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Citation

Is the U.S. Unique?
International Evidence on the Aggregate Earnings-Returns Association[*]

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Abstract

We exploit differences in institutional and macroeconomic environments to shed light on what drives variation in the aggregate earnings-returns relation over time within the U.S. and across countries. We find that both intertemporal and cross-country variation in the aggregate earnings-returns association are driven primarily by two factors, namely, the monetary policy news conveyed in aggregate earnings and the market reaction to that news, which suggest that the strength of the discount rate news channel plays an important role in explaining the aggregate earnings-returns relation both within and outside of the U.S. We further find that institutional characteristics have a significant effect on the information content of aggregate earnings and hence on the aggregate earnings-returns association—aggregate earnings are more informative about policy changes in countries with stronger investor protection and greater accounting transparency. Overall, our study provides new evidence on what drives the aggregate earnings-returns relation across the globe.

1. Introduction

In contrast to the positive association between earnings news and stock returns at the firm level, in a seminal paper Kothari, Lewellen, and Warner (2006) document a negative association between aggregate earnings news and stock returns in the U.S. over the 1970 to 2000 period. Numerous studies have since explored this association and its underlying determinants. While early evidence attributes the negative aggregate earnings-returns (E-R) relation to the predictability of aggregate earnings changes (Sadka and Sadka, 2009), more recent studies find evidence in support of a discount rate news channel whereby aggregate earnings convey discount rate news (Shivakumar, 2007; Cready and Gurun, 2010; Gallo, Hann, and Li, 2016). While these studies advance our understanding of what drives the aggregate E-R relation, they are limited to one (or at most a few) time series within a single economy—the U.S.

A recent study by He and Hu (2014) examines the aggregate E-R relation in an international setting. They find that, in contrast to the U.S. market, this association is largely positive outside of the U.S. over the 1988 to 2009 period and conclude that the negative aggregate E-R relation documented in prior research is unique to the U.S. They further find that earnings predictability (as opposed to the discount rate news in aggregate earnings) explains the variation in the aggregate E-R relation across countries. These different findings outside of the U.S. are interesting, and perhaps surprising. In this study, we attempt to shed some light on these differences by examining 1) why the negative aggregate E-R association documented for the U.S. in prior studies does not extend to other countries, 2) whether the discount rate news channel can explain the aggregate E-R association outside of the U.S., and 3) how the aggregate E-R relation is affected by institutional differences across countries.

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We address these questions using a sample of 31 countries, including the U.S., over the period 1988 to 2016. We begin by documenting the aggregate E-R relation for each country. Like He and Hu (2014), we find that the association is positive for a majority of the sample countries—the association is positive for 25 out of 31 countries, although it is significant for only 9 countries. At the surface, this result appears to challenge the previously documented negative association for the U.S. However, we find that over the sample period considered (i.e., 1988-2016), the aggregate E-R relation for the U.S. is also positive.[1] Though seemingly different from Kothari et al. (2006), prior work shows that the aggregate E-R association in the U.S. has become less negative (or positive) in recent decades (Sadka and Sadka, 2009; Gallo et al., 2013, 2016; Kim et al., 2017). Consistent with prior research, we find that the aggregate E-R association is negative and significant in earlier periods (in general, any subperiods prior to 2000) while it is positive, though not always significant, in more recent periods. These findings suggest that, even within the U.S., the aggregate E-R association is not homogeneous but rather varies over time.

Given these observations, before we turn to our cross-country analysis, we first examine what drives the intertemporal variation in the aggregate E-R association in the U.S., as understanding the time-series dynamics of the association in the U.S. may provide insight into what drives cross-country differences in the aggregate E-R relation. Building on Gallo et al. (2016), who find that the negative aggregate E-R association in the U.S. is driven by aggregate earnings conveying monetary policy news and the market reacting negatively to policy surprises, we predict that the aggregate E-R association should vary with the strength of the discount rate news channel in the form of monetary policy news. Consistent with this conjecture, we find that

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[1] Note that He and Hu (2014) do not include the U.S. in their analysis. Their inference on the U.S. being unique is based solely on the findings for the U.S. documented in prior research, which generally covers earlier time periods.

the intertemporal variation in the aggregate E-R association in the U.S. is driven largely by two factors: 1) the monetary policy news contained in aggregate earnings, and 2) the market's reaction to the policy news. Specifically, using changes in the Federal funds rate to capture monetary policy news, results from a rolling-window regression analysis show that the aggregate E-R association is more negative in periods when aggregate earnings convey more monetary policy news as well as in periods when the market's reaction to monetary policy shocks is stronger. We, however, do not find evidence supporting the role of aggregate earnings predictability in explaining the intertemporal variation in the aggregate E-R relation in the U.S.

Given the above evidence on the monetary policy channel, we next examine whether macroeconomic dynamics play a role in explaining the intertemporal variation in the aggregate E-R relation. We argue that the Fed is more likely to take actions in periods of heightened economic uncertainty, which tend to coincide with periods of greater policy uncertainty and hence greater policy surprises. We therefore expect both factors—the amount of monetary policy news in aggregate earnings and the market's reaction to this news—to vary positively with the degree of macroeconomic uncertainty.[2] Consistent with this conjecture, we find that in periods with high macro uncertainty, aggregate earnings are more informative about policy changes and the market reacts more strongly to policy news, resulting in a more negative aggregate E-R association. These findings suggest that macroeconomic dynamics play an important role in explaining the intertemporal variation in the U.S.

Next, we examine the roles of discount rate news and aggregate earnings predictability in explaining cross-country differences in the aggregate E-R relation. Consistent with the

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[2] Monetary policy is an important policy tool used by the Fed to offset fluctuations and stabilize the economy (e.g., Bernanke, 2008). Therefore, the Fed is more likely to take actions during periods of heightened economic uncertainty. At the same time, Fed actions resolve more risk and uncertainty during such periods, leading to greater market reactions.

intertemporal evidence in the U.S., cross-country variation in the aggregate E-R relation is driven primarily by the discount rate news channel. Specifically, we find that the informativeness of aggregate earnings is a key factor—the aggregate E-R association is significantly more negative (less positive) in countries where aggregate earnings convey more monetary policy news. Like the intertemporal variation, the cross-country variation in the aggregate E-R association is not explained by the degree of aggregate earnings predictability. These findings suggest that the discount rate channel, and in particular, the information content of aggregate earnings, plays an important role in explaining the aggregate E-R association not only in the U.S. but also across the globe.

Given the above finding, we further examine whether institutional characteristics can help explain cross-country differences in the information content of aggregate earnings and hence the aggregate E-R association. Prior studies (e.g., Leuz, Nanda, and Wysocki, 2003) show that stronger investor protection and governance reduce managers' and insiders' abilities to manipulate earnings. As a result, in countries with a higher level of investor protection and stronger governance, firm-level earnings are of higher quality and better reflect true economic performance, and hence aggregate earnings also better reflect the state of the economy. To the extent that central banks make policy decisions based on current and forecasted economic performance, higher quality aggregate earnings news should have greater explanatory power for monetary policy news. Using measures of investor protection from prior literature (e.g., Leuz et al., 2003) as well as governance indicators from the World Bank, we predict and find that aggregate earnings are most informative about monetary policy news in countries with better investor protection and stronger legal enforcement.

Lastly, we examine the effect of accounting transparency on the aggregate E-R relation across countries. He and Hu (2014) argue that aggregate earnings are more predictable in countries with greater transparency. In particular, they predict and find that the aggregate E-R relation is less positive in countries with more transparent disclosure, suggesting that the aggregate E-R relation outside of the U.S. is explained by earnings predictability. In contrast, we find that cross-country differences in the aggregate E-R association are not explained by the degree of aggregate earnings predictability in each country, but rather by the extent to which their aggregate earnings convey monetary policy news and the market's reaction to this news. One possible explanation for the different findings is that transparent reporting affects not only the predictability, but also the informativeness and quality, of aggregate earnings. Hence, aggregate earnings are likely to convey more information about macro fundamentals and in turn policy news in countries with greater accounting transparency. Using the same transparency measures employed by He and Hu (2014), we find that aggregate earnings are indeed more informative about policy news in countries with more transparent disclosure. This finding suggests that, consistent with He and Hu, accounting transparency is an important determinant of the cross-country variation in the aggregate E-R relation. We further show, however, that the effect of transparency stems primarily from the discount rate (monetary policy) news channel rather than the predictability of aggregate earnings.

Our study makes several contributions to the literature. First, while numerous studies explore the aggregate E-R association and its underlying determinants in the U.S., whether the findings documented in this literature extend to an international setting has received relatively little attention. Our study complements He and Hu (2014) by providing new out-of-sample international evidence on the aggregate E-R relation as well as the factors that drive the relation.

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Importantly, our findings show that the U.S. is not unique and that institutional differences in factors such as investor protection and accounting transparency can help explain cross-country variation in the information content of aggregate earnings and hence the aggregate E-R relation.

Second, while prior research shows that the discount rate news in aggregate earnings and the predictability of aggregate earnings can both explain the negative aggregate E-R relation in the U.S., the bulk of the evidence supports the discount rate news channel. Recent research by Gallo et al. (2016) shows that aggregate earnings conveying monetary policy news is a specific discount rate news channel. Our study extends this work by showing that the monetary policy news channel also plays an important role in explaining cross-country differences in the aggregate E-R association. In particular, we find that the aggregate E-R relation is more negative (or less positive) in countries where aggregate earnings are more informative about monetary policy news.

