s(a)	s(b)	R <sub>1</sub> <sup>2</sup>	R <sub>2</sub> <sup>2</sup>	DW	
Belgium	B	-0.01	0.80	0.01	0.19	0.01	1.25	.01	.00	2.76	0.24
	D	0.02	1.34	-0.02	-0.34	0.01	1.40	.03	.00	1.74	0.60
	S	0.01	3.06	-0.01	-2.06	0.01	3.72	.02	.01	2.01	0.69
Canada	B + D + S	0.00	2.20	-0.00	-1.20	0.00	0.87	.05	.02	2.33	1.95/
France	B + D + S	0.01	1.38	-0.01	-0.38	0.00	0.74	.03	.00	2.22	1.20
Germany	B	-0.01	2.18	0.01	-1.18	0.01	2.50	.02	.01	2.82	0.67
	D	0.01	0.81	-0.01	0.19	0.01	2.62	.00	.00	1.81	0.12
	S	-0.05	15.47	0.05	-14.47	0.02	5.52	.20	.18	2.44	2.71*
Italy	B + D + S	0.01	1.64	-0.01	-0.64	0.00	0.47	.10	.02	2.01	2.40*
Japan	B + D + S	-0.01	3.41	0.01	-2.41	0.00	1.01	.09	.05	1.97	2.88**
Netherlands	B + D	-0.01	3.78	0.01	-2.78	0.00	1.14	.12	.07	2.33	2.89**
	S	-0.04	15.28	0.04	-14.28	0.02	4.71	.25	.23	2.54	3.14**
Switzerland	B + D + S	-0.02	4.19	0.02	-3.19	0.01	1.39	.08	.04	2.02	2.66**
United Kingdom	B + D	0.00	2.26	-0.00	-1.26	0.01	0.95	.07	.02	1.94	1.85/
	S	0.01	11.92	-0.01	-10.92	0.01	3.30	.30	.26	2.49	3.46**

NOTE: \*\* indicates significance at 1 percent level; \* indicates significance at 5 percent level; / indicates significance at 10 percent level.

<sup>1</sup>Subperiods are as follows: B, 1976.01–1979.09; D, 1979.10–1982.09; S, 1982.10–1985.06.

<sup>2</sup>Standard error of difference between b1 and b2.

last column reasserts the relative importance of the risk premium that Fama found in his original tests. This result holds both for currencies that revealed structurally differentiated subperiods and for currencies that did not, that is, Canada, Italy, Japan and Switzerland. Of the nine currencies, only the Belgian franc and the French franc failed to support the statistically greater importance of the risk premium over the expected change in the exchange rate.<sup>20</sup> The other results reported in table 2 indicate that the results are quantitatively similar to those reported by Fama for the same currencies over a shorter sample and different data set.

## CONCLUSION

Markets for foreign exchange are well-organized, high-volume interactions that encompass the trading activities of many competitive profit-seeking agents. That is, they appear similar in many functional as-

pects to other (domestic) financial markets so that the hypothesis of efficiency is plausible. Empirical tests, however, have rejected the joint hypothesis of market efficiency and no risk premium in the foreign exchange market. That is, while CIP holds, UIP does not.

Consequently, the role of the risk premium in foreign exchange markets often was not distinguishable from market inefficiency until Fama's (1984) analysis provided a test of its importance in the foreign exchange market. Frankel and Froot (1986) have provided survey-based evidence that also supports the existence of a risk premium but conflicts with Fama's assessment of the risk premium's economic importance. We have replicated Fama's study for an extended sample period and, although the results varied substantially by subperiods, found results that in general corroborate Fama's findings. What this impasse suggests is that the economic significance of the risk premium will not be resolved by tests of its existence, but may require direct modelling of the portfolio choice problem from which it arises.<sup>21</sup>

<sup>20</sup>But even for Belgium and France, the difference  $b1 - b2$  was positive so that forecast error variance was not greater than risk premium variance for any currency.

<sup>21</sup>For an application of portfolio choice theory to this problem, see Bornhoff and Koedijk (1987).

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# Federal Fiscal Policy Since the Employment Act of 1946

*Keith M. Carlson*

**T**HE Employment Act of 1946 assigned to the federal government the official responsibility to achieve and maintain a high level of employment.<sup>1</sup> According to the act:

The Congress hereby declares that it is the continuing policy and responsibility of the Federal Government to use all practicable means . . . to promote maximum employment, production, and purchasing power.<sup>2</sup>

While the act does not specify how to achieve these goals, monetary and fiscal policy over the past 40 years have evolved into the primary tools of stabilization policy.

The general purpose of this article is to summarize fiscal policy since the Employment Act of 1946. The meaning and significance of fiscal policy are discussed, including some measurement problems associated with fiscal actions. Different measures of fiscal action during periods when the pace of economic activity was significantly above or below trend are examined to determine whether the direction of fiscal actions generally has been consistent with the Employment Act.

## THE MEANING OF FISCAL POLICY

Fiscal policy is the use of federal expenditures and taxes to stabilize the economy. Two aspects of this definition require clarification. First, for the most part,

the government does not control directly the dollar amount of expenditures or taxes; instead it controls specific programs and the structure of tax *rates*. Second, to evaluate fiscal policy, a more specific definition of "economic stabilization" is required.

## Defining Fiscal Action

Though Congress is originally responsible for establishing various expenditure programs — indeed, it must appropriate funds each year to keep a program in place — the dollar cost of implementing and maintaining such programs depends on economic conditions, including movements in the general level of prices. Similarly, though Congress legislates tax rates, the performance of the economy in conjunction with these rates determines the dollar amount of tax receipts. Once a tax structure is established, receipts are forthcoming in a particular year without any further action by the government.

The 1962 Economic Report of the President summarized the government's control problem diagrammatically.<sup>3</sup> In figure 1, panel A, an expenditure program is shown as a downward-sloping line,  $E_0$ , reflecting primarily the decline in unemployment benefits as real GNP increases. In combination with a given structure of tax rates (the line  $T_0$ ), the surplus or deficit ( $S_0$ ) is also drawn as a function of the level of GNP in the bottom portion of panel A. A fiscal action, in this case an increase in spending programs, is shown as a shift of

