The Effect of Monetary Policy on Monthly and Quarterly Stock Market Returns: Cross-Country Evidence and Sensitivity Analyses

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Abstract

Several studies report an empirical link between changes in monetary policy and short- as well as long-run stock market performance in the United States. Such findings are germane both to the study of market determinants and to monetary policy transmission mechanisms. Previous univariate time-series results on long-run data, which use the discount rate as the main policy indicator, seem robust to alternative specifications of stock price returns given data on 16 countries from 1956 through 2000. However, out-of-sample tests indicate that the relation has largely decreased over time. Also, panel regressions, which notably include cross-sectional variance and therefore are particularly relevant to market participants, suggest that the relation is less sturdy, and consideration of excess as opposed to raw equity price returns in time-series regressions indicates no relation. Finally, alternative measures of central bank policy suggest a weaker and a diminished correlation between monetary policy changes and long-run stock market performance.

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1. Introduction

Among the burgeoning number of equity market determinants, “anomalous” or otherwise, market participants pay close attention to strategies based on the stance of monetary policy. Indeed, several empirical studies suggest that changes in indicators of central bank policy correlate with both short- and long-run stock market performance. Besides the obvious implications for financial practitioners, this empirical question is also germane to monetary policy transmission mechanisms in which equity markets perform key functions. While most researchers focus on short-run data from the United States (Waud, 1970; Smirlock and Yawitz, 1985; Cook and Hahn, 1988; Rigobon and Sack, 2001), fewer studies examine long-run performance across countries (Conover et al., 1999a, 1999b).

This study performs sensitivity analyses on the long-run international data in five ways. First, despite the plethora of published trading strategies and market anomalies, this literature largely relies on univariate specifications of stock market performance. Therefore, this study conducts robustness checks with respect to specification by controlling for several other purported determinants of returns. Second, previous studies cover a rather lengthy period – beginning in the 1950s and witnessing numerous changes in policy targets – which motivates the question of whether the apparent relation holds using more recent data. Third, the existing literature does not exploit cross-sectional variance. In addition to more powerful empirical tests, variation across space is particularly critical for international equity portfolio managers who must make allocation decisions contemporaneously. Fourth, previous cross-country studies use raw and not excess price returns, which has considerable implications for asset allocation decisions.

Finally, considering its diminutive status as a tool of monetary policy, the use of the discount rate to address this empirical issue is somewhat problematic (Patelis, 1997). Therefore, in contrast to previous cross-country literature, this study examines alternative characterizations of monetary policy across markets, including real variables, the spread between the discount rate and the short-term government bill rate, and the growth of M1.

In short, the data suggest that the relation is indeed robust to alternative specifications of stock market performance – the correlation is generally not spurious using data from 1956 through 2000. However, temporal out-of-sample tests, panel regressions, and the use of excess as opposed to raw returns generally do not corroborate the relation. Also, alternative measures of the stance of monetary policy suggest a weaker if not insignificant correlation that has vitiated over time. These results imply that long-run trading strategies are less profitable and that monetary policy transmission mechanisms through the stock market have become less pronounced, notably despite the recently increased proportion of equity to total household wealth.

Section 2 outlines existing theoretical literature and empirical results with respect to studies of stock market performance as well as monetary policy transmission mechanisms. Section 3 presents the results from sensitivity analyses of previous studies, and Section 4 concludes.

2. Previous Literature

The empirical relation between central bank policy and stock market returns is relevant to two critical topics in financial and monetary economics. First, the question addresses the burgeoning literature on stock market performance. Second, the issue is germane to the study of monetary policy transmission mechanisms in which equity markets are a key link in structural models. In support of these broad perspectives, previous results in both the short and long run generally suggest that monetary policy easing (tightening) produces higher (lower) stock market prices.

2.1. Theory

Economists commonly associate restrictive (expansive) monetary policy with higher (lower) future interest rates and lower (higher) levels of economic activity. Financial economists discuss various reasons why changes in the discount rate affect stock returns. For example, discrete policy rate changes influence forecasts of market-determined interest rates and the equity cost of capital. Also, changes in the discount rate possibly affect expectations of corporate profitability (Waud, 1970).[1] Most recently in a cross-country context, Conover et al. (1999a, 1999b) argue that central bank easing responds to periods of (expected) slower economic growth or contraction, and ex ante

[1] However, as Waud (1970, p. 234) suggests, the relation between non-market determined interest rates and the discount rate used in equity valuation is unclear.

required and realized ex post returns (on average) rise. Broadly consistent with these views, market analysts and "Fed watchers" expend considerable resources to predict the future path of interest rates and Federal Reserve policy, and the financial press frequently interprets asset price movements as reactions to monetary policy decisions.

Besides the practical relevance to portfolio managers, this literature is germane to central bankers.[2] Several purported monetary policy transmission mechanisms link changes in central bank policy to the stock market, which in turn affects aggregate output through consumer expenditure as well as investment spending. With respect to the former, one mechanism suggests that a decrease in (non-market determined) interest rates boosts stock prices and therefore financial wealth and lifetime resources, which in turn raises consumption through the wealth effect (Modigliani, 1971). Another model (Mishkin, 1977) suggests that lower interest rates increase stock prices and therefore decrease the likelihood of financial distress, leading to increased consumer durable expenditure as consumer liquidity concerns abate.

Turning to investment spending, another structural model posits that a reduction in rates raises stock prices, which in turn leads to increased business investment captured by Tobin's q, defined as the equity market value of a firm divided by the book value of a firm. Put somewhat differently, higher stock prices lower the yield on stocks and reduce the cost of financing investment spending through equity issuance (Bosworth, 1975). Finally, another channel involves asymmetric information effects – easier Federal Reserve policy increases stock prices and thereby strengthens private balance sheets, which mitigates adverse selection problems and thereby leads to increased loans and investment.

These structural models present a formidable research agenda, and the objective of this paper is to empirically evaluate the first phase of these possible channels of monetary policy, not to assess the effect of stock prices on real variables or the remaining links in these proposed mechanisms.[3]

2.2. Previous empirical results

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[2] For a more detailed description of monetary policy transmission mechanisms see Mishkin (1995).

[3] For a discussion of the effects of stock prices on private investment in the United States and Canada see Barro (1990). Also, Durham (2000c) examines a larger sample of both high- and low-income countries.

Numerous studies using high frequency data suggest that changes in monetary policy affect short-run stock returns in the United States (Waud, 1970; Smirlock and Yawitz, 1985; Cook and Hahn, 1988) and vice versa (Rigobon and Sack, 2001). Given these data on short-run performance and the "announcement effect," Jensen and Johnson (1995) focus on long-run monthly as well as quarterly performance and find that expected stock returns are significantly greater during expansive monetary periods than in restrictive periods, using data from the United States covering 1962 through 1991. These findings suggest that the stance of monetary policy affects required long-run returns and that at least first link in transmissions mechanisms empirically hold.

Conover et al. (1999a, 1999b) extend such analyses to international markets and find that this general relation holds in 12 of 16 cases from January 1956 through December 1995. The practical implication is that, given the benefits of international diversification, active portfolio managers should purchase (sell) stocks in countries where the central bank is easing (tightening) monetary policy (Conover, 1999b). They also consider the effect of United States monetary policy abroad and find that data from 12 of the same 15 countries suggest that stock prices tend to be greater (lower) during periods in which the Federal Reserve was lowering (raising) the discount rate. This latter finding has limited application in terms of allocation timing decisions because global equity market purportedly move in general unison.

This literature that addresses long-run stock market performance (Jensen et al., 1996; Conover et al., 1999a, 1999b) defines monetary easing (tightening) episodes as periods in which the most recent change in the discount rate is a reduction (increase).[4] Previous studies consider rate changes because the Federal Reserve (or local central bank) presumably operates under the same fundamental monetary policy until the Federal Open Market Committee (FOMC) (or the local governing policy making body) changes the discount rate in the opposite direction from the prevailing trend. To net out "announcement" effects from long-run relations, months (or quarters) that include the first rate change in a series are omitted from the sample. Also, given this definition, market participants know the monetary environment ex ante, and therefore investors could conceivably replicate such "investable" results. Therefore, this study does not

[4] For example, the period following an increase in the discount rate is defined as restrictive.

address the contemporaneous and simultaneous relation[5] between monetary policy and the stock market (Rigobon and Sack, 2001).

As discussed in more detail in Section 3, simple characterizations of the relative stringency of monetary policy are controversial. Some economists consider the discount rate the weakest monetary policy tool if not a largely irrelevant appendage. But, Waud (1970, p. 231) argues that rate changes affect market participants' expectations about the future course of monetary policy because policymakers make changes at discrete intervals, they represent a discontinuous instrument of monetary policy, and they are established by a governing body that presumably assesses the economy's cash and credit needs competently.

2.3. Data Design

The data in this paper largely follow previous studies and therefore cover 16 countries – Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, South Africa, Sweden, Switzerland, the United Kingdom, and the United States – from December 1956 through December 2000. Also, following Conover et al. (1999a, 1999b) and theoretical considerations, the sample does not include periods (or cases) in which the monetary authority pegged the discount rate to a market rate (rather than set the rate directly).[6] The sources for stock market indexes are the IMF's *International Financial Statistics* and the OECD's *Main Economic Indicators: Historical Series*.

The sensitivity analyses in Section 3 identically follow the construction of the dummy variable in previous studies (Conover et al., 1999a, 1999b), and therefore the univariate specification is

(1)

[5] Without recourse to instrumental variables, Rigobon and Sack (2001) directly address estimation problems associated with the simultaneous response of equity prices to interest rate changes and find that that a 5 percent rise (fall) in stock prices over a single day increases the probability of a 25 basis point increase (decrease) in the federal funds target by about 50 percent. Given the use of "investable" and lagged independent variables (policy indicators) as well as the focus on long-run performance, this study does not address this question.

[6] These episodes include Canada from November 1956 through May 1962, Canada from March 1980 through December 1993, Ireland from November 1960 through November 1972, Ireland from April 1977 through June 1981, and New Zealand from July 1985 through December 2000.

$$S_t = a + bD_t^{local} + e_t$$

where S_t is the local nominal monthly stock return measured in local currency terms,[7] and D_t is the dummy variable equal to one (zero) if prevailing local monetary regime is restrictive (expansive). Similarly, the specification that captures the effect of United States monetary policy abroad follows

$$S_t = a + bD_t^{U.S.} + e_t \qquad (2)$$

where D_t^{US} is the is the dummy variable equal to one (zero) if the prevailing United States monetary regime is restrictive (expansive).

3. Sensitivity Analyses

This section re-examines the robustness of previous cross-country results with respect to five issues. First, previous studies rely on univariate specifications of price returns. For example, according to Conover et al. (1999a, 1999b), central bank policy is the sole determinant of stock market performance. But, given the vast number of factors that purportedly explain stock market returns, this study uses extreme bound analysis (EBA) (Durham, 2000a, 2000b, 2001) to control for other factors and to evaluate whether previous results are spurious. Second, the period over which previous literature estimates the relation is considerably lengthy. Therefore, this section examines whether previous results are robust to temporal divisions of the sample. Of contemporary relevance to financial practitioners who attempt to exploit stock market "anomalies" and central bankers who study transmission mechanisms through equity markets, the following analyses examine whether the relation is significant in more recent periods. Third, previous studies only rely on time-series evidence, but cross-sectional variance is particularly critical for market participants who must make asset allocation decision contemporaneously across space. Therefore, the section includes panel regressions using both monthly and quarterly data. Fourth, Conover et al. (1999a, 1999b) only examine raw price returns and do not consider returns over the local riskless rate. Therefore, in addition to more precise comparisons with existing asset pricing model specifications,

[7] The use of local currency returns implies (particularly from a practitioners' perspective) that exchange rate risks are hedged.

previous cross-country analyses do not clearly distinguish the effect of monetary policy regime changes on market interest rates versus stock market returns, which presumably interests portfolio managers who actively allocate investments across asset classes. Finally, the nominal discount rate is only one possible indicator of the stance of monetary policy. Moreover, in most cases, the discount rate is not the most potent policy tool. Therefore, the analysis considers alternatives such as the real discount rate, the spread between the discount rate and government bill rates, and money supply growth.

3.1. EBA of Previous Results

As Durham (2000a, 2000b, 2001) argues, the rigor of asset pricing studies is less advanced compared with sensitivity analyses of growth regressions, as very few studies satisfactorily control for competing explanations of market risk proxies or anomalies. With respect to the question of monetary policy and stock market performance, the univariate (Conover et al., 1999a, 1999b) specification of price returns seems notably incomplete considering the broad literature on market behavior.