Third, although the focus of the study is on explaining cross-country differences in the aggregate E-R association, our time-series analysis, which sheds light on the factors that drive intertemporal variation in the E-R relation in the U.S, is interesting in its own right. While prior research suggests that there is significant intertemporal variation in the aggregate E-R relation, the factors that drive this variation are less clear.[3] We find that the *intensity* of the monetary policy channel (i.e., the extent to which aggregate earnings convey monetary policy news and the size of the market reaction to policy news) plays an important role in explaining the intertemporal variation. This finding is important because it indicates that even though the

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[3] Several studies attempt to explain the intertemporal variation in the aggregate E-R relation. For instance, Gallo et al. (2013, 2016) find that the aggregate E-R relation is more negative in periods with negative policy surprises, which tend to trigger a more significant market reaction. Zolotoy et al. (2017) find that the aggregate E-R relation varies based on whether the economy is in a "good" or "bad" state. Kim et al. (2017) investigate how the relationship between aggregate earnings and future real output affects the time-series variation in this association. Our study examines factors that affect the monetary policy news and aggregate earnings predictability channels.

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discount rate news in aggregate earnings may not fully explain the aggregate E-R relation in all periods for all countries, this does not imply that the discount rate news channel is not present as it is the variation in the intensity of the discount rate news channel that drives the intertemporal and cross-country variation in the aggregate E-R relation.

Lastly, a large stream of the literature explores how the information content of firm-level earnings varies across countries. Our study complements this work by examining how the information content of aggregate-level earnings varies across countries, and the implications of this variation for the aggregate E-R association. Specifically, we contribute to the large literature in economics and accounting that investigates the role of institutions for disclosure attributes by providing evidence on the role of investor protection and accounting transparency in shaping the information content of aggregate accounting earnings.

The rest of the paper is organized as follows. Section 2 reviews the literature. Section 3 summarizes the data and sample selection. Section 4 presents our empirical research design and results. Section 5 concludes.

2. Related Literatures

2.1 The Aggregate Earnings-Returns Relation: U.S. Evidence

Using the U.S. data for the period 1970-2000, Kothari et al. (2006) were the first to show a negative relation between aggregate earnings growth and aggregate stock returns, a surprising finding considering the established positive relation between earnings and returns at the firm level. Their finding of a positive correlation between aggregate earnings and changes in certain proxies for discount rate news (namely, changes in the T-bill rate and default spread) suggests a co-movement between earnings and discount rates at the aggregate level. However, they note

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that their proxies of discount rate news only partially explain the negative relation, leaving a portion of the (discount-rate) shocks unexplained in their analysis.

Cready and Gurun (2010) offer further support for the discount rate channel using daily market returns data and short-window analyses for the period 1973-2006. They find that after controlling for various macro indicators, the arrival of positive (negative) earnings news produces a significantly negative (positive) market reaction consistent with this earnings news increasing (decreasing) the discount rate applied to future cash flows. While these papers provide evidence on the discount rate news in aggregate earnings, they do not identify the exact channel by which aggregate earnings convey discount rate news.

Shivakumar (2007) provides the first preliminary evidence that aggregate earnings are positively associated with future inflation. Building on this finding, Shivakumar and Urcan (2017) perform an in-depth analysis of the link between aggregate earnings news and future inflation and find a strong positive association. Specifically, they examine two causal mechanisms through which aggregate earnings and future inflation are potentially linked—a consumption channel and an investment channel—and find evidence consistent with the investment demand hypothesis.

Gallo et al. (2016), on the other hand, explores monetary policy news as a source of the discount rate news channel. Specifically, using Federal funds futures data to measure monetary policy surprises and find that aggregate earnings convey news about future monetary policy actions. They find that positive (negative) aggregate earnings news predicts positive (negative) surprise changes to the federal funds rate resulting in a negative (positive) market reaction. This finding provides direct evidence of the discount rate news channel driving the negative aggregate E-R association.

Sadka and Sadka (2009), on the other hand, attribute the negative aggregate E-R relation to the predictability of aggregate earnings changes: when investors expect higher earnings in the future, they require a lower risk premium and thus a lower return, which the authors interpret as indicative of the joint determination of cash flows and discount rates. In a sample of yearly and quarterly data covering the period 1965-2000, they show that aggregate earnings changes are significantly more predictable than individual firm earnings changes and that, because the aggregate dividend-price ratio predicts both earnings growth and returns (in opposite directions), expected earnings are negatively correlated with expected returns. Although they find that earnings changes do not predict returns (which would be evidence in support of the discount rate news channel), their explanation of the negative aggregate E-R relation is offered as complementary to prior work emphasizing the discount rate channel.

While the focus of much of the existing research has been on the average association between aggregate earnings and returns in the time-series, evidence from recent studies indicates that the relationship varies intertemporally in the U.S. Specifically, in recent decades, the negative aggregate E-R relation documented originally by Kothari et al. (2006) has turned positive (i.e., Sadka and Sadka, 2009; Gallo et al., 2013; Kim et al., 2017). Several studies attempt to identify the underlying drivers of such intertemporal variation. For instance, Gallo et al. (2016) find that the aggregate E-R relation is more negative in periods with negative policy surprises, which tend to trigger a more significant market reaction. Zolotoy et al. (2017) find that the aggregate E-R relation varies based on whether the economy is in a "good" or "bad" state. Kim et al. (2017) investigate how the relationship between aggregate earnings and future real output affects the time-series variation in this association. Our study examines factors that affect

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the intensity of the discount rate news channel in the form of monetary policy news as well as the aggregate earnings predictability channel.

2.2 The Aggregate Earnings-Returns Relation: International Evidence

Although analysis of the intertemporal variation in the aggregate E-R relation in the U.S. provides insight into what drives the aggregate E-R relation, such an analysis is confined to a single economy with a relatively homogenous legal and regulatory environment over time. An international setting offers a rich opportunity to exploit differences in institutional characteristics to further advance our understanding of the relationship between aggregate earnings and stock returns. There is, however, surprisingly scant international research on this topic, with the exception of He and Hu (2014), who investigate the aggregate E-R association internationally and conclude that the negative association is unique to the U.S. They find that the aggregate E-R association is positive for a majority of the countries included in their sample, and the association is less positive in countries that rank higher on measures of financial disclosure transparency. The authors attribute the mediating effect of disclosure transparency to the same channel as that advanced by Sadka and Sadka (2009), where higher ex-ante expectations of aggregate earnings imply lower risk premium demanded by investors. Since investors in countries with more transparent capital markets would be able to better forecast aggregate earnings, they would tend to require lower returns when they expect higher earnings, and the strength of this relation increases with the level of transparency. They further rule out aggregate earnings conveying discount rate news as a driver of the cross-country variation in the aggregate E-R relation.

Our study revisits this international evidence by examining whether the U.S. is indeed unique and providing additional evidence on the role of the discount rate news channel in explaining cross-country differences in the aggregate E-R association. Building on recent work

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by Gallo et al. (2016), who find that the negative aggregate E-R association is driven by aggregate earnings conveying discount rate news in the form of monetary policy news, we examine whether such a monetary policy channel is also present in an international setting. In the U.S., it is well established that the market reactions positively (negatively) to decreases (increases) in the primarily monetary policy interest rate, the federal funds rate (i.e., Bernanke and Kuttner, 2005). Internationally, a large number of studies analyze the impact of monetary policy on market returns in different countries or groups of countries and find that, as in the U.S., markets react negatively to changes in the policy rate to varying degrees (e.g., Wang and Mayes, 2012; Kleimeier and Sander, 2006; Ioannidis and Kontonikas, 2008; Honda and Kuroki, 2006; Bredin et al., 2009; Bohl, Siklos, and Sondermann, 2008). Hence, we predict that the monetary policy channel should also play a role in explaining the aggregate E-R relation across country.

3. Data and Sample Selection

Our sample is determined by the availability of annual accounting and stock market returns data in the intersection of the Compustat, Compustat Global Vantage and CRSP databases. We exclude observations with missing returns, earnings or book value of equity. We also exclude firms with stock prices less than $1. All variables are winsorized at the top and bottom 1% levels. To ensure representativeness of the aggregated data, we require a minimum of 20 firms for each year-country observation, as well as a minimum of 15 years in each country time series, leaving 36 countries in our sample. Next, we require the countries in our final sample to have an interest rate as at least one of the main instruments of monetary policy.[4] We also exclude countries with missing institutional or transparency variables. Finally, to mitigate the

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[4] Since the monetary policy implementation in Singapore is based on managing the exchange rate of the Singapore dollar against a basket of currencies and not on an interest rate, we exclude Singapore from our sample.

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potential effect of outliers, we also exclude Brazil, which was the only country in the remaining sample that has experienced hyper-inflation during the sample period. This leaves us a final sample of 31 countries.

While data on the U.S. and Canada starts in the early 1960s, our cross-country tests use data starting in 1988 - the first year in Compustat Global Vantage. Individual tests on the U.S. and Canada use all available data. We construct the aggregate measures used in our analysis as the sum of all firms' annual earnings changes measured in year t-1 to year t scaled by either the aggregate lagged book value of equity (ΔX_B_t) or the aggregate lagged market value of equity (ΔX_P_t).[5] Earnings are defined as earnings before extraordinary items. Aggregate returns (Ret_t) are value-weighted aggregate returns measured over the period April 1 of year t to March 31 of year t+1.[6,7]

Monetary policy data is retrieved from Datastream, which identifies each country's main monetary-policy interest rate. These data are supplemented with data from the International Financial Statistics database of the IMF and the St. Louis Fed's FRED database. We measure the main policy interest rate, MP_t, as of March 31 in year t+1 and the change in the main policy interest rate, ΔMP_t, over the same period as returns (April 1 of year t to March 31 of year t+1), i.e., MP_{t+1}-MP_t.