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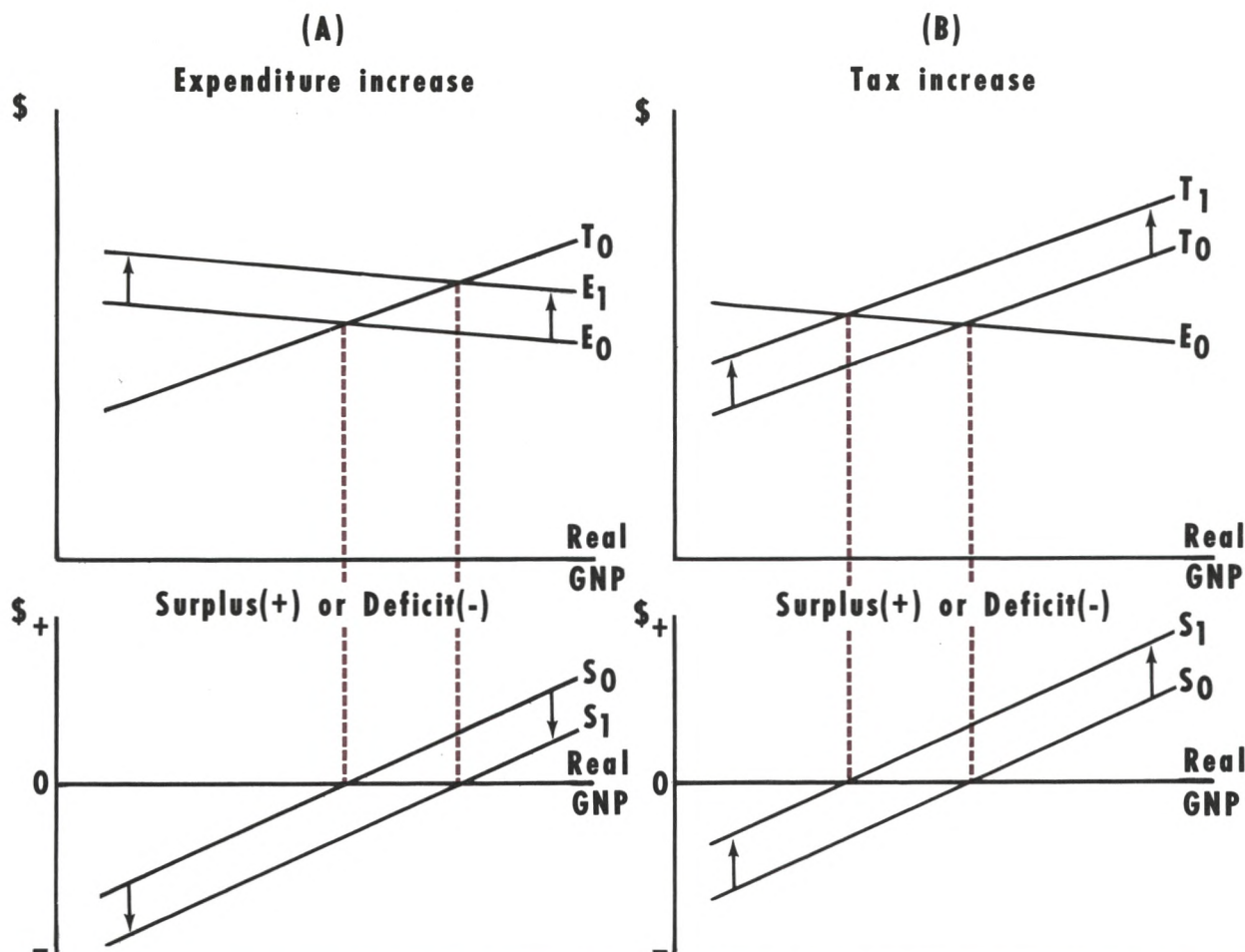
<sup>1</sup>For discussion of the evolution of the Employment Act along with its updated version, The Full Employment and Balanced Growth Act of 1978, see Santoni (1986).

<sup>2</sup>From Public Law 304, quoted in Norton (1985), pp. 79–80.

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<sup>3</sup>Council of Economic Advisers (1962), pp. 77–84. Using real GNP on the horizontal axis implies that the expenditure and tax lines are drawn for a given price level. To avoid complicating the analysis, price level problems are not considered explicitly here. For detailed discussion of such problems, see Carlson (1983).

Figure 1  
An Illustration of Fiscal Actions



the expenditure line to  $E_1$ , which also shifts the surplus/deficit line. But because the new level of expenditures is now greater for each level of GNP, the surplus is less (or the deficit is more) at each GNP level.

Similarly, the affects of a tax action are shown in panel B of figure 1. A given structure of tax rates is shown as an upward-sloping line,  $T_0$ , indicating that taxes increase with the level of GNP. An increase in tax rates will shift the surplus/deficit line upward, to  $S_1$ . This shift represents the effect of legislated or administered fiscal actions.

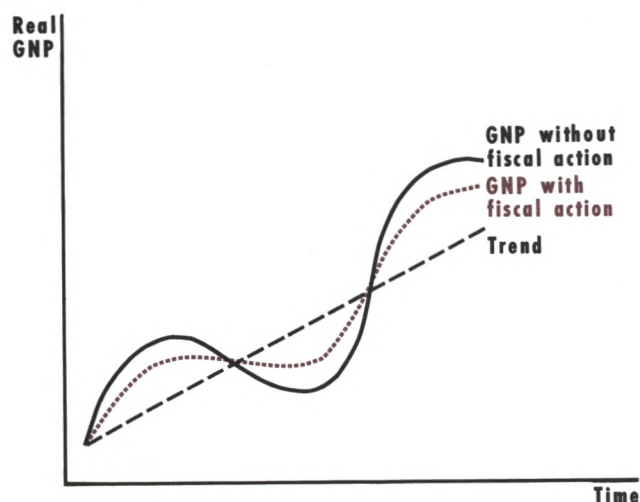
### Defining Economic Stabilization

The second clarification concerns the meaning of the term "stabilizing the economy." While the wording of the Employment Act can serve as a guide, it is not

very specific. In particular, the word "maximum" is subject to a variety of interpretations. A working interpretation has evolved over the years, since one was never clearly delineated in the late 1940s and 1950s. A considerable amount of controversy revolves around the specific goals associated with economic stability.

In theory, the objective of fiscal policy can be defined quite clearly. If the economy is subject to fluctuations, fiscal policy should be used to dampen those fluctuations. To illustrate, see figure 2. The solid line summarizes a cyclical pattern for GNP around an upward trend. A policy of economic stabilization, as shown by the dashed line, dampens the fluctuations. Generally, this would be achieved by taking restrictive action when GNP is above trend and stimulative action when it is below. Doing this at the right time and in the right dosage is, of course, difficult in practice. None-

Figure 2  
The Meaning of Economic Stabilization



theless, this concept does provide a framework for assessing the success or failure of past actions, which, in turn, might be useful as a guide to formulating future actions.

## THE MEASUREMENT OF FISCAL ACTIONS

There has been continuing controversy over the proper role, if any, for fiscal policy in the U.S. economy since the Employment Act of 1946 was passed. Many issues remain unsettled. Accompanying the debate about the theory of fiscal policy have been significant changes in the way fiscal actions are measured.

### Evolution of Budget Data

When the Employment Act of 1946 was passed, about the only data readily available on the federal budget were the figures released in the budget document itself. These figures were for fiscal years for the administrative budget and excluded the transactions of trust funds, for example, social security. The development of the national income accounts budget in the 1950s resulted in the availability of quarterly data. Later, the transactions of the trust funds were com-

bined with the administrative budget, producing the consolidated cash budget.<sup>5</sup>

Currently, the unified budget, which succeeded the consolidated cash budget, serves as the primary budget measure used by the government in its fiscal planning. The federal sector of the national income and product accounts, sometimes called the national income accounts budget, is considered a more useful measure for economic analysis, however (see insert).