Therefore, to help assess the relative robustness of previous results, this section evaluates additional determinants germane to aggregate market level studies using EBA. While the details of EBA can be found elsewhere (Durham, 2000a, 2001) the basic framework follows

$$S_t = \alpha_j + \beta_{zj} z + \beta_{fj}\mathbf{f} + \beta_{xj}\mathbf{x}_j + \varepsilon \tag{3}$$

where z is the "doubtful" variable of interest, either the local or United States monetary regime dummy (D_t^{local} or D_t^{US}); **f** is the set of "free" variables that appear in every regression, and **x** includes variables from the set of other "doubtful" variables, χ. The EBA entails running M regressions that consider every possible linear combination of three variables from χ in **x**.[8] Following previous studies, **f** is empty (but includes country and time-specific dummies in the panel regressions in Section 3.3).

[8] This follows Sala-i-Martin (1997a, 1997b) and, more importantly, a typical number of exogenous variables in multi-factor models of returns. Therefore, the total number of M regressions to evaluate the robustness of monetary tightening vis-à-vis other variables is $(8! \div [5! \times 3!])$ 56 for the first design and $(13! \div [10! \times 3!])$ 286 for the second.

The EBA includes two designs given data availability. In the first design, χ comprises eight variables for which data cover all 16 cases from 1956 to 2000.[9] For example, these include three *price history* variables. The most simple and succinct views are "contrarian" strategies in the *short-* (Jegadeesh, 1990) (the first lagged month) and *long-term* (De Bondt and Thaler, 1985) (the 13th through the 24th lagged month), which exploit purported negative autocorrelations, and "relative strength" strategies in the *medium-run,* which utilize supposed positive autocorrelations (Asness et al., 1997) (the sixth through the 12th lagged month). Also, *inflation* and *inflation volatility* should have a negative impact on cash flows, primarily via price signaling and operating cost shocks, and (univariate) empirical tests confirm the relation (Asprem, 1989). The χ set also includes an estimate of price return *volatility* following Schwert (1989) and Levine and Zervos (1998) as well as calendar phenomenon such as the *January* (Haugen and Lakonishok, 1987) and *September* (Siegel, 1998) effects.

The second design includes five more variables in χ but necessarily covers a shorter time period (1975 through 2000, where available) and employs MSCI instead of IFS data. These additional "doubtful" variables include *value factors* (Fama and French, 1998) such as the price-to-book ratio, the price-to-earnings ratio, and the dividend yield.

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[9] For a more complete description of EBA decision rules see Durham (2001), but the three basic rules used in this paper are as follows. The "extreme" decision rule (Levine and Renelt, 1992) essentially states that each t statistic among the *M* regressions should be greater than 2 (or 1.645 as an alternative), and each *z* coefficient should have the same sign. A more lenient criterion (Granger and Uhlig, 1990) suggests that only models among the original *M* regressions with an R^2_j that satisfies

$$R^2_j \geq (1-\alpha)R^2_{max}$$

where R^2_{max} is the highest R^2 value among all *M* regressions, and a is 0.1 and 0.01 or time-series and panel regressions, respectively, in this study. This "R^2" decision rule is identical to the extreme criterion, but only models that satisfy the condition inform the bounds. Finally, the "CDF" decision rule follows the test outlined in Sala-i-Martin (1997a, 1997b). Sala-i-Martin weights each of the *M* estimates by some measure of overall fit for the underlying j^{th} regression. The weighted means in this paper follow

$$\hat{b}_z = \sum_{j=1}^{M} w_{zj} b_{zj}$$

and

$$\hat{s}^2_z = \sum_{j=1}^{M} w_{zj} s^2_{zj}$$

where w_{zj} is the weight, as in

$$w_{zj} = \frac{R^2_{zj}}{\sum_{i=1}^{M} R^2_{zi}}.$$

Finally, the expanded doubtful set includes *long-term government bond yields* as well and the *yield curve*, defined as the long-term government bond rate minus the short-term government bill rate (Asprem, 1989; Ferson and Harvey, 1997).

Turning to the results, the first EBA design largely suggests that D_t^{local} is robust. In fact, as Table 1A suggests, all 11 cases for which the variable is statistically significant in the univariate specification – Belgium, Canada, Finland, France, Germany, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States – pass at least one EBA decision rule. Data for the Netherlands, the United Kingdom, and the United States pass the most stringent EBA criterion. Among the five remaining cases, the data for South Africa nonetheless pass the R^2 decision rule, which perhaps suggests that the univariate model is under-specified. With respect to United States policy and international price returns, listed in Table 1B, the data largely suggest that the relation is robust. For example, nine of the 15 cases pass at least one EBA criterion, and the data for five of these countries – Belgium, Ireland, the Netherlands, Sweden, Switzerland, and the United Kingdom – pass the extreme decision rule.

The second design using MSCI data produces very different results. In fact, considering D_t^{local}, data for 14 of the 16 cases are fragile according to every EBA decision rule. As Table 1C indicates, the relation for Finland passes the R^2 as well as the CDF decision rule, and data for the United States only pass the CDF decision rule. Also, with respect to $D_t^{U.S.}$, the results as comparatively more robust, as six of the 15 cases listed in Table 1D pass at least one EBA decision rule using MSCI data and the expanded set of doubtful variables. These cases include Belgium, Finland, Germany, Italy, the Netherlands, and Switzerland (the only case for which the relation is robust to the extreme decision rule).

Therefore, at least considering the 1956 to 2000 period, EBA largely suggests that the relation is not sensitive to specification bias. Indeed, compared to other purported market determinants (Durham, 2001), both D_t^{local} and $D_t^{U.S.}$ are comparatively sturdy. However, the data for the more recent 1975 to 2000 period indicate that the relation is more fragile. This result is either due to specification bias and the more complete set of 13 doubtful variables or to the omission of data from 1956 through 1974.

3.2. Temporal Out-of-Sample Tests

The relative dearth of robust results in the second EBA design, which at most covers 1975 through 2000, suggests that previous results might be sensitive to the specific period under consideration. The long-run relation between monetary policy change and stock market performance is perhaps time varying, a possibility that previous studies do not consider. If in fact the correlation is not significant using more recent data, active stock market participants will not be able to exploit such "vanishing anomalies" (Hagin, 1998), and monetary policy makers cannot anticipate the transmission mechanisms outlined in Section 2.

This study pursues two simple designs to investigate whether the relation between monetary policy and stock price returns is time varying. First, (arbitrary) equal and non-overlapping division of the 45-year period into three sub-samples – 1956 though 1970, 1971 through 1985, and 1986 through 2000 – generally suggests that the relation has diminished in recent decades. Consistent with previous studies, as Table 2A indicates, 11 of the 16 countries suggest that the relation between local monetary tightening regimes and stock price returns is negative and statistically significant for the 1956 through 2000 period.[10] But, the relation is significant in only two of these cases from 1986 through 2000. For example, the data for Canada are significant, at least with 10 percent confidence, in the later period. Also, while the parameter estimate is lower and the confidence interval is wider, the data for the United States suggest that the relation is significant from 1986 through 2000.

The results on $D_t^{U.S.}$ tell a similar story. According to Table 2B, nine of the 15 cases confirm previous results and suggests that stock prices tend to decline during monetary tightening periods in the United States.[11] But again, the relation is significant during the most recent 15-year period for only three of these cases. The relation is significant using data for Belgium, but data for both Ireland and the United Kingdom

[10] Data for two of the five remaining cases indicate that the relation is significant with the expected negative sign in at least one 15-year period before 1986. These include Ireland (1956 through 1985) and South Africa (1971 through 1985).

[11] Among the remaining six cases, data for Austria indicate the hypothesized relation for the 1971 through 1985 period.

show that the parameter estimate is lower and that the confidence interval is wider using data from 1986 through 2000.

The second strategy to investigate whether the relation varies over time uses overlapping data. Table 2C summarizes rolling 10-year time-series regressions for the 1956 through 2000 period. This produces 36 regressions per each case for which data are available, ranging from the model that covers the 1956 through 1967 period to the regression that covers the 1991 through 2000 period. With respect to the local monetary policy stance, the data largely confirm the results using the non-overlapping data. With the exception of the limited data for Canada, the regressions produce insignificant estimates (with 5 percent confidence) for the majority of regressions for each case. More importantly, only two of the 16 cases – the Netherlands and South Africa – produce a statistically significant result for an overlapping sample after the 1983 through 1992 sub-sample. Given the significant result for the 1986 through 2000 non-overlapping period in Table 2A, perhaps the results for the United States are particularly noteworthy. The last overlapping period for which the relation is significant is 1981 through 1990, which suggests that the correlation has vitiated.

Similarly, considering the effect of United States monetary policy on international stock prices, the effect seems to have waned according to the rolling data. Only four of the 15 cases – Finland, Ireland, Switzerland, and the United Kingdom – produce significant results using overlapping periods that end after 1992. Considering the significant results for the most recent 15-year non-overlapping period in Table 2B, the results for Belgium, Ireland, and the United Kingdom are perhaps particularly noteworthy. The most recent overlapping periods are 1981 through 1990, 1985 through 1994, and 1984 through 1993, respectively. Therefore, this second design also largely suggests that the relation between monetary policy in the United States and local stock prices has diminished.

3.3. Panel Regressions and Cross-Sectional Variance

The third aspect of the sensitivity analysis examines the complete dearth of cross-sectional variance in previous studies. Besides producing more rigorous empirical tests, such analysis addresses the limited relevance of time-series research designs for practitioners. That is, previous evidence simply does not answer the question of whether returns are greater (lower) in cases in which the central bank is easing (tightening). Temporal variance of course only addresses relative stock market performance over time within a country but not across different cases, which is seemingly critical to portfolio managers who must make cross-country asset allocation decisions contemporaneously.

That said, this study necessarily cannot conduct a pure cross-sectional design but instead presents results from (albeit temporally dominant) panel regressions. Even though temporal variance nonetheless predominantly informs the estimates, cross-sectional variance also influences the results.[12]

The panel analyses consider eight alternative designs per dependent variable. The regressions include and exclude fixed effects and time specific dummy variables and alternatively consider monthly and quarterly data (which produces the greatest ratio of cases to time periods). Fixed effects panel regressions that include time dummies produce the most rigorous test. Turning to the results for local monetary policy, as Model 4 in Table 3A indicates, the effect using monthly data has the expected negative sign but is not statistically significant. However, the quarterly data produce a significant and negative estimate (Model 8, Table 3A), but overall, the results seem sensitive to the frequency of the observations.

While cross-sectional variance is less relevant,[13] Models 9 through 16 consider the effect of United States monetary policy on international price returns. The monthly data confirm the hypothesis, as every alternative design, particularly including Model 12, produces a statistically significant result. However, the most rigorous quarterly design produces a perversely positively signed coefficient that is not significant. Therefore, despite the considerable increase in the degrees of freedom, the panel results again seem to be sensitive to frequency.

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[12] Similar to previous studies, panel regressions in this paper are temporally dominant, with considerably more time periods than cases. Therefore, similar to Durham (2000a, 2000b, 2001), estimation follows FGLS with panel-corrected standard errors (Greene, 1997, pp. 651-654; Kennedy, 1998, p. 231), which entails OLS with its variance-covariance matrix estimated by $(X'\times'WX(X'X)^{-1}$, where W is an estimate of the error variance-covariance matrix. When T > N, the Parks-Kmenta method estimates the error variance-covariance matrix with insufficient degrees of freedom. The panel regressions also correct for possible panel-specific serial correlation using the Prais-Winsten transformation. The precise estimation command in STATA is "xtpcse" with the option "c(psar1)."

[13] By definition $D_t^{U.S.}$ does not differ across space.

Sensitivity analyses with respect to both specification and out-of-sample bias on these univariate panel results is instructive. First, EBA using monthly data and the eight doubtful variables used in first design in Section 3.1 suggests that the panel results are spurious. The results for local monetary policy do not pass any decision rule. In fact, none of the panel regressions produce a statistically significant estimate, even with 10 percent confidence. The effect of United States monetary policy abroad also fails to pass any criteria. While about 57 percent of the regressions are significant, some of these parameter estimates have perverse signs, and the overall weighted beta is positive, in clear contrast to the hypothesis.

Regarding out-of-sample bias, Table 3C suggests that the effect of local policy on stock market prices has diminished. For example, the most rigorous monthly and quarterly models (Models 4, 8, 12, and 16) for the first two 15-year periods each indicate a significant and negative effect of tightening on price returns. However, no regression, including the more rigorous specifications (Models 20 and 24), supports the hypothesis. Moreover, at least according to the monthly data, local tightening curiously has a significant and positive effect on stock market performance.