Macroeconomic Indicators

We use two proxies for macroeconomic uncertainty in the Unites States: econometrically-estimated 12-month horizon forecasts of macroeconomic uncertainty from

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[5] For brevity in our notation, we suppress the country subscript (i) for all of our country-level variables.

[6] We focus our analysis on annual earnings for several reasons. First, not all countries in our sample require interim financial reporting and those that do often only require financial reporting on a semi-annual basis. Second, it is difficult to disentangle which data comes from interim reports versus extrapolation in Compustat Global because quarterly reports often vary in their required disclosure. Finally, the quarterly time-series is shorter for most countries in our sample, limiting our ability to run country-specific regressions.

[7] In calculating ΔX_t, earnings (X) are *measured* in year t, which are ultimately announced in year t+1. Thus, aggregate earnings changes and returns are contemporaneous.

Jurado, Ludvigson, and Ng (2015) measured as an annual average from April of year t to March of year $t+1$ (*Uncert*), as well as the Anxious Index – the forecasted probability of a decline in real GDP as reported in the Survey of Professional Forecasters measured as an annual average of one-quarter ahead forecasts from Q2 in year t to Q1 in year $t+1$ (*Anx*).[8] In order to obtain the full time-series for each country, values of annual GDP growth, inflation and unemployment are collection from the OECD and supplemented with data from the International Financial Statistics database of the IMF and the St. Louis Fed's FRED database.

Institutional Variables

Following Leuz et al. (2003), we proxy for investor protection using measures of Outside Investor Rights and Legal Enforcement from La Porta et al. (1998) and Private Control Benefits from Dyck and Zingales (2004). In addition to these investor protection variables, we follow Leuz et al. (2003) in organizing the countries in our sample into three "clusters" based on nine institutional variables from La Porta et al. (1997, 1998). The first cluster contains countries with large stock markets, low ownership concentration, extensive outsider rights, high disclosure and strong legal enforcement (i.e., "outsider economies"), while the second and third clusters contain countries with smaller stock markets, higher ownership concentration, weaker investor protection, lower disclosure levels and weaker enforcement (i.e., "insider economies"). Cluster 2 contains countries with significantly better legal enforcement than cluster 3.[9]

The La Porta et al. (1998) measures of investor protection are well-established in the literature. However, a weakness of these measures is that there is only one value per country—

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[8] Jurado, Ludvigson, and Ng's measure of macroeconomic uncertainty was downloaded from: https://www.sydneyludvigson.com/data-and-appendixes.
[9] Cluster 1 contains Great Britain, Australia, the United States, Hong Kong, Canada and Norway, cluster 2 contains Japan, France, Switzerland, Germany, Ireland, Sweden, South Africa, Finland, Belgium, Denmark, Austria and the Netherlands, and cluster 3 contains Pakistan, Thailand, Philippines, Spain, Portugal, Greece, Indonesia, Italy, and Korea.

they are not updated over time and are relatively stale.[10] To account time variation in these institutional characteristics, we utilize the Worldwide Governance Indicators (WGI) published by the World Bank.[11] These five variables are Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. Each variable is measured annually on a scale of approximately -2.5 to 2.5 where -2.5 (2.5) indicates weak (strong) governance. We then calculate mean values of each variable for each country over the available time-series.

Lastly, we follow He and Hu (2014) and employ three measures of financial transparency. The first measure, *Factor1,* is from a composite measure of financial data availability developed by Bushman, Piotroski and Smith (2004) and reflects financial transparency. The second, *Discl*, also developed by Bushman et al. (2004), captures disclosure intensity related to R&D expenditures, capital expenditures, segment and subsidiary information and accounting methods.[12] Our third and final measure, *CIFAR*, is a measure of the comprehensiveness of financial disclosure from the Center for Financial Analysis and Research. All variables used in our analyses are defined in Appendix A.

Table 1 reports the descriptive statistics for our sample. Panel A reports the number of years, firm-years, and unique firms for each country, as well as the time-series averages of market returns and aggregate earnings changes for each country. Most countries have more than 20 years of data with no country having less than 16 years. There is significant cross-country variation in the magnitude of the average market returns and changes in aggregate earnings. Panel B reports pooled-sample summary statistics four our measures of earnings, returns and monetary policy. The average change in aggregate earnings is very similar when scaled by the

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[10] The La Porta (1997, 1998) measures (*Outside Investor Rights* and *Legal Enforcement*) are constructed with data available through the mid-1990s. *Private Control Benefits*, from Dyck and Zingales (2004), is measured over the period 1990-2000.

[11] The Worldwide Governance Indicators are available at www.govindicators.org.

[12] Country-level values of *Factor1* and *Discl* are obtained from Appendix B of Bushman et al. (2004).

sum of lagged book value or market value of equity. Panel C reports descriptive statistics for our country-level institutional and macroeconomic measures. We observe significant variation in our institutional measures, consistent with our sample representing countries with differing strengths of governance.

4. Empirical Analysis and Results

4.1 The Aggregate Earnings-Returns Relation: International Evidence

We start our analysis by examining the E-R relation in each country in our sample. Table 2, Panel A reports the results of regressions of market returns on contemporaneous changes in aggregate earnings for each country over the period 1988-2016 where aggregate earnings changes are measured as ΔX_B_t or ΔX_P_t. The results are consistent with He and Hu (2014) and point to a positive association between aggregate earnings and returns in most countries. Because the results using ΔX_B_t and ΔX_P_t are qualitatively similar, for brevity we limit our discussion to the results using ΔX_B_t. Overall, 25 countries exhibit a positive coefficient on ΔX_B_t, although it is only significant for nine countries, including the U.S.[13] While there are six countries with a negative coefficient on ΔX_B_t, it is not statistically significant.[14] Thus, while we do not document a significant negative association for the 30 foreign countries in our sample, it is perhaps not surprising given that we also do not document a negative aggregate E-R relation for the U.S. over this period.

We then proceed with a pooled regression analysis with all countries in our sample, including the U.S. The results are reported in Table 2, Panel B. We again find results

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[13] The countries with a positive and significant coefficient on ΔX_B_t are Belgium, Greece, Israel, the Netherlands, Norway, Philippines, Portugal, Spain and the United States. The countries with a positive and significant coefficient on ΔX_P_t are Belgium, Israel, the Netherlands, Norway, Philippines, Spain, Sweden and the United States.

[14] The countries with a negative (insignificant) coefficient of ΔX_B_t are Finland, Germany, India, Japan, Pakistan and Turkey.

qualitatively similar to those in He and Hu (2014): the average cross-country aggregate E-R association is positive; the coefficient on ΔX_B_t is 2.10 and significant at the 1% level. In Columns 2 and 4, we include an indicator variable for the U.S. (*USA*) and an interaction term between the indicator variable and aggregate earnings changes (*USA*ΔX_t*) to assess how the coefficient on aggregate earnings for the U.S. compares to that of all other countries. We find that the coefficients on both the U.S. dummy and the interaction term are insignificant, suggesting that over the last two decades, the relation between aggregate earnings and returns in the U.S. is, on average, not significantly different from other countries; the coefficient on ΔX_B_t remains positive and significant at the 1% level with a value of 2.08. Results using ΔX_P_t are qualitatively similar. Thus, unlike the conclusion made in He and Hu (2014), we do not find evidence that the U.S. is unique. Instead, our results point to time-series variation in the aggregate E-R association in the U.S.

4.2 Time-series Analysis of the Aggregate Earnings-Returns Relation: The U.S. and Canada

4.2.1 Intertemporal Variation in the U.S.: 1962-2016

The positive association in our sample period is consistent with prior studies that have noted that the aggregate E-R association has become either insignificantly negative or more positive in the recent decades (Sadka and Sadka, 2009; Gallo et al., 2016; Kim et al., 2017). To further explore this time series variation, in Table 3, Panel A we estimate regressions of value-weighted market returns on contemporaneous changes in aggregate earnings for several sub-periods. Indeed, in the earliest period—from the first year with available data (1962) to the last year before the start of the global coverage (1987)—the coefficient on aggregate earnings is the most negative (-6.47 and significant at the 1% level). As we move forward in time, the relation becomes less negative over the Kothari et al. (2006) sample, 1970-2000, with a coefficient of -

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3.71. On the other hand, the sample period of He and Hu (2014), 1988-2009, is characterized by a significantly *positive* relationship (with a coefficient of 3.45, significant at the 5% level), as is the period for which Compustat Global coverage is available, 1988-2016 (with a coefficient of 3.20, significant at the 5% level), which is the sample period for the cross-country analyses in this paper. When we look at the full sample, 1962-2016, the relation is positive but insignificant. These results are consistent with the observed changes from a negative to positive relationship over the past five decades.

A natural question that arises from these findings is: why has this association changed over the last five decades? Although the focus of this study is on exploring cross-country differences in the aggregate E-R association, given the established similarity between the U.S. and other countries over the sample period, understanding the time-series dynamics in the E-R relation in the U.S. can not only shed light on the documented change over the time series, but also provide evidence on the country-level characteristics and institutional features that could help explain cross-country variation in the aggregate E-R relation.

To this end, we perform a rolling window regression analysis over the full sample period (1962-2016). The first annual rolling regression spans 1962 to 1976, with subsequent regressions adding one observation at a time and dropping the first observation from the previous window such that the time series remains fixed at 15 annual observations. This process yields a total of 41 time-series regressions. For each rolling window, we estimate the aggregate E-R relation (β) by regressing market returns on ΔX_B_t. For each window we also regress 1) changes in the monetary-policy interest rate on aggregate earnings to estimate the aggregate earnings news beta ($\beta\Delta MP\_\Delta X$); 2) market returns on changes in the monetary-policy rate to estimate the market reaction beta ($\beta\Delta MP$); and 3) lagged market returns on aggregate earnings changes, using the

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resulting R^2 to the proxy for the predictability of aggregate earnings (*Predictability*) following Sadka and Sadka (2009).[15] We then regress *β* on *βΔMP_ΔX*, *βΔMP*, and *Predictability* both individually and together.