### Full-Employment Budget Concept

One of the most important innovations in measuring fiscal actions occurred in the 1960s when the full employment budget was developed as a part of the *Economic Report of the President*.<sup>6</sup> The full-employment budget is not really a budget at all: it is an analytical measure that adjusts federal expenditures and receipts in the national income accounts to account for the feedback effects of economic activity. One of its main features is to draw the distinction between active and passive deficits (or surpluses). Active deficits (surpluses) result from policy actions, that is, they reflect legislated or administered changes in expenditures or tax rates. Passive deficits (surpluses) reflect the influence of economic activity on the deficit, given the spending programs and the tax structure in place. This distinction is shown in figure 3, which reproduces panel A in figure 1 except that the full-employment level of GNP is now a dashed vertical line. An active deficit (in this case, a smaller surplus) is shown as a movement from A to B. A movement from A to C can be described as a passive deficit (again a smaller surplus).

The full-employment budget was renamed the high-employment budget in the late 1960s and later changed to the cyclically adjusted budget in 1983.<sup>7</sup> Despite these changes, its purpose is unchanged: to adjust actual expenditures and receipts for the influence of changing economic conditions.

### Other Measures

In recent years, other measures of fiscal action have been introduced; most of them are refinements of existing measures. For example, with the recent growth in the importance of interest cost, and its role in eventually eradicating deficits, James Tobin has

<sup>4</sup>For an exhaustive survey of the theory of fiscal policy, see Brunner (1986).

<sup>5</sup>President's Commission on Budget Concepts (1967).

<sup>6</sup>Council of Economic Advisers (1962), and Carlson (1967).

<sup>7</sup>de Leeuw and Holloway (1983).

## The Budget and Federal Sector of the National Income and Product Accounts

The federal budget summarizes the finances of the government and records transactions on a cash basis. The federal sector of the national income and product accounts (sometimes referred to as the NIA budget) is considered a more appropriate measure of budget's effect on economic activity because it is conceptually consistent with the national income and product accounts which measure current income and production. The NIA budget excludes financial transactions and measures taxes when the liability is incurred. Defense procurement is recorded when the goods are delivered to the government; work in progress is a part of private business inventories. The accompanying table shows the relationship of the budget to the NIA budget.<sup>1</sup>

<sup>1</sup>For further discussion, see Budget of the United States Government for Fiscal Year 1988, *Special Analysis B*.

### Relationship of Budgets for Fiscal 1986 (billions of dollars)

#### Receipts

Total budget receipts	\$ 769.1
Government contributions for employee retirement	33.8
Other netting and grossing	12.3
Timing adjustments	0.8
Geographic exclusions	- 1.4
Other	—
NIA receipts	\$ 814.7

#### Expenditures

Total budget outlays	\$ 989.8
Lending and financial transactions	- 12.5
Government contributions for employee retirement	33.8
Other netting and grossing	12.3
Defense timing adjustment	3.2
Bonuses on outer continental shelf land leases	2.0
Geographic exclusions	- 5.4
Other	2.0
NIA expenditures	\$1,025.4

developed the notion of primary surplus or deficit.<sup>8</sup> This measure is simply the surplus or deficit minus interest payments to the public and Federal Reserve payments to the Treasury. This measure can be calculated on a cyclically adjusted basis as well.

Another measure receiving recent publicity has been developed by Robert Eisner.<sup>9</sup> His measure, which can be derived for a variety of budget measures, is adjusted for inflation. This means adjusting the deficit for changes in the value of government debt outstanding due to inflation.

## ECONOMIC PERFORMANCE AND FISCAL POLICY: AN OVERVIEW

While several fiscal policy measures have been developed over the years, the cyclically adjusted budget approach is used here to assess the direction of fiscal

actions in light of the Employment Act's objectives. This approach attempts to measure the active deficit directly; thus, it represents one measure of "discretionary" fiscal action. Several other variants of the cyclically adjusted budget also are examined.

To assess fiscal policy actions, one must discuss and analyze them in an economic context.<sup>10</sup> The background for this assessment is shown in chart 1, which summarizes economic and budget data with reference to the ratio of GNP to its trend value.<sup>11</sup> The vertical

<sup>10</sup>For detailed summaries of fiscal policy, see Holmans (1962), Lewis (1962), Stein (1969), Eisner (1986) and Pechman (1987).

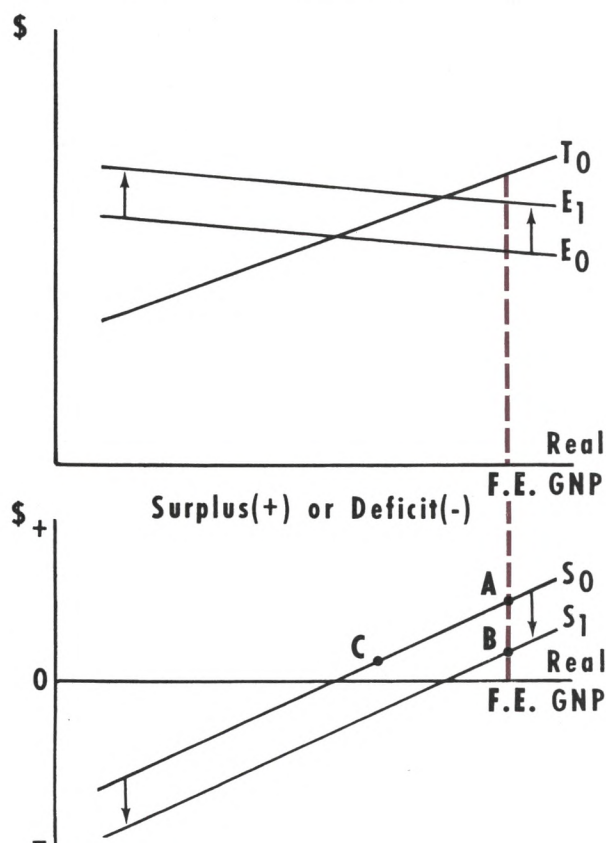
<sup>11</sup>The trend value is calculated following procedures outlined in de Leeuw and Holloway (1983). Since the Department of Commerce does not attempt to cyclically adjust the price level, the ratio could be interpreted in terms of nominal GNP. That is,

$$\frac{\text{actual real GNP}}{\text{trend real GNP}} = \frac{\text{actual real GNP} \times P}{\text{trend real GNP} \times P} = \frac{\text{actual nominal GNP}}{\text{trend nominal GNP}}$$

<sup>8</sup>Tobin (1984).

<sup>9</sup>Eisner (1986).

Figure 3  
Full-Employment Budget



lines represent periods when GNP was persistently above or below trend, or when it was moving along trend. The choice of periods using trend GNP as a point of reference follows the interpretation of figure 2 and differs from procedures followed by the National Bureau of Economic Research where reference points are based on whether economic activity is rising or falling.<sup>12</sup>

The top tier of chart 1 summarizes U.S. economic performance as measured by the ratio of GNP to its trend value from 1947 through 1986. U.S. economic performance in the late 1940s and early 1950s was

quite volatile, reflecting, in part, the influence of wars and their aftermath. During the second half of the 1950s and the early 1960s, economic performance fluctuated relatively close to trend. The second half of the 1960s again reflected wartime conditions. Finally, economic performance in the 1970s and 1980s showed considerable fluctuation around trend, even though there were no major wars.