In contrast, the panel data on the effect of United States monetary policy on stock market price returns abroad does not appear to have decreased over time. For example, as Table 3D indicates, the most rigorous monthly and quarterly regressions for the 1956 through 1970 and 1986 through 2000 periods (Models 4, 8, 20, and 24) produce significant estimates with the expected negative sign. However, data for the 1971 through 1985 period do not corroborate the result (Models 12 and 16).

3.4. Excess Price Returns

The preceding analyses in this section as well as previous studies of cross-country stock market performance (Conover et al., 1999a, 1999b) use the raw price return on the left-hand-side of the specification, as in (1) and (2). Therefore, the results do not indicate that monetary policy affects stock market performance above and beyond movements in the riskless interest rate.[14] Moreover, most studies of stock market anomalies use excess

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[14] Cook and Hahn (1988, pp. 167-168) (as well as Smirlock and Yawitz, 1985) generally suggest that changes in the discount rate that signal (exogenous) changes in the federal funds rate (and not merely "endogenous" realignments with market determined interest rates) affect Treasury bill rates in the United

returns as the dependent variable. Therefore, this section reproduces the analyses in Table 2A but uses excess returns, defined as the local (nominal) price return less the local short-term government bill rate. While this adjustment might not have notable implications for monetary policy transmission mechanisms such, the use of excess returns seems particularly germane to practitioners who make allocation decisions across asset classes. That is, if stock price changes solely compensate for riskless rate movements, then the imperative for portfolio managers to shift into (out of) equities during periods of monetary easing (tightening) would be less persuasive.

Indeed, Table 4 clearly suggests that the results are highly sensitive to the use of raw versus excess price returns. No data for any of the 16 countries for any period or sub-period from 1957 through 2000 support the hypothesis that periods of monetary easing are associated with higher excess stock market returns. In fact, the sole significant result (albeit with 10 percent confidence) directly contradicts the hypothesis – periods of monetary tightening in Canada from 1971 through 1985 correlate positively with excess price returns.[15] These results generally suggest that local monetary policy changes affect market interest rates in general but not (excess) stock market returns in particular.

3.5. Alternative Proxies for the Stance of Monetary Policy

The sensitivity analyses suggest that previous results, while generally robust to EBA, are less sturdy considering temporal divisions of the sample, some degree of cross-sectional variance, and excess instead of raw price returns. Given such fragile results, this section examines alternative measures of the prevailing monetary regime. Of course, the discount window is neither the only nor the most important monetary policy tool, and following precedent, Section 3 does not distinguish between "technical" and "non-technical" discount rate changes.[16] Also, economists have debated the relative merits of

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States in accordance with the expectations theory of the term structure. (That is, bill rates are determined by expectations of the funds rate over the life of the bill.)

[15] Analysis of the effect of United States monetary policy abroad on local excess returns is available on request. These data largely confirm the conclusions in Table 2A, as the use of excess returns does not alter the conclusions.

[16] Cook and Hahn (1988) also classify discount rate changes according to the wording of the attending announcement. Briefly, changes that essentially realigned the discount rate with market-determined yields had little effect on market rates. (In contrast, discount window changes that signaled future changes in the federal funds rate did affect market rates.) The analyses in Section 3 do not address this possibly critical

monetary aggregates and, more recently, interest rates spreads as indicators of central bank policy (Patelis, 1997). Therefore, consideration of other instruments is instructive, and therefore this section examines real discount rates, the spread between the discount rate and government bill rates, and the growth of M1.

Before examining the results, commentary on the correlation between these measures is instructive. Using difference in means tests, Jensen et al. (1996, p. 219) suggest that the discrete discount rate classification scheme correlates with other possible indicators of monetary policy, including the spread between the discount rate and 3-month Treasury bills as well as the (seasonable adjusted) money supply. Therefore, such empirical relations seemingly justify their use of D_t^{local} in the specification of stock market price returns. However, while they duly note that the dummy variable is "not the best technique of identifying minor changes in the stringency of monetary policy," Conover et al. (1999a, p. 1362) do not explain how well discount rate regimes correlate with alternative indicators across countries.

To that end, Table 5 examines the results from the following simple regression –

$$A_t = a + bD_t^{local} + e_t \tag{4}$$

where A_t is an alternative measure of the stance of monetary policy. Overall, D_t^{local} does a poor job of explaining variance in other proxies. For example, the tightening dummy variable curiously suggests that real discount rates are lower during periods of restriction using data for four of the 16 cases – Finland, Sweden, Switzerland, and the United States. Also, these data seem to confirm the findings for the United States in Jensen et al. (1996) regarding the correlation between discount window changes and other indicators, as the tightening dummy is a significant correlate of both the discount spread and M1 growth. However, only three of the remaining 15 cases – Germany, Ireland, and Japan – confirm the former relation, and moreover, two cases – Belgium and New Zealand – produce reversed signs that are significant with 10 percent confidence. Also, with respect to M1 growth, 12 of the 15 remaining cases indicate no relation, as only Germany, the Netherlands, and Switzerland confirm the relation. Therefore, perhaps reflecting the

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distinction. However, as Waud (1970, p. 249) suggests, such assessments of which discount rate changes have "significant policy overtones" according to press releases are considerably subjective.

fragility of previous results, these alternative indicators likely produce different conclusions regarding the relation between monetary policy and stock market performance.

3.5.1. Real Variables

While Conover et al. (1999a) examine the effective of nominal discount rate regimes on real stock price returns, no study adjusts the entire equation for inflation. Indeed, perhaps real non-market determined interest rates are a key indicator of the stance of monetary policy. Low (high) nominal interest rates do not necessarily indicate that the cost of borrowing is low (high) or that monetary policy is easy (tight).[17] Therefore, this section examines the effect of real discount rate regimes as well as continuous levels[18] of one-period lagged real discount rates.

The first design examines the precise construction D_t^{local} and $D_t^{U.S.}$ but refers to the real discount rate. As Table 6A illustrates, the adjustment for real variables considerably alters the results. Among the 16 cases, only the United Kingdom produces a negative and statistically significant parameter estimate with 10 percent confidence for the 45-year period from 1956 through 2000. Also, three cases – Finland, Sweden, and Switzerland – curiously indicate a statistically significant but perversely positive coefficient.[19] Similar to previous results regarding recent trends, none of these four results or any of the remaining 12 cases produce significant estimates for the most recent 15-year period from 1986 through 2000.

The effect of real United States monetary policy abroad is also generally insignificant. In fact, as Table 6B illustrates, the results for all 15 countries are insignificant for the 1956 through 2000 period. Some limited data support the hypothesis for 15-year sub-periods, including Austria (1971 through 1985), Canada (1986 through 2000), Ireland (1971 through 1985), and Japan (1971 through 1985). But, other countries produce perverse results over some sample divisions, including Belgium, Germany, and New Zealand from 1956 through 1970.

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[17] The Great Depression in the United States is a notable episode in which nominal and real interest rates diverged.

[18] In contrast to the literature on longer-run stock market performance, this addresses the issue of whether stock returns should be related to the direction or the level of monetary policy.

To supplement the analysis of the discrete variable, Table 6C examines the results using the (continuous) lagged value of the real local discount rate.[20] Similar to Table 6A, these results largely suggest no relation to real stock price returns. For example, only three of the 16 cases – Finland, Germany, and the Netherlands – produce a statistically significant result for the 1956 through 2000 period. Moreover, among these cases, only the data for Finland are significant using the most recent 15-year period, however wider the confidence interval. Data for some countries produce significant results for some sub-periods, including Austria (1971 through 1985), Japan (1971 through 1985), Sweden (1956 through 1970), the United Kingdom (1956 through 1970), and the United States (1956 through 2000). But again, the results are not robust to out-of-sample tests. In fact, the data for Sweden covering the 1971 through 1985 period suggest a significant and perversely positive effect.[21]

3.5.2. The Spread between the Discount Rate and Government Bill Rates

Jensen et al. (1996, p. 216) suggest that the spread between the discount rate and 3-month Treasury bills in the United States is an alternative measure of the relative stance of monetary policy, but Conover et al. (1999a, 1999b) do not consider this indicator in their cross-country analysis. Indeed, returning to Table 5, the data largely indicate that D_t^{local} does not explain considerable variance in the discount spread, which suggests that the usefulness of D_t^{local} is perhaps limited to the United States.

Turning to Table 7, six of the 16 cases – Germany, Italy, Japan, the Netherlands, Switzerland, and the United States – indicate that the spread is a statistically significant determinant of price returns from 1959 through 2000 (where available). However, similar to previous results, this relation seems to have weakened over time, as only the data for Italy produce a marginally statistically significant estimate using data for the 1986 through 2000 period.

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[19] Data for Austria and Japan also produce the perverse effect using data from 1956 through 2000.
[20] Again, these results therefore are "investable."
[21] Some economists argue that stock prices increase if the central bank maintains stable inflation rates. In fact, six of the 16 cases – Austria, Belgium, Ireland, Italy, South Africa, and Switzerland – suggest that inflation volatility correlates negatively with raw stock price returns from 1956 through 2000. But, only data for Belgium and South Africa produce a significant correlation using data from 1986 through 2000, and the data for Sweden from 1956 through 2000 perversely suggest that inflation volatility boosts stock prices. Results are available on request.

3.5.3. Money Supply Growth

The final alternative measure of the stance of monetary policy regards the growth of the money supply. The analyses consider two alternative measures – a dummy variable for periods of sustained contraction in M1, similar to the construction of D_t^{local} and $D_t^{U.S.}$, and the continuous and contemporaneous measure of M1 growth.

With respect to the dichotomous measure, as Table 8A indicates, only two of the 15 cases – France and the United States – support the hypothesized relation between money growth and stock market returns.[22] The data for these two cases indicate that the relation did not weaken over the period, as the regressions for the most recent 15-year period produce statistically significant and negative parameter estimates.

Considering the continuous and contemporaneous measure of M1 growth in Table 8B, the data produce largely insignificant as well as contradictory results. Of the 15 cases, 11 suggest no relation between M1 growth and stock market performance during the 1959 through 2000 period (where available). Among the remaining four cases, data for Ireland, Italy, and the United Kingdom indicate that stock prices decline as M1 growth increases. But, the data for the United States suggest the opposite, as the coefficient is positive and safely significant. However, none of these results are robust to the most recent 15-year period.

4. Conclusions

Market participants follow Federal Reserve and other central bank policies quite closely, as many academic and practitioner studies suggest that changes in monetary policy correlate with both short- and long-run stock market performance. Such results imply profitable trading strategies as well as possible central bank policy transmission mechanisms, assuming stock prices have real effects.

The preceding analyses generally indicate that the cross-country data are less robust than existing studies suggest. While previous univariate results are significant under more comprehensive specifications of stock price returns, the data are generally not robust to more recent divisions of the sample and, particularly with respect to local

[22] Data on M1 are not available for South Africa.

policy, panel regressions as well as specifications of excess returns. Also, alternative measures of the central bank policy, perhaps most notably including discrete as well as continuous (lagged) real discount rates, indicate a weak and waning, if not more commonly insignificant, relation.

These results have implications for traders as well as central bankers. With respect to the former, perhaps monetary policy changes represent a “vanishing anomaly,” as either monetary authorities have more clearly signaled policy changes, or market participants have more accurately anticipated policy movements. The development of deeper and more liquid futures markets may reflect markets’ ability to fully incorporate policy changes and eliminate drift in stock prices. In fact, Lange et al. (2001) argue that longer-term interest rates and futures rates in the United States have recently incorporated movements in the federal funds rate well in advance, and they discuss institutional developments in FOMC policy making that may have contributed to gradualism in adjusting and transparency regarding the target. (On the other hand, this conclusion perhaps curiously implies that countries in which the relation is generally insignificant for the complete 1956 through 2000 period – including Austria, Ireland, Italy, New Zealand, and South Africa [Table 2A] – have more efficient equity markets on this particular score.)

Regarding the latter, as Patelis (1997, p. 1952) suggests, stocks are claims on future economic output, and therefore, if monetary policy has real effects, then changes in targets or other tools should affect equity prices. These data very generally suggest that this relation has weakened, which in turn implies that targeting asset prices is a complicated, in addition to being a highly controversial, objective. While Cecchetti et al. (2000) argue that central banks should react to asset prices, the evidence in this study suggests that the ability for monetary authorities to do so has attenuated. This conclusion perhaps seems more notable given the increased proportion of equity to total household wealth (Rigobon and Sack, 2001, p. 1) – monetary policy transmission mechanisms in which stock markets perform critical functions have become less potent, even as their potential for increased real effects has increased. These results have no bearing, of course, on a number of other possible policy channels. Nor do these findings question short-run “announcement” effects of policy on equity returns.