Our results, presented in Table 3, Panel B, confirm prior findings (i.e., Gallo et al., 2016) that monetary policy news is an important channel that can help explain the aggregate E-R association. Specifically, the coefficient on *βΔMP_ΔX* is negative and significant (-0.08) which points to a negative relation between the E-R association and the monetary policy news content in aggregate earnings—the more policy news in aggregate earnings, the more negative the E-R association. The positive, significant coefficient on *βΔMP* (95.30) indicates that the E-R association is positively related to the market reaction to monetary policy changes—the market reacts negatively (positively) to surprise increases (decreases) in the policy interest rate and when these reactions are more pronounced, the E-R association is more negative. However, the coefficient on *Predictability* is not significant, suggesting that the predictability of aggregate earnings is not the main driver of the intertemporal variation in aggregate E-R relation. When *βΔMP_ΔX*, *βΔMP*, and *Predictability* are included together as explanatory variables, the coefficients are significantly negative, significantly positive, and significantly positive, respectively. The positive coefficient on *Predictability* is inconsistent with the negative association being driven by aggregate earnings predictability (which would necessitate a negative coefficient).

Next, we utilize rolling regression analysis to explore whether macroeconomic uncertainty can help explain the time series variation in the aggregate E-R association. Because an important role of the Fed is to stabilize the economy, the Fed is more likely to take actions in

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[15] We perform the Durbin-Watson test to evaluate whether there is sufficient autocorrelation to warrant the use of Newey-West standard errors. Accordingly, our rolling regression analysis employs Newey-West adjusted standard errors with three lags.

periods of heightened economic uncertainty. Periods characterized by economic uncertainty often coincide with policy uncertainty. We therefore expect both factors—the amount of monetary policy news in aggregate earnings and the market's reaction to this news—to vary positively with the degree of macroeconomic uncertainty. We use two proxies for macroeconomic uncertainty in the Unites States: econometrically estimated forecasts of twelve-month macroeconomic uncertainty (*Uncert*) from Jurado, Ludvigson, and Hg (2015) and the Anxious Index (*Anx*) from the Philadelphia Fed's Survey of Professional Forecasters, which forecasts the probability of a decline in real GDP over the following quarter.

The results of this analysis are reported in Table 3, Panel C. We find that the aggregate E-R association is more negative during periods characterized by greater uncertainty. Regressing β on our measures of uncertainty yields a coefficient of -82.81 (-0.80) on *Uncert* (*Anx*) that is significant at the 1% level. Looking at the underlying drivers of the aggregate E-R relation reveals that not only does aggregate earnings contain more monetary policy news during periods of greater uncertainty, but also that the market reacts more negatively in these periods. Specifically, when regressing $\beta\Delta MP\_\Delta X$ on our uncertainty measures, the coefficient on *Uncert* (*Anx*) is 9.40 (0.09) and significant at the 1% level. Using $\beta\Delta MP$ as the dependent variable, the coefficient on *Uncert* (*Anx*) is -63.67 (-0.69) and significant at the 1% level. Taken together, our rolling regression findings are consistent with the implications of Gallo et al. (2016) and offer new evidence on the drivers of intertemporal variation in the aggregate E-R association. Importantly, these findings suggest that characteristics that affect a country's monetary policy, such as macroeconomic uncertainty, could play a role in explaining cross-country differences in the aggregate E-R association.

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4.2.2 Intertemporal Changes in Canada: 1964-2016

To provide out-of-sample evidence on these findings, we repeat the time-series analysis using data on Canada, which is the only other country in our sample with a sufficiently long time-series for performing similar rolling regressions. The results, reported in Table 4, are qualitatively similar to those for the U.S. The aggregate E-R association turns from significantly negative in the earlier period to positive and insignificant in recent years (Panel A). Likewise, we find that monetary policy news is an important channel for the aggregate E-R association in Canada (Panel B). Specifically, like the US, we regress β on $\beta\Delta MP\_\Delta X$ and $\beta\Delta MP$ and find a negative (positive) and significant coefficient on $\beta\Delta MP\_\Delta X$ ($\beta\Delta MP$). Again, in Column (4), the coefficient on *Predictability* is insignificant, suggesting that after controlling for the effects of discount rate news, the predictability of aggregate earnings is not the channel dominating the aggregate E-R relation in Canada.

4.3 Cross-country Variation in the Aggregate Earnings-Returns Relation

A major limitation of the pooled regression analysis in Table 2 is it assumes that the aggregate E-R association is constant across countries, which is unlikely given the degree of cross-country heterogeneity. To overcome this limitation and explore what factors help explain the cross-country variation in the aggregate E-R association, we use the results in our rolling analyses of the U.S. and Canadian data to motivate our analysis in a cross-country setting.

We use changes in each country's primary monetary policy rate—the interest rate utilized by each country's central bank that is analogous to the Federal funds rate in the U.S.—to proxy for monetary policy news and perform a cross-country analysis that is analogous to the rolling-window regression analysis. Specifically, we perform three time-series regressions for each country to capture the strength of the three factors – the policy news in aggregate earnings, the

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market's reaction to the news and earnings predictability. With respect to the first factor, we regress changes in the interest rate on aggregate earnings and use the country-specific coefficient from this regression—the aggregate earnings news beta—to capture the amount of policy news in aggregate earnings ($\beta\Delta MP\_\Delta X$). With respect to the second factor, we regress aggregate returns on monetary policy news and use the country-specific coefficient from this regression—the market reaction beta—to capture the market's reaction to policy news ($\beta\Delta MP$). In addition, we also perform time-series regressions for each country to obtain aggregate earnings predictability. Following Sadka and Sadka (2009), we regress lagged market return on aggregate earnings changes and use the country-specific R^2 from this regression as our measure of predictability (*Predictability*). We then regress the country-specific aggregate E-R association (β) on the aggregate earnings news beta, market reaction beta, and aggregate earnings predictability individually and together.

The results, reported in Table 5, confirm our previous findings regarding the importance of the informativeness of aggregate earnings. Specifically, in Columns (1) and (4), the coefficient on $\beta\Delta MP\_\Delta X$ (-0.04 and -0.06) is negative and significant at the 5% level, suggesting that the more positive the association between aggregate earnings and policy news, the more negative the aggregate E-R association. The coefficient on the market reaction beta, $\beta\Delta MP$, is also significant in the predicted direction in Column (4)—the coefficient on $\beta\Delta MP$ is 17.63, suggesting that when the market reaction to policy news is more pronounced, the E-R association is more negative. We, however, do not find evidence to support the predictability of aggregate earnings as a driver of the E-R relation—the coefficient on *Predictability* is insignificant in both the bivariate (Column 3) and multivariate (Column 4) models. It is also worth noting that although both the aggregate earnings news beta ($\beta\Delta MP\_\Delta X$) and market reaction beta ($\beta\Delta MP$) are

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significantly associated with the aggregate E-R relation in multivariate regression (Column 4), their explanatory power is significantly different in the bivariate regressions (Columns 1 and 2)—the adjusted R^2 are 14% and 1% for the $\beta\Delta MP\_\Delta X$ and $\beta\Delta MP$ regression, respectively. These results suggest that while both factors play a role in explaining the cross-country variation in the E-R relation, the information content of aggregate earnings, specifically, the extent to which aggregate earnings convey monetary policy news, is the dominant driver in the international setting.

Overall, we find that the aggregate E-R relation is less positive in countries where aggregate earnings are more informative about monetary policy news. This suggests that monetary policy news plays an important role in explaining the relation between aggregate earnings and stock returns not only in the U.S., but also in other countries. In the following section, we investigate potential drivers of cross-country variation in the monetary-policy information content of aggregate earnings.

4.4 Cross-country Variation in the Aggregate Earnings-Returns Association: Institutional Factors

Institutional factors that affect the properties of accounting numbers can potentially influence the information content of aggregate earnings (e.g., Ball, Kothari, and Robin, 2000; Leuz et al., 2003). Ball et al. (2000) find that institutional differences across countries result in variations in the demand for accounting information, ultimately affecting timeliness and conservatism. Leuz et al. (2003) find significant variation in earnings management across a sample of 31 countries. Specifically, Leuz et al. (2003) link several institutional features directly to earnings quality. If there are systematic differences in earnings management, and hence earnings quality, across countries, then there should be variation in how well earnings capture the underlying economics of the firms.

Given its negative association with aggregate earnings management, investor protection should be positively associated with the aggregate earnings news beta as strong legal protections for outside investors decrease the ability of managers to exercise private control benefits and manipulate earnings (Leuz et al., 2003). If managers are less able to manipulate earnings, then aggregate earnings should better reflect macroeconomic conditions and thus will be more highly correlated with monetary policy changes. Each country's central bank uses the current and forecasted economic climate to make policy decisions, and therefore, aggregate earnings can be a useful indicator in policy-setting, to the extent that earnings accurately reflect the economics of the firms. We therefore predict that aggregate earnings are more informative about monetary policy news, and hence, are more negatively associated with returns, in countries with greater investor protection and stronger governance. As noted earlier, the results in Table 5 suggest that the aggregate earnings news beta—the extent to which aggregate earnings convey monetary policy news—is the primary driver of cross-country variation in the aggregate E-R relation. We therefore focus primarily on institutional features that are likely to explain the informativeness of aggregate earnings in this section.[16] For completeness we also report results on the market reaction beta.