The bottom tier of the chart summarizes fiscal actions as measured by the surplus or deficit in the cyclically adjusted budget. To adjust the level of the surplus or deficit for the size of the economy, we divide by the trend value of GNP in current dollars. The resulting measure is quite volatile on a quarterly basis.

This measure of fiscal action was well in surplus in the late 1940s. The sharp movement from surplus to deficit in the early 1950s followed by the movements back to surplus reflected the Korean War and its aftermath. During the mid-1950s, this budget measure stayed in surplus until 1958 before dipping temporarily into deficit; it bounced back into surplus in 1960.

The period from 1960 to 1968 was one of considerable volatility around a downward trend. Except for one quarter in 1963, this budget was in deficit, increasingly so toward the end of the period when defense spending accelerated during the Vietnam War. By late 1968, however, there was a sharp movement toward a smaller deficit, after a belated tax increase to finance the war. The smaller deficit persisted for the most part until 1975, reflecting mainly the phasing out of the Vietnam War.<sup>13</sup>

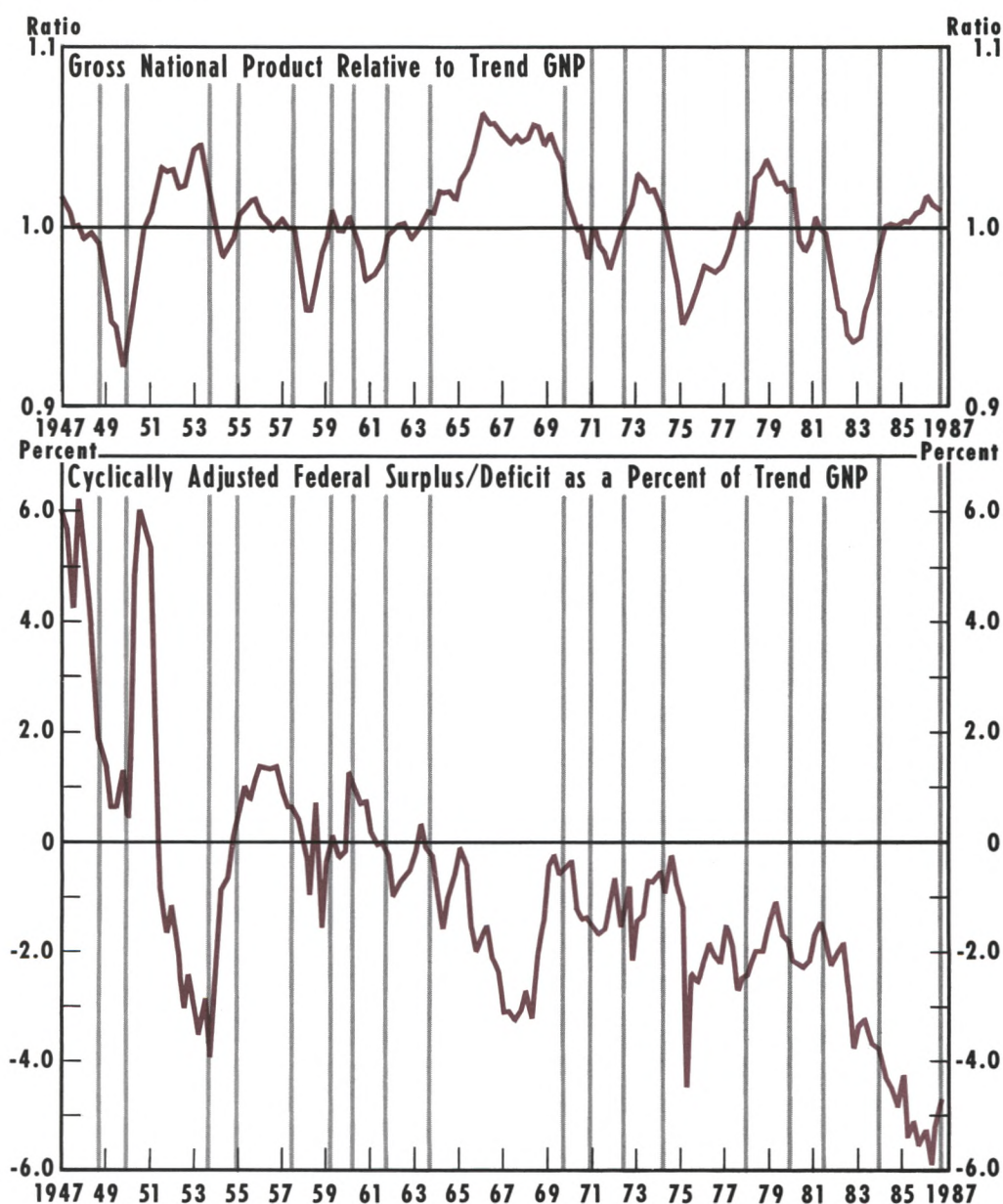
The second half of the 1970s showed a shift toward a larger deficit, highlighted by an anti-recession tax cut in 1975. Following this tax cut, the deficit remained at about 2 percent of trend GNP through 1981. After 1981, however, the deficit showed a sharp downward movement that generally persisted through 1986. This drop was associated with accelerated expenditure growth and the Economic Recovery Tax Act of 1981, which cut individual income taxes by 25 percent and accelerated depreciation allowances for corporations. Despite some rescinding of these provisions by the Tax Equity and Fiscal Responsibility Act of 1982, the cyclically adjusted deficit fell below 5 percent of trend GNP by 1985-86.

<sup>12</sup>Note that the focus is on real GNP movements, thus deemphasizing the problems of inflation. Generally, periods when GNP is above trend are also periods of inflation. The "stagflation" case is not addressed explicitly; the assumption is made that the Employment Act places priority on real economic performance during such times.

<sup>13</sup>For a review of the sources of change in the federal deficit, see Holloway and Wakefield (1985).

Chart 1

## GNP and Federal Fiscal Actions Relative to Trend GNP



### AN ANALYSIS OF FISCAL ACTIONS: 1947-86

To analyze whether fiscal policy has been conducted in a manner consistent with the Employment Act, the last 40 years was divided into 18 periods, as

shown in chart 1. In the presumed spirit of the Employment Act, assessments of whether "easier" or "tighter" fiscal actions were called for were made as follows: periods when GNP was persistently below trend were viewed as calling for easier fiscal actions; periods when GNP was above trend were judged to

call for tighter fiscal actions. A growth of GNP along trend suggests that fiscal actions were satisfactory.

The subperiods are summarized on the left side of tables 1–3; the “description” column in these tables summarizes the relation of GNP to trend during these periods. “Required policy” follows from our analysis above. In some cases, because GNP was coming off such a high level, the early stages of recession were sometimes lumped in with “expansion above trend” (see I/1951–IV/1953 and II/1959–II/1960). Two other recessions were not noted separately: 1969–70 and 1980; the 1969–70 recession appears mild in retrospect and the 1980 recession was so short, as was the ensuing recovery, that it was not treated separately. In some periods, where it is not obvious what the “required policy” was, such cases are labeled “unknown.”