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Table 1A: Time-Series EBA, Local Tightening Dummy Variable (D_t^{local})
8 Doubtful Variables Î c , IFS Data
M Regressions = 56

Decision Rule:	**Extreme**				**R^2**		**CDF**			
Confidence:	**4.55%**			**10.00%**	**4.55%**		**NA**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Country	Lower Bound	Upper Bound	Fraction Significant	Fraction Significant	Granger Fraction Significant	*M* Models Eliminated	Weighted Beta	Weighted Normal CDF	Weighted Non-Normal CDF	Un-Weighted Non-Normal CDF
Austria	-0.0084	0.0169	0.00%	0.00%	0.00%	89.29%	0.0026	0.7266	0.7197	0.7512
Belgium†‡	-0.0171	0.0008	73.21%	100.00%	100.00%	94.64%	-0.0082	0.9823	0.9813	0.9808
Canada‡	-0.0247	0.0028	17.86%	62.50%	0.00%	89.29%	-0.0099	0.9578	0.9546	0.9618
Finland†‡	-0.0282	0.0004	92.86%	100.00%	100.00%	87.50%	-0.0112	0.9860	0.9855	0.9856
France†‡	-0.0283	0.0002	96.43%	100.00%	100.00%	91.07%	-0.0141	0.9878	0.9874	0.9852
Germany‡	-0.0207	0.0013	8.93%	100.00%	0.00%	98.21%	-0.0086	0.9678	0.9672	0.9684
Ireland	-0.0209	0.0196	0.00%	0.00%	0.00%	94.64%	-0.0011	0.5624	0.5706	0.5751
Italy	-0.0257	0.0065	0.00%	0.00%	0.00%	91.07%	-0.0072	0.8907	0.8891	0.8931
Japan†‡	-0.0242	0.0005	75.00%	100.00%	100.00%	89.29%	-0.0102	0.9808	0.9805	0.9804
Netherlands*†‡	-0.0252	-0.0040	100.00%	100.00%	100.00%	92.86%	-0.0131	0.9996	0.9996	0.9996
New Zealand	-0.0169	0.0077	0.00%	0.00%	0.00%	78.57%	-0.0034	0.8184	0.8174	0.8019
South Africa†	-0.0275	0.0080	37.50%	37.50%	100.00%	62.50%	-0.0140	0.9924	0.9769	0.8970
Sweden‡	-0.0215	0.0034	7.14%	64.29%	0.00%	96.43%	-0.0087	0.9598	0.9576	0.9556
Switzerland†‡	-0.0232	0.0032	51.79%	85.71%	100.00%	94.64%	-0.0098	0.9783	0.9732	0.9717
United Kingdom*†‡	-0.0270	-0.0009	100.00%	100.00%	100.00%	89.29%	-0.0105	0.9932	0.9921	0.9953
United States*†‡	-0.0223	-0.0023	100.00%	100.00%	100.00%	91.07%	-0.0115	0.9996	0.9991	0.9993

* Denotes Extreme rule. † Denotes R^2 rule. ‡ Denotes CDF rule.

Table 1B: Time-Series EBA, U.S. Tightening Dummy Variable ($D_t^{U.S.}$)
8 Doubtful Variables Î c , IFS Data
***M* Regressions = 56**

Decision Rule:	**Extreme**				**R^2**		**CDF**			
Confidence:	**4.55%**			**10.00%**	**4.55%**		**NA**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Country	Lower Bound	Upper Bound	Fraction Significant	Fraction Significant	Granger Fraction Significant	*M* Models Eliminated	Weighted Beta	Weighted Normal CDF	Weighted Non-Normal CDF	Un-Weighted Non-Normal CDF
Austria	-0.0118	0.0121	0.00%	0.00%	0.00%	89.29%	0.0005	0.5400	0.5648	0.5559
Belgium*†‡	-0.0234	-0.0061	100.00%	100.00%	100.00%	94.64%	-0.0148	0.9999	0.9999	0.9999
Canada	-0.0179	0.0093	0.00%	0.00%	0.00%	89.29%	-0.0037	0.7349	0.7343	0.7527
Finland‡	-0.0257	0.0024	26.79%	94.64%	50.00%	92.86%	-0.0095	0.9718	0.9700	0.9670
France	-0.0209	0.0045	0.00%	0.00%	0.00%	94.64%	-0.0076	0.9118	0.9103	0.9135
Germany‡	-0.0195	0.0023	0.00%	73.21%	0.00%	94.64%	-0.0078	0.9546	0.9531	0.9548
Ireland*†‡	-0.0415	-0.0020	100.00%	100.00%	100.00%	92.86%	-0.0199	0.9946	0.9941	0.9943
Italy	-0.0220	0.0082	0.00%	0.00%	0.00%	89.29%	-0.0050	0.8227	0.8192	0.8254
Japan‡	-0.0223	0.0006	71.43%	100.00%	50.00%	89.29%	-0.0094	0.9840	0.9825	0.9828
Netherlands*†‡	-0.0244	-0.0031	100.00%	100.00%	100.00%	89.29%	-0.0120	0.9988	0.9988	0.9989
New Zealand	-0.0134	0.0093	0.00%	0.00%	0.00%	78.57%	0.0004	0.5470	0.5724	0.6057
South Africa	-0.0272	0.0092	26.79%	30.36%	71.43%	62.50%	-0.0126	0.9816	0.9700	0.9173
Sweden‡	-0.0231	0.0017	14.29%	100.00%	50.00%	96.43%	-0.0098	0.9704	0.9698	0.9699
Switzerland*†‡	-0.0265	-0.0049	100.00%	100.00%	100.00%	92.86%	-0.0154	0.9995	0.9994	0.9994
United Kingdom*†‡	-0.0289	-0.0023	100.00%	100.00%	100.00%	89.29%	-0.0125	0.9975	0.9967	0.9981

* Denotes Extreme rule. † Denotes R^2 rule. ‡ Denotes CDF rule.

Table 1C: Time-Series EBA, Local Tightening Dummy Variable (D_t^{local})
13 Doubtful Variables Î c , MSCI Data
M Regressions = 286

Decision Rule:	**Extreme**				**R^2**		**CDF**			
Confidence:	**4.55%**			**10.00%**	**4.55%**		**NA**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Country	Lower Bound	Upper Bound	Fraction Significant	Fraction Significant	Granger Fraction Significant	*M* Models Eliminated	Weighted Beta	Weighted Normal CDF	Weighted Non-Normal CDF	Un-Weighted Non-Normal CDF
Austria	-0.0266	0.0469	0.00%	0.35%	0.00%	98.95%	0.0104	0.8457	0.8286	0.7737
Belgium	-0.0186	0.0235	0.00%	0.00%	0.00%	97.62%	0.0008	0.5484	0.6328	0.6214
Canada	-0.0456	0.0144	0.00%	2.45%	0.00%	97.62%	-0.0030	0.6300	0.6885	0.8210
Finland†‡	-0.0852	0.0188	50.35%	66.43%	100.00%	94.05%	-0.0374	0.9972	0.9790	0.9574
France	-0.0415	0.0140	0.00%	0.00%	0.00%	98.81%	-0.0120	0.8886	0.8853	0.8541
Germany	-0.0283	0.0243	0.00%	0.00%	0.00%	91.67%	-0.0052	0.7741	0.7969	0.7951
Ireland	-0.0293	0.0459	0.00%	0.00%	0.00%	92.86%	0.0073	0.7357	0.7333	0.7384
Italy	-0.0434	0.0127	16.08%	53.15%	50.00%	97.62%	-0.0183	0.9605	0.9525	0.9452
Japan	-0.0401	0.0163	2.10%	22.73%	33.33%	96.43%	-0.0165	0.9582	0.9418	0.8842
Netherlands	-0.0244	0.0146	0.00%	45.80%	0.00%	95.24%	-0.0087	0.9256	0.9103	0.9111
South Africa	-0.0992	0.0923	25.17%	34.97%	80.00%	94.05%	-0.0261	0.9558	0.9032	0.8751
Sweden	-0.0231	0.0217	0.00%	0.00%	0.00%	98.81%	-0.0008	0.5409	0.5670	0.5594
Switzerland	-0.0243	0.0271	0.00%	0.00%	0.00%	92.86%	-0.0030	0.6641	0.7066	0.6870
United Kingdom	-0.0311	0.0152	19.58%	51.05%	0.00%	86.90%	-0.0095	0.9199	0.8875	0.9281
United States‡	-0.0294	0.0054	69.93%	81.47%	44.44%	89.29%	-0.0104	0.9800	0.9679	0.9723

* Denotes Extreme rule. † Denotes R^2 rule. ‡ Denotes CDF rule.

Table 1D: Time-Series EBA, U.S. Tightening Dummy Variable ($D_t^{U.S.}$)
13 Doubtful Variables Î c , MSCI Data
***M* Regressions = 286**

Decision Rule:	**Extreme**				**R^2**		**CDF**			
Confidence:	**4.55%**			**10.00%**	**4.55%**		**NA**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Country	Lower Bound	Upper Bound	Fraction Significant	Fraction Significant	Granger Fraction Significant	*M* Models Eliminated	Weighted Beta	Weighted Normal CDF	Weighted Non-Normal CDF	Un-Weighted Non-Normal CDF
Austria	-0.0270	0.0292	0.00%	0.00%	0.00%	99.65%	0.0031	0.6139	0.6000	0.5651
Belgium†‡	-0.0311	0.0024	82.87%	99.65%	100.00%	96.43%	-0.0139	0.9852	0.9832	0.9844
Canada	-0.0166	0.0337	0.00%	0.00%	0.00%	94.05%	0.0085	0.7882	0.7890	0.8442
Finland†‡	-0.0511	0.0061	79.37%	97.90%	100.00%	98.81%	-0.0220	0.9861	0.9833	0.9829
France	-0.0261	0.0096	0.00%	0.00%	0.00%	98.81%	-0.0063	0.8085	0.8159	0.8773
Germany‡	-0.0294	0.0026	25.52%	98.95%	50.00%	92.86%	-0.0127	0.9729	0.9714	0.9710
Ireland	-0.0487	0.0403	0.00%	0.00%	0.00%	92.86%	-0.0087	0.7577	0.7731	0.8519
Italy†‡	-0.0494	0.0026	98.95%	100.00%	100.00%	98.81%	-0.0260	0.9933	0.9925	0.9925
Japan	-0.0268	0.0098	0.00%	2.45%	0.00%	98.81%	-0.0089	0.9119	0.9082	0.9150
Netherlands‡	-0.0307	0.0010	97.20%	100.00%	75.00%	95.24%	-0.0136	0.9894	0.9883	0.9894
South Africa	-0.0970	0.0884	6.64%	10.49%	0.00%	98.81%	0.0156	0.7990	0.8148	0.7944
Sweden	-0.0356	0.0079	0.00%	0.00%	0.00%	98.81%	-0.0112	0.9058	0.9053	0.9116
Switzerland†‡	-0.0316	-0.0002	100.00%	100.00%	100.00%	91.67%	-0.0152	0.9916	0.9910	0.9917
United Kingdom	-0.0335	0.0082	4.20%	30.77%	9.09%	86.90%	-0.0106	0.9376	0.9287	0.9275

* Denotes Extreme rule. † Denotes R^2 rule. ‡ Denotes CDF rule.