We test these predictions using several measures of country-level institutional characteristics. We first follow Leuz et al. (2003) and segment our sample into three clusters. The first cluster contains countries with large stock markets, low ownership concentration, extensive outsider rights, high disclosure and strong legal enforcement (i.e., "outsider economies"), while the second and third clusters contain countries with smaller stock markets, higher ownership concentration, weaker investor protection, lower disclosure levels and weaker

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[16] Unlike the information content of aggregate earnings, the effect of institutional characteristics on the market's reaction to policy news is less clear ex ante. For instance, institutional factors may only affect the information content of earnings and not directly the market's reaction to the news.

enforcement (i.e., "insider economies"). Then, we calculate the mean values of $\beta\Delta MP\_\Delta X$ and $\beta\Delta MP$ using the 26 of our 31 countries able to be sorted into clusters. Results are reported in Table 6, Panel A. We find that consistent with predictions, $\beta\Delta MP\_\Delta X$ is more positive for cluster one (23.73) than clusters two and three (5.104 and -1.91, respectively), suggesting that in "outsider" economies with more developed capital markets and better legal protections, aggregate earnings contain more policy news. The difference between $\beta\Delta MP\_\Delta X$ in clusters 1 and 3 is significant at the 5% level. Countries in cluster one do not have a significantly more negative market response to policy news, on average.

One potential issue with using the main monetary policy rate in our cross-country analysis is that Eurozone countries are governed by a single central bank.[17] Thus, it is not clear ex-ante whether aggregate earnings news in each individual Eurozone country will contain policy news. To address this concern, we estimate alternate versions of $\beta\Delta MP\_\Delta X$ and $\beta\Delta MP$, which we denote $\beta\Delta Rate\_\Delta X$ and $\beta\Delta Rate$, respectively. For these measures, we substitute the ten-year government bond rate for the main policy rate when estimating the values for Eurozone countries. In Panel A, we find similar results using these alternative beta measures. Specifically, the mean value of $\beta\Delta Rate\_\Delta X$ is more positive in cluster one than in clusters two and three; the difference between clusters 1 and 3 is significant at the 5% level.[18]

Leuz et al. (2003) find that stronger investor protection and legal systems are associated with higher-quality earnings. Following Leuz et al. (2003), we next perform a regression analysis analyzing the relationship between $\beta\Delta MP\_\Delta X$ and $\beta\Delta MP$ and three institutional factors that capture investor protection: 1) *Outside Investor Rights*, measured as the anti-director rights index

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[17] Eurozone countries are E.U. countries that have adopted the Euro. Eurozone countries in our sample include Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain.

[18] The values remain unchanged in Cluster 1 using the alternative interest rate because Cluster 1 does not contain any Eurozone countries.

from La Porta et al. (1998), 2) *Legal Enforcement*, measured as the average of the efficiency of the judicial system and an assessment of rule of law (La Porta et al., 1998), and 3) *Private Control Benefits*, measured as the average block premium based on transfers of controlling blocks of shares (Dyck and Zingales, 2004). To control for differences in macroeconomic conditions, we include country-level mean values of inflation, real GDP growth, and unemployment.[19]

Table 6, Panel B reports results from these regressions estimated cross-sectionally over the 26 countries with available data. Consistent with our predictions, we find positive and significant relationships between *Legal Enforcement* and *Outside Investor Rights* and *βΔMP_ΔX* with coefficients of 4.88 and 5.91, respectively. Although the coefficient on *Private Control Benefits* is insignificant, it is likely that *Legal Enforcement* and *Outside Investor Rights* explain *Private Control Benefits* making it difficult to document a direct effect. Mean level of inflation is positively associated with *βΔMP_ΔX* which suggests that the economic environment does play a role. Because inflation targeting is a common goal of monetary policy, it is perhaps not surprising that inflation is the only macroeconomic indicator that is significantly related to the information content of aggregate earnings. We document similar results using the alternative interest rate for Eurozone countries to calculate the news content of aggregate earnings (*βΔRate_ΔX)*. The relationship between *βΔMP* or *βΔRate* and these institutional measures is largely insignificant. Taken together, the evidence is consistent with investor protection leading to higher-quality earnings that contain more news about the economy, specifically monetary policy news.

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[19] Our time-series analysis for the U.S. highlighted the role of uncertainty in explaining variations in the aggregate earnings news beta and the market reaction beta. Because parsimonious measures of economic uncertainty do not exist for each country in our sample over the necessary time-period, we instead control for the macroeconomic environment using mean values of inflation, GDP growth and unemployment.

A limitation of the measures used in Panel B is that they are relatively stale compared to our sample period. In order to take into consideration variation across time in the strength of each country's institutions and governance, our final set of institutional proxies make use of the Worldwide Governance Indicators (WGI) published by the World Bank and updated annually, which reflect each country's political, regulatory, bureaucratic, and legal institutions. An additional benefit of these measures is the expanded availability for all 31 countries in our sample. Specifically, we employ five of the World Bank WGI indicators: *Political Stability*, *Government Effectiveness*, *Regulatory Quality*, *Rule of Law*, and *Control of Corruption*.[20] In addition to including each of these measures individually, we create two aggregate measures, *WBInst_5* and *WBInst_3,* where the former is the average of all five measures, and the latter is the average of *Regulatory Quality, Rule of Law, and Control of Corruption*, which are the measures more closely aligned with the notion of investor protection. We regress *βΔMP_ΔX* and *βΔMP* on each individual and aggregate measure and each specification also includes the three macroeconomic indicators. Table 6, Panel C (D) reports the results of these regressions using *βΔMP_ΔX* and *βΔMP* (*βΔRate_ΔX* and *βΔRate*).

     Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and *Control of Corruption* are each positively and significantly associated with *βΔMP_ΔX,* as are both aggregate measures. We do not document a significant association between these governance measures and *βΔMP*. The results are similar when utilizing our alternative interest rate measures for the Eurozone in Panel D. *Political Stability, Government Effectiveness,*

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[20] See Kaufmann, Kraay and Mastruzzi (2004) for a detailed description of these measures.

Regulatory Quality, Rule of Law, and *Control of Corruption*, as well as both aggregate measures, are positively and significantly associated with *β∆Rate_∆X*.[21]

Taken together, the results from Table 6 document an interesting relationship between country-level institutions and the news content of aggregate earnings. Specifically, aggregate earnings contain more policy rate news in countries with stronger investor protection, consistent with these countries reporting higher-quality earnings that better reflect the underlying economics of the firms.

4.5 Cross-country Variation in the Aggregate Earnings-Returns Association: Accounting Transparency

As noted previously, He and Hu (2014) find that the aggregate E-R relation is less positive in countries with greater financial disclosure transparency. They argue that aggregate earnings are more predictable in countries with greater transparency, thus attributing the aggregate E-R association outside of the U.S. to be driven by earnings predictability rather than the discount rate news in aggregate earnings. This finding is inconsistent with our earlier findings—we document that the aggregate E-R does, in fact, vary across countries with the extent to which aggregate earnings convey discount rate news and the market's reaction to this news. One potential explanation for He and Hu's (2014) findings is that accounting transparency affects not only the predictability of aggregate earnings, but also the informativeness and quality of those earnings. Specifically, aggregate earnings may convey more information about macroeconomic fundamentals – and by extension, monetary policy – in countries with more transparent accounting information.

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[21] Although the focus of these tests is on the role of institutional factors in explaining cross-country differences in the information content of aggregate earnings, these results suggest that these factors should also explain cross-country variation in the aggregate E-R relation. In untabulated analyses we find that each of the governance indicators (as well as the two aggregates) are significantly negatively related to the aggregate E-R relation, consistent with stronger institutions leading to less positive/more negative associations.

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To test this conjecture, we investigate whether the disclosure transparency measures employed by He and Hu (2014) are positively associated with $\beta\Delta MP\_\Delta X$ or *Predictability*. Specifically, He and Hu (2014) employ three transparency measures: *Discl*, a measure of disclosure intensity from Bushman et al. (2004), *Factor1*, a summary disclosure measure from Bushman et al. (2004), and *Cifar*, a measure of disclosure comprehensiveness from the Center for Financial Analysis and Research. Table 7 reports results of this analysis. Consistent with our prediction, we find a positive and significant association between $\beta\Delta MP\_\Delta X$ and both *Factor1* and *Discl*.[22] The coefficient on *Factor1* (*Discl*) is 10.76 (0.46) and is significant at the 5% level. In contrast, none of the disclosure measures are positively associated with *Predictability*. Again, for completeness, we include results for the market reaction beta. Similar to the results in Table 6, we do not find a significant association with transparency. These results suggest that aggregate earnings are indeed more informative about monetary policy news in countries with greater reporting transparency. Thus, the negative relationship between transparency and the aggregate E-R relation documented by He and Hu (2014) stems primarily from the discount rate (monetary policy) news channel, rather than the predictability of aggregate earnings.

4.6 Robustness Tests

We perform several additional analyses (untabulated) to test the robustness of our results. First, we repeat our analysis using aggregate earnings changes scaled by the lagged market value of equity instead of book value and find qualitatively similar results.[23] Second, using an alternative annual window for returns and changes in monetary policy rates—from May in year *t* to April in year *t+1* instead of from April in year *t* to March in year *t+1*—yields similar results. Third, we repeat our rolling regression analysis using a rolling window of 12 instead of 15 years

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[22] We find qualitatively similar results when we use the 10-year government bond rate instead of the main monetary policy rate for Eurozone countries in estimating the aggregate earnings news and market reaction betas.
[23] We focus our analysis using the measure scaled by book value because it yields a larger sample size.

and find qualitatively similar results. Fourth, because the majority of firms in six of the countries in our sample—Australia, New Zealand, Pakistan, South Africa, India, and Japan—have fiscal years ending in June or September instead of December, we repeat our analyses adjusting the windows for returns and changes in monetary policy according to these fiscal year timeframes and find similar results. Finally, while we currently provide additional analysis using an alternative interest rate for Eurozone countries in our cross-country tests, we perform additional robustness tests replacing the central bank policy rate with the 10-year government bond yield for all countries and find qualitatively similar results.