Tax policy and expenditure policy are examined separately. The tax system is, in a sense, self-perpetuating. Once a tax structure is put in place, the economic system will generate a stream of tax receipts without further “discretionary action.” Expenditure policy, on the other hand, is not as automatic. For the most part, to implement new programs or continue existing ones, some congressional action is required. After examining the tax and expenditure policies separately, the two are combined to assess overall fiscal policy.

### *Federal Tax Policy*

Table 1 summarizes tax policy over the 1947–86 period with the annual rate of change of cyclically adjusted receipts. This change is termed “restrictive” or “stimulative,” depending on whether its growth rate was larger or smaller than that of trend GNP in current dollars. Using cyclically adjusted receipts as a measure of discretionary action implies that they were moving as the policymakers wanted them to. For example, if such receipts were growing significantly faster than trend GNP, we assume that policymakers were content with that outcome.<sup>14</sup>

According to table 1, over the entire 40-year period, tax policy was restrictive in 12 of the 18 periods, although in some cases marginally so (as shown with

question marks in table 1). This apparently reflected the progressive nature of the tax system and the continuing increases in social security taxes, even with the multitude of tax actions legislated throughout the periods (see appendix).

To determine the tax policy response to economic conditions, we focus on those periods when GNP was persistently above or below trend. For the nine periods in which GNP was below trend — mainly recessions and recoveries — tax policy was appropriately stimulative only three times: II/1960–IV/1961, II/1974–I/1978 and III/1981–I/1984.

GNP was persistently above trend in only four periods, two of these during wartime. The table shows that tax policy was restrictive in three of the four cases. The two wartime periods however, require special mention. During the Korean War, corporate, individual and excise taxes were raised very quickly after the outbreak of hostilities. As a result, most of the revenue effect occurred in the IV/1948–I/1951 period while the economy was still recovering from the 1948–49 recession. In the I/1951–IV/1953 period, on the other hand, revenues declined in the latter part of the period because some wartime taxes were allowed to expire.

The Vietnam War was handled much differently. In the early part of IV/1963–IV/1969, most tax actions were stimulative rather than restrictive. Not until 1968 and 1969, long after the war had accelerated, were taxes increased. Because of the 10 percent surcharge on corporate and individual income taxes in 1968, tax policy during the IV/1963–IV/1969 period is shown as restrictive, even though it was stimulative during the early part of this period.

In summary, tax policy often has not been conducted in a manner consistent with the Employment Act. Tax actions that were taken were usually overwhelmed by other considerations, namely, financing wars and the social security system. The record has improved, however, in the 1970s and 1980s. Major tax cuts were implemented during the 1973–75 recession and before the 1981–82 recession; during the 1972–74 and 1978–80 periods of excess demand, taxes increased faster than GNP.

### *Federal Expenditure Policy*

Table 2 summarizes federal expenditure policy for the same periods as described in table 1. The measure of expenditure policy is total cyclically adjusted expenditures; the reason underlying the use of this as a

<sup>14</sup>The Commerce Department also calculates another measure, which purports to be a measure of discretionary tax action. It is derived from total cyclically adjusted receipts by subtracting an estimate of the automatic effect of inflation on such receipts (See Holloway (1984)). The Commerce Department calls this residual “receipts change due to discretionary and other factors.” Use of this alternative measure did not alter the conclusions.

Table 1  
Federal Tax Actions

Period	No. of quarters	Description	Required policy	Rate of change of cyclically adjusted receipts	Rate of change of trend GNP in current dollars	Tax policy direction	Correct policy direction?
I/47–IV/48	7	Expansion along trend	Unknown	0.5%	11.6%	Stimulative	—
IV/48–I/51	9	Recession and recovery	Stimulative	19.5	7.8	Restrictive	No
I/51–IV/53	11	Expansion above trend including early recession	Restrictive to Unknown	–0.8	4.5	Stimulative	No
IV/53–I/55	5	Recession and recovery	Stimulative	7.0	6.4	Restrictive?	No
I/55–III/57	10	Expansion along trend	Unknown	7.5	6.3	Restrictive?	—
III/57–II/59	7	Recession and recovery	Stimulative	5.4	4.7	Restrictive?	No
II/59–II/60	4	Expansion along trend including early recession	Unknown to Stimulative	7.4	4.8	Restrictive	No
II/60–IV/61	6	Mild recession and recovery	Stimulative	3.9	4.5	Stimulative?	Yes
IV/61–IV/63	8	Expansion along trend	Unknown	6.0	5.6	Restrictive?	—
IV/63–IV/69	24	Expansion above trend	Restrictive	8.9	7.7	Restrictive	Yes
IV/69–I/71	5	Expansion along trend	Unknown	2.2	9.5	Stimulative	—
I/71–III/72	6	Expansion below trend	Stimulative	10.7	8.9	Restrictive	No
III/72–II/74	7	Expansion above trend	Restrictive	13.1	10.3	Restrictive	Yes
II/74–I/78	15	Recession and recovery	Stimulative	9.5	10.4	Stimulative?	Yes
I/78–I/80	8	Expansion above trend	Restrictive	13.6	11.5	Restrictive	Yes
I/80–III/81	6	Short recession and recovery followed by expansion along trend	Stimulative to Unknown	16.4	12.3	Restrictive	No
III/81–I/84	10	Recession and recovery	Stimulative	3.8	7.1	Stimulative	Yes
I/84–IV/86	11	Expansion along trend	Unknown	5.7	5.1	Restrictive?	—

Table 2  
Federal Expenditure Actions

Period	No. of quarters	Description	Required policy	Rate of change of cyclically adjusted expenditures	Rate of change of trend GNP in current dollars	Expenditure policy direction	Correct policy direction?
I/47-IV/48	7	Expansion along trend	Unknown	17.1%	11.6%	Stimulative	—
IV/48-I/51	9	Recession and recovery	Stimulative	9.3	7.8	Stimulative	Yes
I/51-IV/53	11	Expansion above trend including early recession	Restrictive to Unknown	19.1	4.5	Stimulative	No
IV/53-I/55	5	Recession and recovery	Stimulative	-10.2	6.4	Restrictive?	No
I/55-III/57	10	Expansion along trend	Unknown	7.1	6.3	Stimulative?	—
III/57-II/59	7	Recession and recovery	Stimulative	7.0	4.7	Stimulative	Yes
II/59-II/60	4	Expansion along trend including early recession	Unknown to Stimulative	2.9	4.8	Restrictive	No
II/60-IV/61	6	Mild recession and recovery	Stimulative	8.1	4.5	Stimulative	Yes
IV/61-IV/63	8	Expansion along trend	Unknown	6.2	5.6	Stimulative?	—
IV/63-IV/69	24	Expansion above trend	Restrictive	9.1	7.7	Stimulative	No
IV/69-I/71	5	Expansion along trend	Unknown	7.0	9.5	Restrictive	—
I/71-III/72	6	Expansion below trend	Stimulative	7.8	8.9	Restrictive	No
III/72-II/74	7	Expansion above trend	Restrictive	13.6	10.3	Stimulative	No
II/74-I/78	15	Recession and recovery	Stimulative	11.6	10.4	Stimulative	Yes
I/78-I/80	8	Expansion above trend	Restrictive	12.7	11.5	Stimulative	No
I/80-III/81	6	Short recession and recovery followed by expansion along trend	Stimulative to Unknown	14.8	12.3	Stimulative	Yes
III/81-I/84	10	Recession and recovery	Stimulative	7.9	7.1	Stimulative?	Yes
I/84-IV/86	11	Expansion along trend	Unknown	7.0	5.1	Stimulative	—

discretionary variable parallels that for cyclically adjusted receipts.<sup>15</sup>