Table 2A: Local Monetary Tightening ($S_t = a + b D_t^{local} + e_t$), 1956 through 2000 and 15-year Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria	1956-2000	525	-0.001	0.004	0.673
Austria	1956-1970	176	-0.004	0.003	0.367
Austria	1971-1985	173	0.000	0.000	-0.023
Austria	1986-2000	176	-0.004	0.006	0.547
Belgium**	1956-2000	500	0.007	-0.008	-2.130
Belgium*	1956-1970	173	0.011	-0.008	-1.711
Belgium*	1971-1985	161	0.014	-0.013	-1.835
Belgium	1986-2000	166	0.000	-0.001	-0.136
Canada**	1956-2000	284	0.011	-0.012	-2.027
Canada*	1956-1970	106	0.021	-0.015	-1.813
Canada	1971-1985	105	-0.009	-0.003	-0.273
Canada*	1986-2000	73	0.025	-0.021	-1.670
Finland**	1956-2000	523	0.011	-0.015	-2.413
Finland	1956-1970	176	0.006	-0.013	-1.376
Finland**	1971-1985	172	0.028	-0.018	-2.341
Finland	1986-2000	175	0.009	-0.022	-1.456
France**	1956-2000	515	0.007	-0.013	-2.109
France	1956-1970	174	-0.004	-0.004	-0.496
France**	1971-1985	174	0.033	-0.029	-2.623
France	1986-2000	167	-0.005	-0.004	-0.282
Germany**	1956-2000	523	0.006	-0.010	-2.012
Germany	1956-1970	173	0.005	-0.014	-1.374
Germany**	1971-1985	174	0.023	-0.014	-2.246
Germany	1986-2000	176	-0.005	-0.003	-0.294
Ireland	1956-2000	313	-0.002	-0.005	-0.589
Ireland**	1956-1970	56	0.222	-0.026	-4.097
Ireland**	1971-1985	94	0.033	-0.034	-2.044
Ireland	1986-2000	163	0.009	0.019	1.581
Italy	1956-2000	519	0.001	-0.008	-1.206
Italy	1956-1970	177	-0.001	-0.014	-0.915
Italy	1971-1985	171	-0.002	-0.012	-0.922
Italy	1986-2000	171	0.002	-0.013	-1.074
Japan**	1956-2000	523	0.007	-0.011	-2.090
Japan	1956-1970	169	0.004	-0.010	-1.281
Japan**	1971-1985	176	0.019	-0.017	-2.016
Japan	1986-2000	178	0.001	-0.016	-1.086
Netherlands**	1956-2000	516	0.020	-0.016	-3.294
Netherlands**	1956-1970	173	0.056	-0.025	-3.343
Netherlands	1971-1985	167	0.010	-0.014	-1.587
Netherlands	1986-2000	176	0.000	-0.009	-0.910
New Zealand	1956-2000	341	-0.002	-0.004	-0.710
New Zealand	1956-1970	178	0.004	-0.010	-1.285
New Zealand	1971-1985	163	0.000	-0.001	-0.148
New Zealand	1986-2000	NA			
South Africa	1956-2000	466	0.000	-0.008	-1.098
South Africa	1956-1970	159	-0.002	0.005	0.461
South Africa**	1971-1985	134	0.046	-0.030	-2.733
South Africa	1986-2000	173	0.000	-0.003	-0.192
Sweden*	1956-2000	513	0.005	-0.009	-1.748
Sweden**	1956-1970	172	0.052	-0.019	-3.207
Sweden	1971-1985	171	0.008	-0.013	-1.494
Sweden	1986-2000	170	-0.001	0.009	0.725
Switzerland**	1956-2000	525	0.010	-0.012	-2.528
Switzerland*	1956-1970	175	0.013	-0.015	-1.770
Switzerland**	1971-1985	177	0.023	-0.015	-2.272
Switzerland	1986-2000	173	-0.005	-0.004	-0.445
United Kingdom**	1956-2000	486	0.015	-0.016	-3.126
United Kingdom**	1956-1970	165	0.076	-0.023	-3.832
United Kingdom**	1971-1985	156	0.021	-0.029	-2.198
United Kingdom	1986-2000	165	0.000	-0.001	-0.151
United States**	1956-2000	516	0.026	-0.015	-3.800
United States	1956-1970	171	0.006	-0.009	-1.329
United States**	1971-1985	170	0.049	-0.021	-3.063
United States**	1986-2000	175	0.012	-0.013	-1.976

* Denotes $0.05 < p = 0.10$ ** Denotes $p = 0.05$.

Table 2B: U.S. Monetary Tightening ($S_t = a + bD_t^{U.S.} + e_t$), 1956 through 2000 and 15-year Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria	1956-2000	516	-0.001	0.000	-0.001
Austria	1956-1970	171	0.001	0.007	0.805
Austria**	1971-1985	170	0.020	-0.015	-2.117
Austria	1986-2000	175	-0.004	0.006	0.567
Belgium**	1956-2000	516	0.029	-0.015	-4.015
Belgium	1956-1970	171	-0.001	-0.005	-0.951
Belgium**	1971-1985	170	0.043	-0.020	-2.954
Belgium**	1986-2000	175	0.021	-0.017	-2.185
Canada	1956-2000	293	-0.001	-0.005	-0.766
Canada	1956-1970	107	-0.007	-0.005	-0.488
Canada	1971-1985	105	-0.004	-0.007	-0.657
Canada	1986-2000	81	0.000	0.002	0.137
Finland*	1956-2000	516	0.003	-0.011	-1.648
Finland	1956-1970	171	0.001	0.007	0.989
Finland	1971-1985	170	0.002	-0.008	-1.074
Finland	1986-2000	175	0.008	-0.025	-1.602
France	1956-2000	516	0.002	-0.008	-1.413
France	1956-1970	171	-0.002	0.007	0.847
France	1971-1985	170	0.003	-0.012	-1.243
France	1986-2000	175	0.005	-0.014	-1.401
Germany*	1956-2000	516	0.004	-0.008	-1.802
Germany	1956-1970	171	-0.003	0.006	0.686
Germany**	1971-1985	170	0.067	-0.022	-3.622
Germany	1986-2000	175	-0.003	-0.008	-0.803
Ireland**	1956-2000	331	0.023	-0.023	-3.006
Ireland	1956-1970	55	0.000	0.001	0.108
Ireland**	1971-1985	101	0.086	-0.050	-3.231
Ireland*	1986-2000	175	0.011	-0.019	-1.731
Italy	1956-2000	516	0.000	-0.006	-0.844
Italy	1956-1970	171	-0.004	0.006	0.620
Italy	1971-1985	170	-0.004	0.002	0.141
Italy	1986-2000	175	0.008	-0.019	-1.600

Country	Sample	Obs.	R^2	β	t stat.
Japan**	1956-2000	516	0.006	-0.010	-1.998
Japan	1956-1970	171	-0.005	0.003	0.354
Japan**	1971-1985	170	0.063	-0.025	-3.581
Japan	1986-2000	175	-0.001	-0.010	-0.946
Netherlands**	1956-2000	516	0.018	-0.015	-3.269
Netherlands	1956-1970	171	-0.005	-0.002	-0.304
Netherlands**	1971-1985	170	0.064	-0.027	-3.515
Netherlands	1986-2000	175	0.007	-0.014	-1.583
New Zealand	1956-2000	335	0.001	-0.002	-0.440
New Zealand	1956-1970	171	0.007	0.007	1.338
New Zealand	1971-1985	164	0.004	-0.009	-0.979
New Zealand	1986-2000	NA			
South Africa	1956-2000	516	0.002	-0.009	-1.372
South Africa	1956-1970	171	-0.001	-0.009	-0.982
South Africa	1971-1985	170	0.008	-0.016	-1.458
South Africa	1986-2000	175	0.000	-0.003	-0.172
Sweden**	1956-2000	516	0.006	-0.011	-2.106
Sweden	1956-1970	171	-0.004	-0.004	-0.610
Sweden	1971-1985	170	0.000	-0.008	-0.953
Sweden	1986-2000	175	0.005	-0.017	-1.440
Switzerland**	1956-2000	516	0.023	-0.017	-3.646
Switzerland	1956-1970	171	0.001	-0.009	-1.031
Switzerland**	1971-1985	170	0.095	-0.028	-4.316
Switzerland	1986-2000	175	0.007	-0.014	-1.554
United Kingdom**	1956-2000	516	0.023	-0.019	-3.568
United Kingdom	1956-1970	171	-0.004	-0.004	-0.550
United Kingdom**	1971-1985	170	0.054	-0.037	-3.183
United Kingdom*	1986-2000	175	0.012	-0.014	-1.865

* Denotes $0.05 < p = 0.10$ ** Denotes $p = 0.05$.

Table 2C: Temporal Out-of-Sample Tests
10-year Rolling Time-Series Regressions

Country	Specification	Obs.	% Significant (5 % confidence)	Ending Year of 10-year Rolling-period for Significant Regressions
Austria	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	2.78%	1983
Belgium	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	22.22%	1972-1979
Canada	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	8	50.00%	1974-1977
Finland	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	33	18.18%	1976-1981
France	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	34	8.82%	1979, 1980, 1983
Germany	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	33.33%	1972-1983
Ireland	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	10	0.00%	NA
Italy	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	32	3.13%	1979
Japan	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	11.11%	1979, 1981, 1990, 1991
Netherlands	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	47.22%	1965-1979, 1981, 1982, 1997
New Zealand	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	19	0.00%	NA
South Africa	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	19.44%	1980-1985, 2000
Sweden	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	30.56%	1965, 1966, 1968-1970, 1972, 1974-1978
Switzerland	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	16.67%	1974, 1975, 1982, 1983, 1985, 1986
United Kingdom	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	33.33%	1965-1973, 1984-1986
United States	$\mathbf{S_t} = a + b\mathbf{D_t}^{local} + e_t$	36	44.44%	1972-1983, 1987-1990
Austria	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	2.78%	1981
Belgium	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	33.33%	1972-1978, 1986-1990
Canada	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	8	62.50%	1974-1978
Finland	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	13.89%	1987, 1989-1991, 1995
France	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	2.78%	1975
Germany	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	33.33%	1974, 1975, 1978-1983, 1985-1988
Ireland	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	10	40.00%	1991-1994
Italy	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	0.00%	NA
Japan	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	33.33%	1972-1981, 1987, 1990
Netherlands	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	41.67%	1972-1983, 1986-1988
New Zealand	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	20	0.00%	NA
South Africa	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	0.00%	NA
Sweden	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	5.56%	1975, 1991
Switzerland	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	55.56%	1973-1988, 1990, 1992-1994
United Kingdom	$\mathbf{S_t} = a + b\mathbf{D_t}^{U.S.} + e_t$	36	52.78%	1973-1983, 1986-1993

Table 3A: Panel Regressions
Total Sample, 1956 through 2000

Model	Ind. Variable	Frequency	Obs.	R^2	β	t. stat.	Fixed Effects?	Time Dummies?
1	Local	Monthly	7588	0.007	-0.010**	-5.437	No	No
2	Local	Monthly	7588	0.008	-0.010**	-5.449	Yes	No
3	Local	Monthly	7588	0.333	-0.002	-1.402	No	Yes
4	Local	Monthly	7588	0.335	-0.002	-1.444	Yes	Yes
5	Local	Quarterly	2298	0.027	-0.034**	-2.724	No	No
6	Local	Quarterly	2298	0.030	-0.035**	-2.713	Yes	No
7	Local	Quarterly	2298	0.459	-0.009**	-2.300	No	Yes
8	Local	Quarterly	2298	0.461	-0.010**	-2.115	Yes	Yes
9	U.S.	Monthly	7151	0.008	-0.011**	-3.631	No	No
10	U.S.	Monthly	7151	0.009	-0.011**	-3.642	Yes	No
11	U.S.	Monthly	7151	0.331	-0.027**	-5.143	No	Yes
12	U.S.	Monthly	7151	0.332	-0.038**	-9.091	Yes	Yes
13	U.S.	Quarterly	2145	0.022	-0.032**	-2.296	No	No
14	U.S.	Quarterly	2145	0.026	-0.032**	-2.299	Yes	No
15	U.S.	Quarterly	2145	0.453	-0.037**	-2.450	No	Yes
16	U.S.	Quarterly	2145	0.457	0.003	0.053	Yes	Yes

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.

Table 3B: Panel EBA, Local and U.S. Tightening Dummy Variables (D_t^{local} and $D_t^{U.S.}$)
8 Doubtful Variables Î c , IFS Data
***M* Regressions = 56**

Decision Rule:	**Extreme**				**R^2**		**CDF**			
Confidence:	**4.55%**			**10.00%**	**4.55%**		**NA**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variable:	Lower Bound	Upper Bound	Fraction Significant	Fraction Significant	Granger Fraction Significant	*M* Models Eliminated	Weighted Beta	Weighted Normal CDF	Weighted Non-Normal CDF	Un-Weighted Non-Normal CDF
D_t^{local}	-0.0051	0.0019	0.00%	0.00%	0.00%	89.29%	-0.0016	0.0016	0.8371	0.8368
$D_t^{U.S.}$	-0.0846	0.1099	57.14%	57.14%	66.67%	89.29%	0.0002	0.0111	0.5078	0.9153

* Denotes Extreme rule. † Denotes R^2 rule. ‡ Denotes CDF rule.