5. Conclusion

Prior research explores the aggregate earnings-returns relation and the factors underlying this relation in the U.S. Despite the call for more international evidence (Shivakumar, 2010), we know relatively little about this phenomenon internationally, with the exception of He and Hu (2014), who find that the negative aggregate E-R relation is unique to the U.S. In this study, we shed further light on the aggregate E-R association by first examining the factors that drive intertemporal variation in the U.S. and then exploiting differences in institutional characteristics across countries to better understand this relation across the globe.

Consistent with He and Hu (2014), we find that the aggregate E-R association is positive for most countries outside of the U.S. over our sample period (i.e., 1988-2016). However, the aggregate E-R relation for the U.S. is also positive during this period. In fact, as noted in prior research, although the aggregate E-R association in the U.S. is negative in earlier periods (pre-2000), it has become more positive in recent periods (post-2000). These findings suggest that the difference between the U.S. and other countries proposed by He and Hu (2014) is explained primarily by time-series variation in the aggregate E-R relation. We further show that the

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strength of the discount rate news channel helps explain the intertemporal variation in the U.S.—the aggregate E-R relation is more negative in periods when aggregate earnings convey more monetary policy news as well as in periods when the market's reaction to such policy news is stronger, which tend to coincide with periods of high macroeconomic uncertainty.

While there is substantial intertemporal variation in macroeconomic dynamics in the U.S., its legal and regulatory environment is relatively homogeneous over time. A cross-country setting thus offers a rich opportunity to exploit differences in institutional characteristics to better understand the relation between aggregate earnings and stock returns. In our cross-country analysis, we first show that, similar to the U.S., the aggregate E-R association is driven primarily the monetary policy news contained in aggregate earnings—the association is significantly more negative (less positive) in countries where aggregate earnings contain more policy news. These results suggest that the discount rate news channel plays an important role in explaining cross-country differences in the E-R relation. Also, in contrast to He and Hu (2014), we find that the predictability of aggregate earnings is not a key driver of the cross-country variation in the aggregate E-R association. Finally, we show that aggregate earnings convey more news about monetary policy changes, and hence are more negatively related to stock returns, in countries with stronger investor protection and greater transparency.

Overall, this study provides novel evidence on the aggregate E-R association in the U.S., establishes a link between the U.S. and international literature on the E-R relation by showing that the U.S. is not unique, and sheds new light on how institutional factors affect the relation between aggregate earnings and market returns across the globe.

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Appendix A. Variable Definitions

Variable	Definition
ΔX_P_t	The sum of annual earnings changes for all firms in each country measured from year t-1 to t (i.e., X_P_t - X_P_{t-1}), scaled by aggregate lagged market value of equity, with earnings defined as earnings before extraordinary items.
ΔX_B_t	The sum of annual earnings changes for all firms in each country, measured from year t-1 to t (i.e., X_B_t - X_B_{t-1}), scaled by aggregate lagged book value of equity, with earnings defined as earnings before extraordinary items.
Ret_t	Value-weighted aggregate returns measured from April 1 of year t to March 31 of year $t+1$.
MP_t	The main monetary policy rate as of the end of March of year $t+1$.
ΔMP_t	Changes in monetary policy (MP_{t+1} – MP_t) measured over the window from April of year t to March of year $t+1$.
USA	An indicator variable equal to 1 for the United States and 0 otherwise.

U.S. Intertemporal and Cross-country Analyses

β	The aggregate earnings-returns association for each country or rolling window: the estimated coefficient on ΔX_B from regressing Ret on ΔX_B
$\beta \Delta MP$	The market reaction beta for each country or rolling window: the estimated coefficient on ΔMP from regressing Ret on ΔMP.
$\beta \Delta MP\_\Delta X$	The aggregate earnings news beta for each country or rolling window: the estimated coefficient on ΔX_B from regressing ΔMP on ΔX_B.
$\beta \Delta Rate$	Same as $\beta \Delta MP$, except using the 10-year government bond rate ($Rate$) instead of the main monetary policy rate (MP) for Eurozone countries.
$\beta \Delta Rate\_\Delta X$	Same as $\beta \Delta MP\_\Delta X$, except using the 10-year government bond rate ($Rate$) instead of the main monetary policy rate (MP) for Eurozone countries.
$Predictability$	The R^2 estimated from a regression of lagged market return (Ret) on aggregate earnings changes (ΔX_B).

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Variable	Definition
U.S. Intertemporal Analysis: Macroeconomic Uncertainty Indices	
Uncert	Annual average from April in year *t* to March in year *t+1* of monthly observations of 12-month ahead forecasts of macroeconomic uncertainty as used in Jurado, Ludvigson, and Ng (2015).
Anx	Annual average from Q2 in year *t* to Q1 in year *t+1* of quarterly observations of one-quarter ahead forecasts of the probability of a decline in real GDP as reported in the Survey of Professional Forecasters, referred to as the anxious index.
Cross-country Analysis: Institutional Indices and Macroeconomic Environment	
Outside Investor Rights	Outside Investor Rights are measured as by the anti-director index in La Porta et al. (1998) which ranges from zero to five.
Legal Enforcement	Average score across three legal variables used in La Porta et al. (1998): 1) efficacy of legal system 2) assessment of rule of law and 3) the corruption index. Each component ranges from zero to ten.
Private Control Benefits	The average block premium based on transfers of controlling blocks of shares from Dyck and Zingales (2004).
Political Stability	The likelihood that the government will be destabilized by unconstitutional or violent means, including terrorism, from the World Bank. Measured annually on a scale of -2.5 to 2.5 and averaged over all available years for each country.
Regulatory Quality	The ability of the government to provide sound policies and regulations that enable and promote private sector development, from the World Bank. Measured annually on a scale of -2.5 to 2.5 and averaged over all available years for each country.
Government Effectiveness	The quality of public services, the capacity of the civil services and its independence from political pressures and the quality of policy formulation, from the World Bank. Measured annually on a scale of -2.5 to 2.5 and averaged over all available years for each country.
Control of Corruption	The extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests, from the World Bank. Measured annually on a scale of -2.5 to 2.5 and averaged over all available years for each country.

Variable	Definition
Rule of Law	The extent to which agents have confidence in and abide by the rules of society, including the quality of contract enforcement and property rights, the police, and the courts, as well as the likelihood of crime and violence, from the World Bank. Measured annually on a scale of -2.5 to 2.5 and averaged over all available years for each country.
WBInst_5	The average of *Political Stability, Regulatory Quality, Government Effectiveness, Control of Corruption, and Rule of Law.*
WBInst_3	The average of *Government Effectiveness, Control of Corruption, and Rule of Law.*
Factor1	A summary measure of financial transparency obtained from Bushman et al. (2004).
Discl	A measure of disclosure intensity regarding some proprietary information including R&D, capital expenditure, and segment data from Bushman et al. (2004).
Cifar	A measure of comprehensiveness of financial information disclosure, developed by the Center for Financial Analysis and Research.
Minf	Average annual inflation over available years for each country.
Mrgdp	Average annual real GDP growth over available years for each country.
Munemp	Average annual unemployment rate over available years for each country.

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Table 1. Descriptive Statistics

Panel A reports the number of year, firm-years and unique firm observations comprising the annual aggregate measures as well as the time-series means of aggregate returns and change in aggregate earnings by country. The sample consists of 31 countries for the period 1988-2016. Panel B reports descriptive statistics of the main variables for the pooled sample. Panel C reports descriptive statistics of country-level institutional and macroeconomic variables. All variables are defined in Appendix A.

Panel A. Sample coverage and descriptive statistics by country

Country	Observations			Mean		
	Years	*Firm-Years*	*Unique Firms*	*Ret*	*ΔX_B*	*ΔX_P*
AUSTRALIA	27	5,586	924	0.114	0.007	0.004
AUSTRIA	27	1,488	149	0.056	0.002	-0.005
BELGIUM	26	1,912	206	0.118	-0.003	-0.013
CANADA	29	4,005	547	0.119	0.005	0.002
CHILE	20	2,095	225	0.123	0.005	0.002
DENMARK	26	2,289	247	0.148	0.016	0.007
FINLAND	23	1,843	181	0.146	0.007	0.007
FRANCE	27	10,752	1,140	0.079	0.001	0.000
GERMANY	25	10,755	1,165	0.092	0.007	0.004
GREECE	20	1,631	233	0.070	0.010	0.014
HONG KONG	24	5,734	916	0.110	0.009	0.006
INDIA	16	21,407	3,520	0.246	0.020	0.009
IRELAND	19	538	77	0.103	0.018	0.008
ISRAEL	19	2,691	456	0.127	0.013	0.006
ITALY	26	3,102	404	0.074	0.001	0.000
JAPAN	29	62,162	4,359	0.035	0.004	0.003
KOREA	17	11,915	1,755	0.113	0.006	0.009
NETHERLANDS	27	2,806	281	0.097	0.002	0.001
NEW ZEALAND	18	948	144	0.088	0.005	0.003
NORWAY	26	2,824	395	0.137	0.013	0.010
PAKISTAN	18	2,697	419	0.272	0.027	0.017
PHILIPPINES	19	1,607	231	0.122	0.011	0.009
PORTUGAL	21	644	78	0.081	0.003	-0.005
SOUTH AFRICA	27	3,337	414	0.151	0.015	0.007
SPAIN	25	2,197	242	0.116	0.006	0.005
SWEDEN	26	5,105	705	0.156	0.013	0.008
SWITZERLAND	27	4,058	372	0.112	0.009	0.004
THAILAND	23	6,642	718	0.092	0.018	0.010
TURKEY	17	2,375	379	0.161	0.008	0.008
UNITED KINGDOM	28	14,178	2,040	0.106	0.007	0.004
UNITED STATES	29	130,262	14,593	0.119	0.008	0.004