To determine whether expenditures were stimulative or restrictive, we compare them with trend GNP. Like cyclically adjusted receipts in table 1, we compare total expenditures with trend GNP in current dollars. According to this measure, expenditure actions were stimulative in fourteen of the eighteen periods. The overall 40-year period provides a mixed assessment of expenditure policy. There were nine periods when economic conditions called for stimulative policy. Expenditure policy was stimulative in six of those periods. As noted earlier, total expenditures grew faster than trend GNP throughout the entire period. Thus, it is not surprising that expenditure policy just happens to have moved in the appropriate direction more often than not when economic conditions called for policy in a stimulative direction. To refer to such results as an example of success perhaps overrates them.

There were four periods of high demand, when a restrictive policy would have been appropriate; in each case, however, expenditure policy was stimulative. Two of these periods encompassed the buildup for the Korean and Vietnam wars.

On net, like tax policy, federal expenditure policy has not been consistent generally with the Employment Act. During periods of recession and recovery, it was stimulative only two-thirds of the time. During periods of excess demand, it was always stimulative; two of these periods, however, were associated with wars.

### **Total Fiscal Policy**

As a final step in assessing whether fiscal policy has been conducted consistent with the spirit of the Employment Act, we examine measures of total fiscal policy. An overall measure is derived from tables 1 and 2 and summarized in table 3. It is the dollar change in expenditures minus the dollar change in receipts, converted to an annual rate, and divided by the average of trend GNP (in current dollars) over the relevant subperiod. If this ratio was positive, policy on net was stimulative over the period. If it was negative, policy was restrictive.

In only four of the 12 nonneutral cases did the measure of total fiscal policy move in the right direction. These were recession and recovery periods after 1955. When GNP was above trend, the quantitative measures indicated stimulus in each case, although the size of the net stimulus usually was very small. Analysis of this summary measure suggests that fiscal actions generally have moved in a direction opposite to that which would be consistent with the Employment Act.

### **SUMMARY**

The Employment Act of 1946 designated a role for the federal government in stabilizing the level of economic activity. Economists, in general, interpret this to mean that monetary and fiscal actions should be used for that purpose. This article summarizes the general movement of fiscal policy since the 1946 act.

After reviewing the meaning and measurement of fiscal policy, fiscal actions were summarized over the 1947–86 period. This was done by dividing the 40-year period into subperiods depending on the relation of GNP to its trend value. Various measures of fiscal action then were examined to determine if such actions were consistent with the spirit of the Employment Act, focusing on the direction of fiscal response to economic conditions, not on the impact of fiscal actions on the economy.

Although various measures of fiscal actions occasionally offered different conclusions, some tentative general conclusions emerged. Fiscal actions during periods of recession and recovery were usually stimulative, although this assertion is somewhat sensitive to the measure of fiscal action chosen. During periods of high demand and inflation, fiscal actions tended to be inappropriate mainly because these were wartime periods.

Overall, it is impossible to determine accurately whether the Employment Act has succeeded or failed in stabilizing the economy. To do so requires an assessment of other policies, and perhaps the inherent stability of private actions, as contributors to the economic stability and progress of the United States over the past 40 years.

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<sup>15</sup>The Commerce Department also calculates a direct measure of discretionary expenditure. Reflecting the effect of cost-of-living escalator clauses, it is obtained by subtracting an automatic inflation effect on federal programs from cyclically adjusted expenditures. Use of this measure did not alter the overall conclusions about expenditure policy.

Table 3

**Federal Fiscal Policy: Summary Indicators (dollar amounts in billions)**

Period	No. of quarters	Description	Required policy	Annualized change of cyclically adjusted expenditures	Annualized change of cyclically adjusted receipts	Change in expenditure minus change in receipts ÷ trend GNP in current dollars	Policy direction	Correct policy direction?
I/47–IV/48	7	Expansion along trend	Unknown	\$ 5.4	\$ 0.2	2.1%	Stimulative	—
IV/48–I/51	9	Recession and recovery	Stimulative	3.9	9.6	–2.1	Restrictive	No
I/51–IV/53	11	Expansion above trend including early recession	Restrictive to Unknown	10.8	–0.5	3.2	Stimulative	No
IV/53–I/55	5	Recession and recovery	Stimulative	–7.8	4.5	–3.3	Restrictive	No
I/55–III/57	10	Expansion along trend	Unknown	5.1	5.4	–0.1	Restrictive?	—
III/57–II/59	7	Recession and recovery	Stimulative	5.8	4.6	0.2	Stimulative	Yes
II/59–II/60	4	Expansion along trend including early recession	Unknown to Stimulative	2.6	6.8	–0.8	Restrictive	No
II/60–IV/61	6	Mild recession and recovery	Stimulative	7.7	3.9	0.7	Stimulative	Yes
IV/61–IV/63	8	Expansion along trend	Unknown	6.7	6.5	0.0	Stimulative?	—
IV/63–IV/69	24	Expansion above trend	Restrictive	13.5	13.0	0.1	Stimulative	No
IV/69–I/71	5	Expansion along trend	Unknown	14.1	4.3	1.0	Stimulative	—
I/71–III/72	6	Expansion below trend	Stimulative	17.1	22.0	–0.4	Restrictive	No
III/72–II/74	7	Expansion above trend	Restrictive	34.5	32.1	0.2	Stimulative	No
II/74–I/78	15	Recession and recovery	Stimulative	41.0	31.2	0.6	Stimulative	Yes
I/78–I/80	8	Expansion above trend	Restrictive	61.9	59.1	0.1	Stimulative	No
I/80–III/81	6	Short recession and recovery followed by expansion along trend	Stimulative to Unknown	89.3	89.2	0.0	Unknown	—
III/81–I/84	10	Recession and recovery	Stimulative	60.1	25.8	1.0	Stimulative	Yes
I/84–IV/86	11	Expansion along trend	Unknown	64.1	43.1	0.5	Stimulative	—

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## Appendix

# Chronology of Major Federal Tax Actions: 1948–86

Listed below are the major tax actions affecting federal receipts from 1948 through 1986. The list is not exhaustive but does include the major tax actions. For greater detail, see the following:

The Annual Report of the Secretary of Treasury,  
Budget of the United States Government,  
Survey of Current Business,  
Joseph A. Pechman, *Federal Tax Policy*, 5th ed., The  
Brookings Institution, 1987,  
Congress and the Nation (Congressional Quarterly,  
Inc.).