Table 3C: Panel Regressions: 15-year Non-overlapping Sample Divisions
Local Monetary Tightening Dummy Variable (D_t^{local})

Model	Period	Frequency	Obs.	R^2	β	t stat.	Fixed Effects?	Time Dummies?
1	1956-1970	Monthly	2573	0.012	-0.010**	-5.021	No	No
2	1956-1970	Monthly	2573	0.016	-0.012**	-5.268	Yes	No
3	1956-1970	Monthly	2573	0.261	-0.005**	-2.815	No	Yes
4	1956-1970	Monthly	2573	0.265	-0.007**	-3.052	Yes	Yes
5	1956-1970	Quarterly	774	0.030	-0.029**	-3.718	No	No
6	1956-1970	Quarterly	774	0.046	-0.037**	-4.120	Yes	No
7	1956-1970	Quarterly	774	0.339	-0.013**	-2.415	No	Yes
8	1956-1970	Quarterly	774	0.349	-0.018**	-2.846	Yes	Yes
9	1971-1985	Monthly	2538	0.018	-0.015**	-4.993	No	No
10	1971-1985	Monthly	2538	0.021	-0.016**	-5.133	Yes	No
11	1971-1985	Monthly	2538	0.279	-0.005*	-1.784	No	Yes
12	1971-1985	Monthly	2538	0.282	-0.005*	-1.817	Yes	Yes
13	1971-1985	Quarterly	761	0.051	-0.050**	-2.420	No	No
14	1971-1985	Quarterly	761	0.061	-0.053**	-2.413	Yes	No
15	1971-1985	Quarterly	761	0.424	-0.017**	-2.509	No	Yes
16	1971-1985	Quarterly	761	0.434	-0.017**	-2.335	Yes	Yes
17	1986-2000	Monthly	2477	0.001	-0.004	-0.735	No	No
18	1986-2000	Monthly	2477	0.004	-0.004	-0.728	Yes	No
19	1986-2000	Monthly	2477	0.428	0.005**	2.198	No	Yes
20	1986-2000	Monthly	2477	0.433	0.006**	2.409	Yes	Yes
21	1986-2000	Quarterly	763	0.010	-0.020	-0.929	No	No
22	1986-2000	Quarterly	763	0.019	-0.022	-0.961	Yes	No
23	1986-2000	Quarterly	763	0.536	0.011	1.317	No	Yes
24	1986-2000	Quarterly	763	0.543	0.010	1.169	Yes	Yes

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.

Table 3D: Panel Regressions: 15-year Non-overlapping Sample Divisions
U.S. Monetary Tightening Dummy Variable ($D_t^{U.S.}$)

Model	Period	Frequency	Obs.	R^2	β	t stat.	Fixed Effects?	Time Dummies?
1	1956-1970	Monthly	2385	0.000	0.001	0.230	No	No
2	1956-1970	Monthly	2385	0.003	0.001	0.225	Yes	No
3	1956-1970	Monthly	2385	0.249	0.013**	3.223	No	Yes
4	1956-1970	Monthly	2385	0.252	-0.024**	-5.509	Yes	Yes
5	1956-1970	Quarterly	695	0.000	0.001	0.066	No	No
6	1956-1970	Quarterly	695	0.009	0.001	0.093	Yes	No
7	1956-1970	Quarterly	695	0.336	-0.082**	-10.759	No	Yes
8	1956-1970	Quarterly	695	0.345	-0.082**	-10.633	Yes	Yes
9	1971-1985	Monthly	2410	0.024	-0.018**	-3.285	No	No
10	1971-1985	Monthly	2410	0.027	-0.018**	-3.326	Yes	No
11	1971-1985	Monthly	2410	0.272	-0.025**	-3.747	No	Yes
12	1971-1985	Monthly	2410	0.276	0.010	1.270	Yes	Yes
13	1971-1985	Quarterly	710	0.059	-0.054**	-2.110	No	No
14	1971-1985	Quarterly	710	0.064	-0.055**	-2.142	Yes	No
15	1971-1985	Quarterly	710	0.406	-0.020	-1.387	No	Yes
16	1971-1985	Quarterly	710	0.412	-0.020	-1.339	Yes	Yes
17	1986-2000	Monthly	2356	0.007	-0.012*	-1.926	No	No
18	1986-2000	Monthly	2356	0.010	-0.012*	-1.933	Yes	No
19	1986-2000	Monthly	2356	0.421	0.007	1.372	No	Yes
20	1986-2000	Monthly	2356	0.427	-0.040**	-8.894	Yes	Yes
21	1986-2000	Quarterly	740	0.022	-0.033	-1.578	No	No
22	1986-2000	Quarterly	740	0.034	-0.033	-1.583	Yes	No
23	1986-2000	Quarterly	740	0.534	-0.372**	-50.207	No	Yes
24	1986-2000	Quarterly	740	0.546	-0.261**	-41.302	Yes	Yes

* Denotes $0.05 < p = 0.10$ ** Denotes $p = 0.05$.

Table 4: Local Monetary Tightening and *Excess* Returns ($E_t = a + bD_t^{local} + e_t$), 1957 through 2000 and 15-year Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria	1956-2000	408	0.000	-0.00001	-0.968
Austria	1956-1970	48	-0.021	-0.00001	-0.157
Austria	1971-1985	180	-0.004	-0.00001	-0.448
Austria	1986-2000	180	0.004	-0.00003	-1.286
Belgium	1956-2000	528	0.003	-0.00001	-1.556
Belgium	1956-1970	168	0.004	-0.00001	-1.295
Belgium	1971-1985	180	-0.003	-0.00001	-0.686
Belgium	1986-2000	180	0.001	-0.00001	-1.105
Canada	1956-2000	297	-0.001	0.00001	0.893
Canada	1956-1970	103	0.010	0.00002	1.430
Canada*	1971-1985	110	0.023	0.00004	1.897
Canada	1986-2000	84	-0.003	-0.00001	-0.869
Finland	1956-2000	277	-0.004	0.00000	-0.136
Finland	1956-1970	NA			
Finland	1971-1985	97	-0.007	0.00001	0.600
Finland	1986-2000	180	-0.004	-0.00001	-0.426
France	1956-2000	528	0.001	-0.00002	-1.306
France	1956-1970	168	-0.004	0.00001	0.532
France	1971-1985	180	0.006	-0.00004	-1.466
France	1986-2000	180	-0.004	-0.00001	-0.530
Germany	1956-2000	528	-0.002	0.00000	-0.171
Germany	1956-1970	168	0.001	0.00002	1.077
Germany	1971-1985	180	-0.005	0.00000	-0.272
Germany	1986-2000	180	-0.001	-0.00003	-0.875
Ireland	1956-2000	286	-0.003	0.00000	0.268
Ireland	1956-1970	NA			
Ireland	1971-1985	106	-0.002	0.00002	0.900
Ireland	1986-2000	180	-0.004	-0.00001	-0.464
Italy	1956-2000	528	-0.001	0.00001	0.463
Italy	1956-1970	168	-0.005	-0.00001	-0.386
Italy	1971-1985	180	-0.005	-0.00001	-0.387
Italy	1986-2000	180	0.003	0.00003	1.257

Country	Sample	Obs.	R^2	β	t stat.
Japan	1956-2000	528	-0.002	0.00000	0.433
Japan	1956-1970	168	-0.006	0.00000	-0.102
Japan	1971-1985	180	0.004	0.00002	1.286
Japan	1986-2000	180	-0.006	0.00000	0.037
Netherlands	1956-2000	528	-0.002	0.00000	-0.349
Netherlands	1956-1970	168	-0.002	-0.00001	-0.792
Netherlands	1971-1985	180	-0.001	0.00001	0.886
Netherlands	1986-2000	180	0.007	-0.00003	-1.471
New Zealand	1956-2000	139	-0.007	0.00000	-0.063
New Zealand	1956-1970	NA			
New Zealand	1971-1985	139	-0.007	0.00000	-0.063
New Zealand	1986-2000	NA			
South Africa	1956-2000	528	-0.001	0.00000	-0.524
South Africa	1956-1970	168	-0.003	0.00001	0.735
South Africa	1971-1985	180	-0.005	0.00000	-0.298
South Africa	1986-2000	180	-0.004	-0.00001	-0.329
Sweden	1956-2000	457	-0.002	0.00000	-0.261
Sweden	1956-1970	97	-0.009	0.00001	0.359
Sweden	1971-1985	180	-0.004	-0.00001	-0.461
Sweden	1986-2000	180	-0.005	0.00000	-0.149
Switzerland	1956-2000	528	-0.002	0.00000	0.148
Switzerland	1956-1970	168	-0.006	0.00001	0.261
Switzerland	1971-1985	180	-0.006	0.00000	-0.046
Switzerland	1986-2000	180	0.000	0.00000	0.119
United Kingdom	1956-2000	528	-0.002	0.00000	-0.042
United Kingdom	1956-1970	168	0.001	0.00001	1.036
United Kingdom	1971-1985	180	0.002	-0.00001	-1.140
United Kingdom	1986-2000	180	-0.002	0.00001	0.776
United States	1956-2000	528	0.003	0.00001	1.529
United States	1956-1970	168	-0.003	0.00001	0.731
United States	1971-1985	180	0.000	0.00001	1.011
United States	1986-2000	180	-0.003	0.00001	0.727

Denotes 0.05 < p = 0.10 Denotes p = 0.05.

Table 5: Alternative Monetary Policy Proxies on Tightening Dummy (1956 through 2000, where available)
($A_t = a + b D_t^{local} + e_t$)

Country	Alternative Proxy	Obs.	R^2	β	t stat.
Austria	Real Discount Rate	525	-0.002	0.00010	0.160
Belgium	Real Discount Rate	500	0.009	0.00009	0.182
Canada	Real Discount Rate	284	0.010	0.00063	1.197
Finland	Real Discount Rate	523	0.019	-0.00195**	-3.381
France	Real Discount Rate	515	0.006	-0.00085	-1.148
Germany	Real Discount Rate	523	0.004	0.00059	1.498
Ireland	Real Discount Rate	313	0.018	-0.00047	-0.360
Italy	Real Discount Rate	519	-0.001	-0.00065	-0.756
Japan	Real Discount Rate	523	-0.002	-0.00038	-0.494
Netherlands	Real Discount Rate	516	-0.002	0.00005	0.095
New Zealand	Real Discount Rate	341	-0.001	0.00052	0.369
South Africa	Real Discount Rate	466	-0.001	0.00055	0.767
Sweden	Real Discount Rate	513	0.008	-0.00112**	-2.197
Switzerland	Real Discount Rate	525	0.016	-0.00118**	-3.047
United Kingdom	Real Discount Rate	486	0.000	0.00051	0.750
United States	Real Discount Rate	516	0.009	-0.00076**	-2.127
Austria	Discount Spread	396	0.011	-0.518	-1.242
Belgium	Discount Spread	488	0.020	0.655**	2.275
Canada	Discount Spread	284	0.063	-0.037	-0.256
Finland	Discount Spread	268	0.116	-0.692	-0.857
France	Discount Spread	503	0.000	0.070	0.101
Germany	Discount Spread	523	0.017	-0.688**	-3.594
Ireland	Discount Spread	257	0.020	-0.738**	-2.493
Italy	Discount Spread	507	0.010	-0.232	-0.435
Japan	Discount Spread	511	0.107	-1.509**	-6.440
Netherlands	Discount Spread	516	0.000	-0.440	-1.389
New Zealand	Discount Spread	129	0.024	1.569*	1.651
South Africa	Discount Spread	466	0.042	0.010	0.084
Sweden	Discount Spread	454	0.000	-0.077	-0.175
Switzerland	Discount Spread	513	0.002	-0.481	-1.367
United Kingdom	Discount Spread	486	0.051	0.049	0.934
United States	Discount Spread	516	0.034	-0.484**	-4.509
Austria	M1 Growth	507	0.000	-0.0005	-0.257
Belgium	M1 Growth	226	-0.002	-0.0025	-0.778
Canada	M1 Growth	284	0.003	-0.0037	-1.466
Finland	M1 Growth	358	0.000	0.0001	0.049
France	M1 Growth	351	0.000	-0.0014	-0.565
Germany	M1 Growth	511	0.017	-0.0030**	-3.203
Ireland	M1 Growth	266	0.006	-0.0034	-1.047
Italy	M1 Growth	423	0.001	-0.0017	-0.683
Japan	M1 Growth	465	-0.001	-0.0010	-0.292
Netherlands	M1 Growth	458	0.004	-0.0042*	-1.667
New Zealand	M1 Growth	90	0.000	-0.0044	-0.662
Sweden	M1 Growth	454	-0.001	-0.0008	-0.464
Switzerland	M1 Growth	466	0.010	-0.0064**	-2.432
United Kingdom	M1 Growth	338	0.000	0.0004	0.150
United States	M1 Growth	481	0.028	-0.0025**	-3.220

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.