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Table 1 Continued

Panel B. Pooled-sample descriptive statistics: Main measures

	N	Mean	St. Dev.	Q1	Q2	Q3
ΔX_B_t	731	0.01	0.03	-0.01	0.01	0.03
ΔX_P_t	731	0.00	0.03	-0.01	0.01	0.02
Ret_t	731	0.12	0.28	-0.06	0.12	0.28
ΔMP_t	731	-0.41	2.34	-0.85	-0.15	0.25

Panel C. Country-level descriptive statistics: Institutional and macroeconomic measures

	N	Mean	St. Dev.	Q1	Q2	Q3
Legal Enforcement	26	8.27	2.03	7.09	9.21	10.00
Outside Investor Rights	26	3.23	1.31	2.00	3.00	4.00
Private Control Benefits	26	0.10	0.12	0.02	0.05	0.16
Political Stability	31	0.45	0.93	0.05	0.89	1.15
Regulatory Quality	31	1.15	0.68	0.86	1.42	1.67
Government Effectiveness	31	1.27	0.72	0.61	1.57	1.79
Control of Corruption	31	1.23	0.97	0.31	1.44	2.04
Rule of Law	31	1.17	0.77	0.68	1.36	1.77
WBInst_5	31	1.05	0.79	0.58	1.32	1.66
WBInst_3	31	1.18	0.80	0.57	1.39	1.80
Factor1	31	0.30	0.76	-0.26	0.36	0.81
Discl	31	86.98	16.06	79.35	92.75	100.00
Cifar	31	72.32	7.84	66.00	74.00	79.00
Minf	31	3.19	2.92	1.95	2.20	2.85
Mrgdp	31	3.63	3.85	1.62	2.27	4.05
Munemp	31	7.52	4.28	4.43	7.02	8.73

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Table 2. The Aggregate Earnings-Returns Association Across Countries

Panel A reports the results of annual regressions of market returns on contemporaneous changes in aggregate earnings for each country. The sample consists of 31 countries for the period 1988-2016. Annual returns are measured over the window from April of year t to March of year $t+1$ using the CRSP value-weighted index. Panel B reports the results of annual regressions of market returns on contemporaneous changes in aggregate earnings for the full pooled-sample consisting of 731 country-year observations for the period 1988-2016. *USA* is an indicator variable equal to 1 for the United States and 0 for other countries. t-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

Panel A. Country-level regressions

Country	$\beta\ (\Delta X\_B_t)$			$\beta\ (\Delta X\_P_t)$		
	Coeff.	t-stat	R^2	Coeff.	t-stat	R^2
AUSTRALIA	1.143	0.748	0.022	2.374	0.930	0.033
AUSTRIA	0.773	0.564	0.013	0.608	0.489	0.009
BELGIUM	4.753***	3.303	0.312	3.277***	2.812	0.248
CANADA	0.837	0.817	0.024	1.453	0.795	0.023
CHILE	2.175	1.074	0.060	3.616	1.221	0.077
DENMARK	0.314	0.167	0.001	2.508	0.638	0.017
FINLAND	-0.892	-0.444	0.009	-0.074	-0.030	0.000
FRANCE	1.898	0.863	0.029	2.427	0.680	0.018
GERMANY	-0.420	-0.160	0.001	-0.831	-0.193	0.002
GREECE	5.029**	2.837	0.309	2.324	1.566	0.120
HONG KONG	2.799	0.865	0.033	5.366	0.982	0.042
INDIA	-1.069	-0.240	0.004	1.765	0.195	0.003
IRELAND	1.369	1.039	0.060	2.904	1.115	0.068
ISRAEL	3.558***	3.517	0.421	10.649***	4.107	0.498
ITALY	1.480	0.822	0.027	0.502	0.482	0.010
JAPAN	-0.748	-0.282	0.003	-0.850	-0.216	0.002
KOREA	3.323	0.924	0.054	2.118	0.654	0.028
NETHERLANDS	4.405***	3.141	0.283	8.241***	2.828	0.242
NEW ZEALAND	0.511	0.404	0.010	1.091	0.469	0.014
NORWAY	3.822***	3.077	0.283	5.780***	3.007	0.274
PAKISTAN	-0.067	-0.035	0.000	0.005	0.003	0.000
PHILIPPINES	7.776***	5.303	0.623	12.909***	6.257	0.697
PORTUGAL	4.267**	2.225	0.207	2.842	1.620	0.121
SOUTH AFRICA	0.151	0.135	0.001	1.228	0.502	0.010
SPAIN	2.801**	2.299	0.187	0.662	0.691	0.020
SWEDEN	2.439	1.653	0.102	2.542*	1.768	0.115
SWITZERLAND	1.844	0.822	0.026	4.038	0.841	0.027
THAILAND	2.449	1.587	0.107	2.968	1.390	0.084
TURKEY	-0.940	-0.498	0.016	2.017	0.497	0.016
UNITED KINGDOM	2.121	1.186	0.051	2.945	0.930	0.032
UNITED STATES	3.202**	2.433	0.180	7.413**	2.362	0.171

Table 2 Continued

Panel B. Pooled-sample regressions

	Dependent Variable = Ret			
ΔX_B_t	2.104***	2.080***		
	(7.177)	(7.007)		
$USA*\Delta X\_B_t$		1.123		
		(0.560)		
USA		-0.003		-0.015
		(-0.058)		(-0.271)
ΔX_P_t			1.966***	1.940***
			(5.949)	(5.852)
$USA*\Delta X\_P_t$				5.473
				(1.150)
$Intercept$	0.098***	0.098***	0.107***	0.107***
	(9.456)	(9.258)	(10.445)	(10.225)
Obs	731	731	731	731
$Adj\ R^2$	0.065	0.063	0.045	0.044

Table 3. Intertemporal Variation in the Aggregate Earnings-Returns Association in the U.S.: 1962-2016

Panel A reports the results of annual regressions of market returns on contemporaneous changes in aggregate earnings (ΔX_B) for the U.S. for five different subperiods: (1) the beginning of the sample period to the last year without corresponding global coverage; (2) the sample period used in Kothari et al. (2006); (3) the sample period used in He & Hu (2013); (4) the global coverage sample; and (5) the full U.S. data coverage sample. Panel B reports results of rolling regressions of the aggregate earnings-returns association (β) on three factors: 1) the aggregate earnings news beta ($\beta\Delta MP\_\Delta X$), 2) the market reaction beta ($\beta\Delta MP$), and 3) the predictability of aggregate earnings (*Predictability*). The first annual rolling regression spans 1962 to 1976, with subsequent regressions adding one observation at a time and dropping the first observation from the previous window such that the time series remains fixed at 15 yearly observations, yielding a total of 41 time-series regressions. For each rolling window, we regress market returns on aggregate earnings changes (ΔX_B) to estimate the aggregate earnings-returns relation (β), we regress 1) changes in monetary policy (ΔMP) on aggregate earnings changes (ΔX_B) to estimate the aggregate earnings news beta ($\beta\Delta MP\_\Delta X$), 2) market returns on changes in monetary policy (ΔMP) to estimate the market reaction beta ($\beta\Delta MP$), and 3) lagged market returns on aggregate earnings changes using the estimating R^2 as a proxy for aggregate earnings predictability (*Predictability*). Panel C table reports results from regressing β (*Agg E-R*), $\beta\Delta MP\_\Delta X$, and $\beta\Delta MP$ on macro uncertainty measured using forecasts of macro uncertainty from Jurado et al. (2015) (*Uncert*) or the Anxious Index from the Survey of Professional Forecasters (*Anx*). *t*-statistics in Panels B and C are calculated using standard errors with the Newey-West adjustment for autocorrelation using 3 lags and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

Panel A. The aggregate earnings-returns regressions by sub-period

	Period	β (*Agg E-R*)	*t*-statistic	Adj. R^2
(1)	1962-1987	-6.474**	-2.725	0.205
(2)	1970-2000	-3.706*	-1.755	0.065
(3)	1988-2009	3.450**	2.097	0.139
(4)	1988-2016	3.202**	2.433	0.150
(5)	1962-2016	1.528	1.284	0.012

Panel B. Rolling regressions: Monetary policy news and aggregate earnings predictability channels

	Dependent Variable = β (*Agg E-R*)			
$\beta\Delta MP\_\Delta X$	-0.083***			-0.047***
	(-8.681)			(-4.974)
$\beta\Delta MP$		95.299***		49.088***
		(11.000)		(6.017)
Predictability			10.343	4.666*
			(0.869)	(1.743)
Constant	5.344***	-1.143***	-2.507	2.032***
	(6.900)	(-3.492)	(-1.604)	(3.446)
Obs	41	41	41	41
Adj R^2	0.842	0.883	0.02	0.947

Table 3 Continued

Panel C. Rolling regressions: The source of time-series variation – Macroeconomic uncertainty

	Dependent Variable		
	β (Agg E-R)	*βΔMP_ΔX*	*βΔMP*
Uncert	-82.809***	9.399***	-63.667***
	(-4.598)	(4.740)	(-3.890)
Constant	75.702***	-7.943***	58.991***
	(4.383)	(-4.209)	(3.694)
Obs	41	41	41
Adj R²	0.432	0.459	0.251
Anx	-0.803***	0.085***	-0.688***
	(-4.696)	(4.474)	(-4.941)
Constant	14.306***	-0.893**	13.272***
	(4.209)	(-2.638)	(3.985)
Obs	34	34	34
Adj R²	0.569	0.660	0.417