**1948** Revenue Act of 1948 (enacted 4-2-48 over president's veto): individual income tax rates reduced, standard deduction increased, exemptions raised and income splitting allowed; effective for calendar 1948 with reduced withholding beginning 5-1-48.

**1950** OASDI tax rate raised from 2.0 percent to 3.0 percent.

Revenue Act of 1950 (enacted 9-23-50): individual income tax rates increased, with increased withholding effective 10-1-50; corporate tax rates increased, applicable to profits in calendar 1950; excise tax rate on gambling devices raised, 10 percent tax extended to television sets and deep-freeze units.

**1951** Excess Profits Tax Act of 1950 (enacted 1-3-51): effective 1st quarter 1951 but retroactive to 7-1-50.

OASDI wage base raised from \$3000 to \$3600.

Revenue Act of 1951 (enacted 10-20-51): individual income tax rates increased, with increased withholding effective 11-1-51; corporate tax rate increased (applicable to profits for 3-31-51) and excess profits credit reduced; excise tax rates raised on distilled spirits, beer, cigarettes, gasoline and automobiles, and a new tax enacted on wagers.

**1954** Expiration of Revenue Act of 1951: individual income tax rates reduced.

Excess profits tax allowed to expire.

OASDI tax rate raised from 3.0 percent to 4.0 percent.

Excise Tax Reduction Act of 1954 (enacted 3-31-54): excise tax rates reduced on jewelry, some admissions, telephone service and transportation of persons.

Internal Revenue Code of 1954 (enacted 8-16-54): provided for general reform, with liberalized depreciation allowances one of the most important provisions.

**1955** OASDI wage base raised from \$3600 to \$4200.

**1956** Federal-Aid Highway Act of 1956 (enacted 6-29-56): excise tax rates increased on gasoline, tires, etc.

**1957** OASDI tax rate raised from 4.0 percent to 4.5 percent.

**1958** Excise tax on transportation of property repealed.

**1959** OASDI tax rate raised from 4.5 percent to 5.0 percent, and wage base raised from \$4200 to \$4800.

Excise tax rate raised on gasoline.

**1960** OASDI tax rate raised from 5.0 percent to 6.0 percent.

Excise tax rate raised on tires, tubes and heavy trucks.

**1961** Unemployment insurance tax rate raised from 3.0 percent to 3.1 percent.

**1962** OASDI tax rate raised from 6.0 percent to 6.25 percent.

Unemployment insurance tax rate raised from 3.1 percent to 3.5 percent.

Revenue Act of 1962 (enacted 10-16-62): tax credit for investment in equipment allowed.

Depreciation guidelines and rules revised.

**1963** OASDI tax rate raised from 6.25 percent to 7.25 percent.

Unemployment insurance tax rate reduced from 3.5 percent to 3.35 percent.

- 1964** Unemployment insurance tax rate reduced from 3.35 percent to 3.1 percent.

Revenue Act of 1964 (enacted 2-26-64): individual and corporate tax rates reduced, with reduced withholding effective 3-1-64.

- 1965** Second stage of Revenue Act of 1964.

Excise Tax Reduction Act of 1965 (enacted 6-21-65): excise tax rates reduced on automobiles and air conditioners (retroactive to 5-15-65).

- 1966** Second stage of Excise Tax Reduction Act of 1965.

OASDI tax rate raised from 7.25 percent to 8.4 percent, and wage base raised from \$4800 to \$6600.

Tax Adjustment Act of 1966 (enacted 3-15-66): graduated withholding of individual income taxes introduced, effective 5-1-66, and corporate income taxes accelerated (the act did not alter tax liabilities).

Investment Credit Suspension Act of 1966 effective 10-10-66.

- 1967** OASDI tax rate raised from 8.4 percent to 8.8 percent.

Investment tax credit restored, effective 3-9-67 (enacted 6-13-67).

- 1968** OASDI wage base raised from \$6600 to \$7800.

Revenue and Expenditure Control Act of 1968 (enacted 6-28-68): 10 percent individual income tax surcharge imposed, with withholding effective 7-1-68 but retroactive to 4-1-68 (scheduled to expire 6-30-69); 10 percent corporate tax surcharge imposed, applicable to profits in calendar 1968 (scheduled to expire 6-30-69); scheduled 4-1-68 reduction in the 7 and 10 percent excise tax rates on automobiles and telephone services postponed until January 1970.

- 1969** OASDI tax rate raised from 8.8 percent to 9.6 percent.

The 10 percent surcharge, previously scheduled to expire 6-30-69, extended to 12-31-69.

Tax Reform Act of 1969 (enacted 12-30-69 but generally effective beginning in 1970): personal exemption increased from \$600 to \$625 in 1970,

to \$650 in 1971, to \$700 in 1972 and to \$750 in 1973; standard deduction increased from 10 to 15 percent over a three-year period beginning in 1971; maximum marginal rate introduced of 50 percent on earned income (maximum rate on unearned income remained at 70 percent); surcharge extended to 6-30-70 at a 5 percent rate; scheduled reductions in excise tax rates on automobiles and telephone services postponed until 1-1-71; investment tax credit generally repealed for corporations for property constructed, reconstructed or acquired after 4-18-69.

Unemployment insurance tax rate raised from 3.1 percent to 3.2 percent.

- 1970** Surcharge expired on 7-1-70.

Excise, Estate and Gift Tax Adjustment Act of 1970: repeal of excise tax rates on automobiles and telephone services extended to 1-1-72; collection of estate and gift taxes accelerated.

- 1971** OASDI tax rate raised from 9.6 percent to 10.4 percent.

Treasury's asset depreciation guidelines (issued in June 1971) gave firms the option of raising or lowering the "guideline lives" of depreciable assets by up to 20 percent, effective for calendar 1970. (This administrative action was, for the most part, incorporated into legislation as part of the Revenue Act of 1971).

Job development tax credit effective 8-15-71.

Import tax surcharge effective 8-15-71.

Revenue Act of 1971 (enacted 12-10-71): scheduled increases in personal exemptions and the standard deduction accelerated by one year (see Tax Reform Act of 1969); 7 percent excise tax on automobiles repealed retroactive to 8-15-71 and excise tax on small trucks and transit buses repealed retroactive to 9-22-71; 7 percent investment tax credit reinstated.

Elimination of import tax surcharge effective 12-20-71.

- 1972** OASDI wage base raised from \$7800 to \$9000.

Covered wages for unemployment insurance tax raised from \$3000 to \$4200.

- 1973** OASDI tax rate raised from 10.4 percent to 11.7 percent, and wage base raised from \$9,000 to \$10,800.

Unemployment insurance tax rate raised from 3.2 percent to 3.28 percent.

**1974** OASDI wage base raised from \$10,800 to \$13,200.

Unemployment insurance tax rate reduced from 3.28 percent to 3.2 percent.

**1975** OASDI wage base raised from \$13,200 to \$14,100.

Import fees on petroleum products increased \$1 per barrel on 2-1-75.