Table 6A: Real Local Monetary Tightening Dummy Variable, 1956 through 2000 and 15-year Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria**	1956-2000	206	0.005	0.011	1.495
Austria	1956-1970	69	0.053	0.018	2.180
Austria	1971-1985	20	-0.036	-1.006	-0.580
Austria	1986-2000	77	0.000	0.002	0.163
Belgium	1956-2000	202	-0.004	0.002	0.347
Belgium	1956-1970	72	-0.003	0.006	0.894
Belgium	1971-1985	62	-0.014	-0.005	-0.437
Belgium	1986-2000	68	-0.011	0.003	0.263
Canada	1956-2000	107	-0.003	-0.006	-0.693
Canada	1956-1970	48	-0.020	0.000	0.003
Canada	1971-1985	35	-0.027	-0.005	-0.299
Canada	1986-2000	24	-0.024	-0.013	-0.800
Finland*	1956-2000	184	0.015	0.016	1.950
Finland	1956-1970	62	0.001	0.009	1.008
Finland	1971-1985	50	0.034	0.020	1.623
Finland	1986-2000	72	0.014	0.025	1.430
France	1956-2000	212	0.000	-0.001	-0.151
France	1956-1970	68	0.000	0.002	0.118
France	1971-1985	70	-0.012	-0.009	-0.545
France	1986-2000	74	-0.009	0.009	0.628
Germany	1956-2000	219	-0.004	0.002	0.376
Germany	1956-1970	81	-0.011	-0.003	-0.302
Germany	1971-1985	71	-0.007	0.008	0.727
Germany	1986-2000	67	-0.014	0.002	0.193
Ireland	1956-2000	228	0.004	-0.012	-1.348
Ireland	1956-1970	45	0.038	-0.011	-1.207
Ireland	1971-1985	73	0.006	-0.019	-1.199
Ireland	1986-2000	110	-0.006	-0.010	-0.653
Italy	1956-2000	229	0.003	0.011	1.356
Italy	1956-1970	74	0.021	0.016	1.601
Italy	1971-1985	86	-0.003	0.014	0.810
Italy	1986-2000	69	-0.008	0.008	0.503

Country	Sample	Obs.	R^2	β	t stat.
Japan	1956-2000	225	0.000	0.007	1.036
Japan**	1956-1970	71	0.048	0.020	2.189
Japan	1971-1985	66	-0.013	0.004	0.358
Japan	1986-2000	88	-0.012	0.001	0.081
Netherlands	1956-2000	259	-0.003	-0.002	-0.289
Netherlands	1956-1970	78	-0.002	-0.009	-0.906
Netherlands	1971-1985	90	-0.008	0.006	0.627
Netherlands	1986-2000	91	0.005	-0.009	-0.764
New Zealand	1956-2000	277	-0.001	-0.004	-0.807
New Zealand	1956-1970	149	-0.002	-0.004	-0.745
New Zealand	1971-1985	128	0.000	-0.003	-0.418
New Zealand	1986-2000	NA			
South Africa	1956-2000	197	-0.005	0.008	0.594
South Africa	1956-1970	61	-0.012	-0.003	-0.226
South Africa	1971-1985	72	0.002	0.019	1.056
South Africa	1986-2000	64	-0.014	0.016	0.461
Sweden*	1956-2000	208	0.011	0.013	1.829
Sweden	1956-1970	72	-0.013	0.002	0.240
Sweden**	1971-1985	60	0.045	0.022	1.986
Sweden	1986-2000	76	0.017	0.023	1.501
Switzerland**	1956-2000	180	0.043	0.020	2.977
Switzerland**	1956-1970	74	0.040	0.023	2.011
Switzerland	1971-1985	50	0.034	0.018	1.637
Switzerland	1986-2000	56	0.012	0.015	1.242
United Kingdom*	1956-2000	216	0.012	-0.013	-1.909
United Kingdom**	1956-1970	74	0.075	-0.021	-2.635
United Kingdom**	1971-1985	72	0.072	-0.034	-2.491
United Kingdom	1986-2000	70	0.007	0.015	1.217
United States	1956-2000	206	-0.003	0.005	0.849
United States	1956-1970	61	-0.009	0.004	0.491
United States	1971-1985	75	-0.012	0.004	0.433
United States	1986-2000	70	0.000	0.004	0.365

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.

Table 6B: Real U.S. Monetary Tightening Dummy Variable, 1956 through 2000 and 15-year Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria	1956-2000	206	0.000	-0.007	-0.974
Austria	1956-1970	61	-0.014	0.006	0.445
Austria*	1971-1985	75	0.028	-0.015	-1.771
Austria	1986-2000	70	-0.002	-0.011	-0.901
Belgium	1956-2000	206	-0.001	0.006	0.853
Belgium**	1956-1970	61	0.055	0.014	2.073
Belgium	1971-1985	75	-0.010	-0.009	-0.777
Belgium	1986-2000	70	-0.002	0.013	0.945
Canada	1956-2000	123	0.007	-0.011	-1.371
Canada	1956-1970	40	0.009	0.007	0.779
Canada	1971-1985	49	0.031	-0.020	-1.497
Canada**	1986-2000	34	0.080	-0.037	-1.937
Finland	1956-2000	206	0.003	0.009	1.056
Finland	1956-1970	61	-0.004	0.008	0.693
Finland	1971-1985	75	0.000	-0.002	-0.159
Finland	1986-2000	70	-0.010	0.016	0.725
France	1956-2000	206	0.000	-0.008	-0.758
France	1956-1970	61	-0.006	-0.012	-0.934
France	1971-1985	75	-0.008	-0.012	-0.518
France	1986-2000	70	0.012	-0.003	-0.180
Germany	1956-2000	206	0.004	0.009	1.295
Germany*	1956-1970	61	0.065	0.026	2.224
Germany	1971-1985	75	-0.009	-0.005	-0.572
Germany	1986-2000	70	-0.010	0.010	0.598
Ireland	1956-2000	130	-0.006	-0.007	-0.594
Ireland	1956-1970	19	-0.020	-0.005	-0.351
Ireland**	1971-1985	41	0.079	-0.044	-2.101
Ireland	1986-2000	70	-0.004	0.013	0.700
Italy	1956-2000	206	0.003	0.012	1.259
Italy	1956-1970	61	0.027	0.022	1.638
Italy	1971-1985	75	-0.009	0.011	0.639
Italy	1986-2000	70	-0.014	-0.002	-0.121

Country	Sample	Obs.	R^2	β	t stat.
Japan	1956-2000	206	0.006	-0.009	-1.454
Japan	1956-1970	61	-0.010	0.008	0.661
Japan**	1971-1985	75	0.078	-0.022	-2.708
Japan	1986-2000	70	-0.004	-0.011	-0.843
Netherlands	1956-2000	206	0.000	-0.001	-0.135
Netherlands	1956-1970	61	-0.016	0.004	0.322
Netherlands	1971-1985	75	-0.003	-0.009	-0.823
Netherlands	1986-2000	70	-0.014	0.000	-0.032
New Zealand	1956-2000	134	-0.001	0.006	0.881
New Zealand*	1956-1970	61	0.034	0.011	1.836
New Zealand	1971-1985	73	-0.011	0.000	-0.015
New Zealand	1986-2000	NA			
South Africa	1956-2000	206	0.000	-0.009	-0.978
South Africa	1956-1970	61	-0.013	-0.004	-0.378
South Africa	1971-1985	75	-0.006	-0.009	-0.626
South Africa	1986-2000	70	-0.008	-0.013	-0.667
Sweden	1956-2000	206	-0.003	0.003	0.404
Sweden	1956-1970	61	-0.002	0.007	0.763
Sweden	1971-1985	75	0.000	-0.009	-1.006
Sweden	1986-2000	70	-0.012	0.007	0.396
Switzerland*	1956-2000	206	0.008	0.012	1.663
Switzerland	1956-1970	61	0.022	0.017	1.016
Switzerland	1971-1985	75	-0.012	0.003	0.405
Switzerland	1986-2000	70	0.000	0.019	1.309
United Kingdom	1956-2000	206	-0.005	0.002	0.310
United Kingdom	1956-1970	61	-0.010	0.005	0.495
United Kingdom	1971-1985	75	-0.012	-0.003	-0.207
United Kingdom	1986-2000	70	-0.014	0.003	0.266

* Denotes $0.05 < p = 0.10$ ** Denotes $p = 0.05$.

Table 6C: Real Local (Continuous One-month Lagged) Monetary Tightening, 1956 through 2000 and 15-year Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.	Country	Sample	Obs.	R^2	β	t stat.
Austria	1956-2000	540	0.002	-0.003	-1.438	Japan	1956-2000	540	-0.002	0.000	-0.343
Austria	1956-1970	180	-0.005	0.001	0.160	Japan	1956-1970	180	-0.003	0.003	0.628
Austria**	1971-1985	180	0.020	-0.007	-2.166	Japan*	1971-1985	180	0.010	-0.004	-1.652
Austria	1986-2000	180	-0.003	-0.002	-0.670	Japan	1986-2000	180	-0.002	-0.002	-0.786
Belgium	1956-2000	540	0.000	-0.001	-0.904	Netherlands**	1956-2000	540	0.011	-0.004	-2.610
Belgium	1956-1970	180	0.005	-0.003	-1.397	Netherlands**	1956-1970	180	0.022	-0.009	-2.260
Belgium	1971-1985	180	-0.005	0.000	-0.328	Netherlands	1971-1985	180	0.006	-0.003	-1.451
Belgium	1986-2000	180	-0.003	-0.001	-0.636	Netherlands	1986-2000	180	0.008	-0.004	-1.543
Canada	1956-2000	307	-0.003	0.000	0.143	New Zealand	1956-2000	354	0.000	0.000	0.015
Canada	1956-1970	113	0.001	-0.003	-1.043	New Zealand	1956-1970	180	0.007	-0.012	-1.515
Canada	1971-1985	110	0.007	0.003	1.338	New Zealand	1971-1985	174	-0.005	0.000	0.408
Canada	1986-2000	84	-0.011	-0.001	-0.200	New Zealand	1986-2000	NA			
Finland**	1956-2000	540	0.015	-0.006	-3.046	South Africa	1956-2000	540	0.001	-0.001	-1.141
Finland	1956-1970	180	-0.004	-0.005	-0.593	South Africa	1956-1970	180	0.001	-0.005	-1.105
Finland	1971-1985	180	0.008	-0.008	-1.531	South Africa	1971-1985	180	-0.005	0.000	-0.353
Finland*	1986-2000	180	0.010	-0.006	-1.655	South Africa	1986-2000	180	-0.005	0.000	-0.152
France	1956-2000	540	-0.001	-0.001	-0.842	Sweden	1956-2000	540	-0.002	0.000	-0.043
France	1956-1970	180	-0.005	-0.001	-0.204	Sweden**	1956-1970	180	0.047	-0.010	-3.148
France	1971-1985	180	-0.003	-0.002	-0.676	Sweden**	1971-1985	180	0.017	0.004	2.025
France	1986-2000	180	0.002	-0.002	-1.178	Sweden	1986-2000	180	-0.002	-0.001	-0.793
Germany**	1956-2000	540	0.007	-0.003	-2.144	Switzerland	1956-2000	540	0.002	-0.002	-1.497
Germany*	1956-1970	180	0.013	-0.007	-1.840	Switzerland	1956-1970	180	-0.004	-0.003	-0.500
Germany	1971-1985	180	0.003	-0.002	-1.201	Switzerland	1971-1985	180	0.000	-0.002	-0.968
Germany	1986-2000	180	0.000	-0.002	-1.003	Switzerland	1986-2000	180	0.001	-0.002	-1.093
Ireland	1956-2000	344	-0.001	-0.001	-0.905	United Kingdom	1956-2000	540	-0.001	0.000	-0.571
Ireland	1956-1970	58	-0.004	-0.007	-0.909	United Kingdom*	1956-1970	180	0.014	-0.005	-1.891
Ireland	1971-1985	106	-0.009	-0.001	-0.190	United Kingdom	1971-1985	180	-0.006	0.000	0.028
Ireland	1986-2000	180	-0.005	0.001	0.341	United Kingdom	1986-2000	180	-0.005	0.000	-0.263
Italy	1956-2000	540	-0.002	0.000	0.213	United States	1956-2000	540	0.002	-0.001	-1.508
Italy	1956-1970	180	0.005	-0.013	-1.407	United States*	1956-1970	180	0.012	-0.005	-1.796
Italy	1971-1985	180	0.000	0.001	0.990	United States	1971-1985	180	-0.002	-0.001	-0.770
Italy	1986-2000	180	-0.003	-0.001	-0.683	United States	1986-2000	180	0.000	0.000	0.028

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.

Table 7: Discount Rate Spread (Government Bill Rates), 1957 through 2000, Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria	1967-2000	408	-0.002	-0.001	-0.205
Austria	1967-1970	48	-0.022	0.002	0.068
Austria	1971-1985	180	0.000	0.000	0.032
Austria	1986-2000	180	-0.005	-0.002	-0.341
Belgium	1957-2000	528	0.002	-0.003	-1.436
Belgium*	1957-1970	168	0.011	-0.006	-1.714
Belgium	1971-1985	180	0.001	-0.003	-1.048
Belgium	1986-2000	180	-0.003	-0.003	-0.699
Canada	1957-2000	297	0.001	0.007	1.106
Canada	1957-1970	103	-0.006	0.007	0.637
Canada	1971-1985	110	-0.003	0.008	0.806
Canada	1986-2000	84	-0.006	0.017	0.710
Finland	1977-2000	277	0.003	0.003	1.303
Finland	1957-1970	NA			
Finland	1971-1985	97	-0.010	0.000	-0.217
Finland	1986-2000	180	0.008	0.005	1.535
France	1957-2000	528	0.002	0.002	1.451
France	1957-1970	168	-0.005	-0.002	-0.401
France	1971-1985	180	-0.003	0.001	0.728
France*	1986-2000	180	0.012	0.012	1.767
Germany**	1957-2000	528	0.010	0.005	2.567
Germany*	1957-1970	168	0.012	0.008	1.745
Germany**	1971-1985	180	0.043	0.006	3.017
Germany	1986-2000	180	-0.004	0.003	0.504
Ireland	1971-2000	286	-0.002	0.001	0.558
Ireland	1957-1970	NA			
Ireland	1971-1985	106	-0.007	0.002	0.532
Ireland	1986-2000	180	-0.005	0.000	0.050
Italy**	1957-2000	528	0.020	0.007	3.429
Italy	1957-1970	168	0.002	0.012	1.161
Italy**	1971-1985	180	0.049	0.008	3.201
Italy*	1986-2000	180	0.010	0.008	1.651

Country	Sample	Obs.	R^2	β	t stat.
Japan*	1957-2000	528	0.005	0.003	1.902
Japan**	1957-1970	168	0.026	0.005	2.344
Japan	1971-1985	180	0.002	0.004	1.077
Japan	1986-2000	180	-0.006	0.000	-0.055
Netherlands**	1957-2000	528	0.009	0.004	2.364
Netherlands	1957-1970	168	0.008	0.005	1.538
Netherlands*	1971-1985	180	0.016	0.003	1.947
Netherlands	1986-2000	180	0.005	0.013	1.328
New Zealand	1973-2000	139	0.009	0.004	1.586
New Zealand	1957-1970	NA			
New Zealand	1971-1985	139	0.009	0.004	1.586
New Zealand	1986-2000	NA			
South Africa	1957-2000	528	-0.002	0.000	-0.077
South Africa	1957-1970	168	-0.003	-0.009	-0.750
South Africa	1971-1985	180	-0.005	0.002	0.274
South Africa	1986-2000	180	0.000	0.002	0.219
Sweden	1963-2000	457	-0.001	0.001	0.662
Sweden	1963-1970	97	0.012	0.008	1.461
Sweden	1971-1985	180	-0.003	-0.001	-0.643
Sweden**	1986-2000	180	0.032	0.013	2.622
Switzerland**	1957-2000	528	0.009	0.004	2.396
Switzerland**	1957-1970	168	0.037	0.013	2.712
Switzerland**	1971-1985	180	0.016	0.003	1.975
Switzerland	1986-2000	180	0.001	0.006	1.083
United Kingdom	1957-2000	528	-0.001	-0.004	-0.804
United Kingdom	1957-1970	168	-0.004	0.005	0.447
United Kingdom	1971-1985	180	0.001	-0.008	-1.078
United Kingdom	1986-2000	180	-0.004	0.007	0.540
United States**	1957-2000	528	0.039	0.013	4.753
United States**	1957-1970	168	0.021	0.012	2.132
United States**	1971-1985	180	0.131	0.018	5.293
United States	1986-2000	180	0.000	-0.001	-0.138

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.

Table 8A: M1 Growth Dummy Variable, 1959 through 2000 and Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria	1959-2000	166	0.000	0.006	0.598
Austria	1959-1970	55	0.000	0.016	0.398
Austria	1971-1985	52	0.016	0.007	1.336
Austria	1986-2000	59	0.000	-0.002	-0.136
Belgium	1980-2000	80	-0.002	0.001	0.127
Belgium	1959-1970	NA			
Belgium	1971-1985	28	-0.007	0.008	0.287
Belgium	1986-2000	52	-0.019	0.000	-0.014
Canada	1959-2000	174	0.001	-0.006	-0.990
Canada	1959-1970	56	0.009	-0.011	-1.166
Canada	1971-1985	66	-0.012	0.006	0.487
Canada*	1986-2000	52	0.045	-0.019	-1.837
Finland	1970-2000	105	0.003	0.016	1.244
Finland	1959-1970	NA			
Finland*	1971-1985	50	0.047	0.021	1.988
Finland	1986-2000	50	-0.016	0.011	0.437
France**	1970-2000	119	0.067	-0.034	-3.106
France	1970-1970	NA			
France**	1971-1985	54	0.144	-0.043	-3.159
France**	1986-2000	61	0.050	-0.034	-2.045
Germany	1959-2000	161	0.006	-0.012	-1.425
Germany	1959-1970	59	0.022	-0.020	-1.526
Germany	1971-1985	54	0.005	-0.013	-1.140
Germany	1986-2000	48	0.000	0.000	0.024
Ireland	1960-2000	169	0.001	0.011	1.172
Ireland	1960-1970	51	-0.018	0.000	0.010
Ireland	1971-1985	58	0.014	0.025	1.339
Ireland	1986-2000	60	0.000	0.006	0.355
Italy	1964-2000	148	-0.006	-0.004	-0.381
Italy	1964-1970	28	-0.016	-0.019	-0.794
Italy	1971-1985	60	-0.010	0.007	0.414
Italy	1986-2000	60	-0.007	-0.014	-0.766
	1959-2000				

Country	Sample	Obs.	R^2	β	t stat.
Japan	1961-1970	166	0.000	0.000	-0.068
Japan	1971-1985	41	-0.025	0.002	0.119
Japan	1986-2000	64	-0.001	-0.008	-0.936
Japan		61	0.000	0.003	0.268
	1961-2000				
Netherlands	1961-1970	197	0.009	0.009	1.341
Netherlands	1971-1985	46	-0.008	0.010	0.740
Netherlands	1986-2000	79	-0.008	0.007	0.781
Netherlands		72	0.012	0.007	0.642
	1977-2000				
New Zealand	1959-1970	89	0.017	-0.034	-1.451
New Zealand	1971-1985	NA			
New Zealand	1986-2000	29	0.079	-0.031	-1.644
New Zealand		NA			
	1961-2000				
Sweden	1961-1970	134	-0.006	-0.004	-0.411
Sweden	1971-1985	25	0.000	0.006	0.273
Sweden	1986-2000	50	-0.005	-0.012	-0.796
Sweden		59	0.000	-0.001	-0.062
	1961-2000				
Switzerland	1961-1970	176	-0.005	0.003	0.463
Switzerland	1971-1985	49	0.000	-0.004	-0.337
Switzerland	1986-2000	60	-0.013	0.006	0.536
Switzerland		67	-0.009	0.007	0.544
	1969-2000				
United Kingdom	1959-1970	170	0.000	0.000	0.016
United Kingdom	1971-1985				
United Kingdom	1986-2000	80	-0.012	0.001	0.082
United Kingdom		80	-0.011	-0.004	-0.478
	1959-2000				
United States**	1959-1970	209	0.054	-0.018	-3.558
United States*	1971-1985	56	0.032	-0.014	-1.674
United States**	1986-2000	85	0.041	-0.021	-2.184
United States**	1961-1970	68	0.047	-0.015	-2.065

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.

Table 8B: (Continuous, Contemporaneous) M1 Growth Variable, 1959 through 2000 and Sample Divisions

Country	Sample	Obs.	R^2	β	t stat.
Austria	1959-2000	522	-0.002	-0.010	-0.150
Austria	1959-1970	162	0.007	-0.253	-1.436
Austria	1971-1985	180	0.001	0.082	1.098
Austria	1986-2000	180	-0.004	-0.061	-0.487
Belgium	1980-2000	252	-0.003	-0.042	-0.382
Belgium	1959-1970	NA			
Belgium	1971-1985	72	0.013	-0.341	-1.395
Belgium	1986-2000	180	-0.005	0.048	0.394
Canada	1959-2000	540	0.001	0.095	1.129
Canada	1959-1970	180	0.003	0.200	1.264
Canada	1971-1985	180	-0.005	0.045	0.317
Canada	1986-2000	180	-0.003	0.103	0.701
Finland	1970-2000	371	-0.002	-0.032	-0.414
Finland	1959-1970	NA			
Finland**	1971-1985	180	0.047	-0.161	-3.123
Finland*	1986-2000	180	0.017	0.441	2.001
France	1970-2000	371	-0.003	-0.003	-0.019
France	1970-1970	NA			
France	1971-1985	180	-0.006	-0.027	-0.053
France	1986-2000	180	-0.006	0.007	0.055
Germany	1959-2000	527	0.002	0.286	1.439
Germany	1959-1970	167	0.001	0.540	1.138
Germany**	1971-1985	180	0.017	0.594	1.994
Germany	1986-2000	180	-0.005	0.067	0.207
Ireland*	1960-2000	491	0.004	-0.109	-1.752
Ireland	1960-1970	131	0.011	-0.080	-1.532
Ireland	1971-1985	180	-0.005	-0.046	-0.399
Ireland	1986-2000	180	0.007	-0.178	-1.495
Italy**	1964-2000	444	0.014	-0.204	-2.732
Italy	1964-1970	84	-0.012	-0.025	-0.126
Italy**	1971-1985	180	0.025	-0.321	-2.368
Italy	1986-2000	180	0.009	-0.164	-1.582

Country	Sample	Obs.	R^2	β	t stat.
Japan	1961-2000	479	0.000	-0.043	-0.901
Japan	1961-1970	119	0.003	-0.134	-1.179
Japan	1971-1985	180	0.003	-0.060	-1.169
Japan	1986-2000	180	0.000	0.087	0.990
Netherlands	1961-2000	479	-0.002	-0.001	-0.012
Netherlands	1961-1970	119	-0.002	-0.195	-0.895
Netherlands	1971-1985	180	0.000	0.100	1.005
Netherlands	1986-2000	180	-0.002	-0.090	-0.699
New Zealand	1977-2000	285	0.004	0.204	1.485
New Zealand	1959-1970	NA			
New Zealand	1971-1985	105	0.000	0.056	1.036
New Zealand	1986-2000	NA			
Sweden	1961-2000	479	0.003	0.166	1.593
Sweden	1961-1970	119	-0.006	-0.117	-0.534
Sweden*	1971-1985	180	0.016	0.254	1.939
Sweden	1986-2000	180	-0.003	0.156	0.723
Switzerland	1961-2000	479	-0.001	0.041	0.529
Switzerland	1961-1970	119	-0.006	-0.144	-0.530
Switzerland	1971-1985	180	-0.004	0.041	0.503
Switzerland	1986-2000	180	-0.002	0.155	0.770
United Kingdom**	1969-2000	378	0.011	-0.178	-2.257
United Kingdom	1959-1970	NA			
United Kingdom**	1971-1985	180	0.031	-0.339	-2.577
United Kingdom	1986-2000	180	-0.004	-0.056	-0.590
United States**	1959-2000	503	0.018	1.048	3.201
United States**	1959-1970	143	0.036	1.979	2.516
United States**	1971-1985	180	0.069	2.319	3.778
United States	1986-2000	180	-0.004	0.241	0.518

* Denotes 0.05 < p = 0.10 ** Denotes p = 0.05.