Tax Reduction Act of 1975 (enacted 3-29-75): generally effective retroactive to 1-1-75; individual income taxes reduced including a \$8.1 billion rebate on 1974 income and with lower withholding rates effective 5-1-75 reflecting increases in the minimum and standard deductions and a \$30 credit against taxes paid on 1975 income; investment tax credit increased from 7 percent (4 percent for utilities) to 10 percent for property acquired between 1-21-75 and 1-1-77; corporate surtax exemption increased from \$25,000 to \$50,000 and rate on first \$25,000 reduced from 22 to 20 percent; oil depletion allowance repealed and limits placed on corporate use of foreign tax credits and deferral.

Import fees increased \$1 per barrel on petroleum products on 6-1-75.

Revenue Adjustment Act of 1975; ongoing provisions of the Tax Reduction Act of 1975 essentially extended, except for the tax rebate.

**1976** OASDI wage base raised from \$14,100 to \$15,300.

Tax Reform Act of 1976 (enacted 10-4-76): individual income provisions of the Revenue Adjustment Act of 1975 essentially extended including extending the per capita tax credit and the refundable earned income credit, making permanent the standard deduction of \$2,400 for single returns and \$12,800 for joint returns; estate tax exemption raised; the corporate income provisions of the Revenue Adjustment Act of 1975 extended, including reduction in corporate tax rates extension of surtax exemption of \$50,000 through 1977 and extension of the investment tax credit through 1980.

**1977** OASDI wage base raised from \$15,300 to \$16,500.

Unemployment insurance tax raised from 3.2 percent to 3.4 percent.

Excise tax on telephone service reduced.

Tax Reduction and Simplification Act (enacted 5-23-77): effective 6-1-77, standard deduction modified, reducing withholding; jobs tax credit for corporations enacted.

**1978** OASDI tax rate raised from 11.7 percent to 12.1 percent and wage base raised from \$16,500 to \$17,700.

Covered wages for unemployment insurance tax raised from \$4,200 to \$6,000.

Excise tax on telephone service reduced.

Revenue Act of 1978 (enacted 11-6-78): effective 1-1-79; personal exemption increased from \$750 to \$1,000, replacing the temporary general tax credit; tax brackets indexed, tax rates cut and zero bracket amount increased; earned income credit increased and deductions for state and local fuel taxes repealed; corporate tax rates reduced; broadened and made permanent the investment tax credit at 10 percent; jobs tax credit modified.

Energy Tax Act of 1978 (enacted 11-9-78): tax credits allowed for energy-conserving expenditures retroactive to 4-20-77.

Foreign Earned Income Act of 1978 (enacted 10-15-78): tax laws liberalized for U.S. citizens living abroad.

**1979** OASDI tax rate raised from 12.1 percent to 12.26 percent and wage base raised from \$17,700 to \$22,900.

Excise tax on telephone service reduced.

**1980** OASDI wage base raised from \$22,900 to \$25,900.

Crude Oil Windfall Profit Tax Act of 1980 (enacted 4-2-80): retroactive to 3-1-80; corporate tax reduced because of deductibility of windfall profits tax which is an excise tax; excise tax on telephone service reduced; temporary fee of \$4.62 per barrel placed on imported crude oil effective 3-15-80.

Omnibus Reconciliation Act of 1980: effective 1-1-81; use of tax-exempt mortgage subsidy bonds restricted for individuals and corporations.

- 1981** OASDI tax rate raised from 12.26 percent to 13.3 percent and wage base raised from \$25,900 to \$29,700.

Economic Recovery Tax Act of 1981 (enacted 8-13-81): cost recovery system accelerated for corporations, applicable to 1981 income; credit for the windfall profits tax increased for corporations; individual income tax rates reduced 25 percent over 33 months with the first stage a 5 percent cut on 10-1-81.

- 1982** OASDI tax rate raised from 13.3 percent to 13.4 percent and wage base raised from \$29,700 to \$32,400.

Economic Recovery Tax Act: tax rates reduced on income not subject to withholding and exclusion from gross income of interest and dividends repealed; estate and gift taxes reduced.

Tax Equity and Fiscal Responsibility Act of 1982 (enacted 9-3-82): modified coinsurance transactions repealed effective 1-1-82; various modifications and restrictions for leasing enacted, generally effective 7-1-82; airport and airway taxes increased effective 9-1-82.

Economic Recovery Tax Act of 1981: second stage of tax reduction, 10 percent on 7-1-82.

- 1983** OASDI wage base raised from \$32,400 to \$35,700.

Unemployment insurance tax raised from 3.4 to 3.5 percent, and covered wages raised from \$6,000 to \$7,000.

Tax Equity and Fiscal Responsibility Act of 1982: compliance provisions of individual income tax strengthened and casualty and medical expense deductions modified; basis for investment tax credit for corporations adjusted and contract method of accounting modified; cigarette tax doubled to 16 cents per pack on 1-1-83 and excise tax increased on telephone service from 1 percent to 3 percent.

Highway Revenue Act of 1982 (enacted 1-5-83): tax on gasoline and diesel fuel increased from 4 to 9 cents per gallon effective 4-1-83; general taxes repealed on tires, lubricating oil, and retail sales of lightweight trucks and trailers; taxes increased on heavy-duty trucks and trailers.

Social Security Amendments of 1983 (enacted April 1983): previously scheduled tax rate increase accelerated; employee share of the rate

increase in 1984 reduced by 0.3 percentage-point; self-employed tax rate increased; coverage of new federal civilian employees and employees of nonprofit organizations made mandatory; taxation of social security benefits required when income exceeds certain levels.

Economic Recovery Tax Act of 1981: third stage of tax reduction, 10 percent on 7-1-83.

Railroad Retirement Revenue Act of 1983 (enacted August 1983): changes similar to Social Security Amendments introduced.

- 1984** OASDI tax rate raised from 13.4 percent to 14.0 percent, and wage base raised from \$35,700 to \$37,800.

Deficit Reduction Act of 1984 (enacted 7-18-84): tax-exempt entity leasing restricted; depreciation period for real property lengthened; taxation of life insurance companies modified; interest exclusion as allowed for under Economic Recovery Tax Act of 1981 repealed; income averaging modified.

- 1985** OASDI tax rate raised from 14.0 percent to 14.1 percent, and wage base raised from \$37,800 to \$39,600.

Unemployment insurance tax raised from 3.5 to 6.2 percent.

Economic Recovery Tax Act of 1981: indexing of individual income tax began.

Tax Equity and Fiscal Responsibility Act of 1982: accelerated depreciation schedules for 1985 to 1986 under the Economic Recovery Tax Act of 1981 repealed.

Deficit Reduction Act of 1984: alcohol tax increased from \$10.50 to \$12.50 per proof gallon effective 10-1-85.

- 1986** OASDI wage base raised from \$39,600 to \$42,000.

Consolidated Omnibus Budget Reconciliation Act of 1985 (enacted 4-7-86): excise tax on coal production increased; medicare coverage extended to new state and local employees.

Tax Reform Act of 1986 (enacted 10-22-86): federal tax system overhauled by broadening the individual and corporate tax bases and lowering individual and corporate tax rates; generally effective 1-1-87 except for repeal of investment tax credit effective 1-1-86 and transition to modified depreciation schedules effective for property placed in service after 7-31-86.

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