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Table 4. Intertemporal Variation in the Aggregate Earnings-Returns Association in Canada: 1964-2016

Panel A reports the results of annual regressions of market returns on contemporaneous changes in aggregate earnings for Canada for four sub-periods: (1) the beginning of the sample period to the last year without corresponding global coverage; (2) the sample period used in He & Hu (2013); (3) the global coverage sample; (4) the full data coverage sample. Panel B reports results of rolling regressions of market returns on contemporaneous changes in aggregate earnings for Canada. The first annual rolling regression spans 1964 to 1978, with subsequent regressions adding one observation at a time and dropping the first observation from the previous window such that the time series remains fixed at 15 yearly observations, yielding a total of 39 time-series regressions. For each rolling window, we regress market returns on aggregate earnings changes (ΔX_B) to estimate the aggregate earnings-returns relation (β), we regress changes in monetary policy (ΔMP) on aggregate earnings changes (ΔX_B) to estimate the aggregate earnings news beta ($\beta\Delta MP\_\Delta X$), we regress market returns on changes in monetary policy (ΔMP) to estimate the market reaction beta ($\beta\Delta MP$), and we regress lagged market returns on aggregate earnings changes using the R^2 as a proxy for aggregate earnings predictability (*Predictability*). *t*-statistics are calculated using standard errors with Newey-West adjustment for autocorrelation using three lags and are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

Panel A. The aggregate earnings-returns regressions by sub-period

	Period	Coefficient	*t*-statistic	Adj. R^2
(1)	1964-1987	-2.023*	-2.057	0.123
(2)	1988-2009	0.733	0.536	-0.035
(3)	1988-2016	0.837	0.817	-0.012
(4)	1964-2016	-0.354	-0.484	-0.015

Panel B. Rolling regressions: Monetary policy news and aggregate earnings predictability channels

	Dependent Variable = β (Agg E-R)			
$\beta\Delta MP\_\Delta X$	-0.187***			-0.096***
	(-6.523)			(-2.755)
$\beta\Delta MP$		54.040***		44.094***
		(6.394)		(4.582)
Predictability			6.848**	-5.203*
			(2.051)	(-1.797)
Constant	4.868***	0.239	-0.675	3.088***
	(5.120)	(0.844)	(-1.143)	(2.810)
Obs	39	39	39	39
Adj R^2	0.545	0.669	0.090	0.733

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Table 5. Cross-Country Analysis of the Aggregate Earnings-Returns Association

This table reports results of cross-sectional regressions of country-specific aggregate earnings-returns association (*β*) on country-level estimates of the aggregate earnings news beta (*βΔMP_ΔX*), the market reaction beta (*βΔMP*), and the predictability of aggregate earnings (*Predictability*). The sample consists of 31 countries over the period 1988-2016. For each country, *β* is estimated by regressing market returns on aggregate earnings changes; *βΔMP* is estimated by regressing market returns on changes in monetary policy; *βΔMP_ΔX* is estimated by regressing monetary policy changes on aggregate earnings changes; and *Predictability* is the R^2 estimated from regressing lagged market returns on aggregate earnings changes. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

	Dependent Variable = β (Agg E-R)			
βΔMP_ΔX	-0.037**			-0.058***
	(-2.414)			(-3.737)
βΔMP		7.441		17.633***
		(1.195)		(2.968)
Predictability			-2.845	-1.370
			(-1.351)	(-0.769)
Constant	2.498***	2.494***	2.515***	3.880***
	(7.557)	(5.509)	(5.787)	(7.491)
Obs	31	31	31	31
Adj R²	0.139	0.014	0.027	0.337

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Table 6. Cross-country Analysis: Institutional Environment

Panel A reports cluster-level mean values of *βΔMP_ΔX* and *βΔMP,* as well as mean values of an alternative set of betas (*βΔRate_ΔX* and *βΔRate*) calculated using 10-year government bond rates for Eurozone countries. The three country clusters are as defined in Leuz et al. (2003). Cluster 1 contains Great Britain, Australia, USA, Hong Kong, Canada and Norway, cluster 2 contains Japan, France, Switzerland, Germany, Ireland, Sweden, South Africa, Finland, Belgium, Denmark, Austria and the Netherlands, and cluster 3 contains Pakistan, Thailand, Philippines, Spain, Portugal, Greece, Italy, and Korea. Panel B reports results of cross-sectional regressions of the aggregate earnings news beta (*βΔMP_ΔX* or *βΔRate_ΔX*) and the market reaction beta (*βΔMP* or *βΔRate)* on *Legal Enforcement, Outside Investor Rights,* and *Private Control Benefits* as well as mean values of inflation, real GDP growth and unemployment for each country. The sample consists of 26 countries for the period 1988-2016. Panels C and D report results of cross-sectional regressions of the aggregate earnings news beta (*βΔMP_ΔX* or *βΔRate_ΔX*) and the market reaction beta (*βΔMP* or *βΔRate)* on country-level institutional measures from the World Bank. The sample consists 31 countries for the period 1988-2016. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. All variables are defined in Appendix A.

Panel A. The aggregate earnings news beta and market reaction beta by cluster

		Cluster 1			Cluster 2			Cluster 3	
	n	*βΔMP_ΔX*	*βΔMP*	*n*	*βΔMP_ΔX*	*βΔMP*	*n*	*βΔMP_ΔX*	*βΔMP*
Mean Beta Value	6	23.730	-0.011	12	5.104	-0.075	8	-1.907	-0.059
Mean Alt Beta Value	6	23.730	-0.011	12	3.266	-0.072	8	-11.029	-0.069

Panel B. Monetary policy news channel: Investor protection

	βΔMP_ΔX	*βΔMP*	*βΔRate_ΔX*	*βΔRate*
Legal Enforcement	4.877**	-0.002	6.507**	-0.001
	(2.223)	(-0.377)	(2.745)	(-0.100)
Outside Investor Rights	5.912**	0.020**	6.961**	-0.007
	(2.100)	(2.440)	(2.288)	(-0.808)
Private Control Benefits	21.284	-0.084	25.998	-0.169
	(0.651)	(-0.881)	(0.736)	(-1.653)
Minf	6.396*	-0.006	5.064	0.001
	(2.026)	(-0.649)	(1.484)	(0.076)
Mrgdp	-0.225	0.009	0.703	0.001
	(-0.097)	(1.367)	(0.282)	(0.162)
Munemp	-0.905	-0.001	0.162	-0.004
	(-0.797)	(-0.401)	(0.132)	(-1.223)
Constant	-61.360**	-0.091	-86.569***	0.082
	(-2.314)	(-1.176)	(-3.020)	(0.989)
Obs	26	26	26	26
Adj R²	0.501	0.323	0.491	0.070

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Table 6 Continued

Panel C. Monetary policy news channel: World Bank institutional environment measures

Institutional Var	Political Stability		Regulatory Quality		Government Effectiveness		Control of Corruption		Rule of Law		WBInst_5		WBInst_3	
	βΔMP_ΔX	βΔMP	βΔMP_ΔX	βΔMP	βΔMP_ΔX	βΔMP	βΔMP_ΔX	βΔMP	βΔMP_ΔX	βΔMP	βΔMP_ΔX	βΔMP	βΔMP_ΔX	βΔMP
Institutional Var	10.207**	-0.003	18.806***	0.014	14.614***	-0.001	10.611***	0.001	15.539***	-0.004	14.719***	0.001	14.819***	0.003
	(2.437)	(-0.248)	(3.89)	(0.827)	(2.829)	(-0.044)	(2.912)	(0.100)	(3.255)	(-0.252)	(3.193)	(0.057)	(3.363)	(0.200)
Minf	4.548**	-0.010	6.402***	-0.007	5.676**	-0.009	5.020**	-0.009	5.742**	-0.010	5.613**	-0.009	5.712**	-0.009
	(2.088)	(-1.426)	(3.146)	(-0.916)	(2.539)	(-1.290)	(2.366)	(-1.295)	(2.704)	(-1.396)	(2.644)	(-1.274)	(2.732)	(-1.217)
Mrgdp	0.759	0.009*	-0.336	0.008	0.062	0.009*	0.387	0.009*	0.186	0.009*	0.275	0.009*	0.132	0.009*
	(0.500)	(1.764)	(-0.250)	(1.681)	(0.042)	(1.791)	(0.266)	(1.793)	(0.132)	(1.805)	(0.194)	(1.791)	(0.094)	(1.780)
Munemp	-0.264	0.002	-0.497	0.002	-0.36	0.002	-0.220	0.002	-0.126	0.002	-0.272	0.002	-0.257	0.002
	(-0.333)	(0.929)	(-0.712)	(0.906)	(-0.469)	(0.940)	(-0.289)	(0.944)	(-0.170)	(0.913)	(-0.366)	(0.941)	(-0.351)	(0.947)
Constant	-9.069	-0.069**	-26.117**	-0.095***	-23.234**	-0.072*	-17.884*	-0.075**	-25.311**	-0.066*	-21.470**	-0.075**	-23.365**	-0.078**
	(-1.101)	(-2.642)	(-2.759)	(-2.816)	(-2.066)	(-1.943)	(-1.870)	(-2.385)	(-2.377)	(-1.812)	(-2.181)	(-2.236)	(-2.355)	(-2.300)
Obs	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Adj R²	0.297	-0.020	0.454	0.003	0.340	-0.023	0.349	-0.022	0.387	-0.020	0.380	-0.023	0.399	-0.021

Table 6 Continued

Panel D. Monetary policy news channel with alternative Eurozone interest rates: World Bank institutional environment measures

Institutional Var	Political Stability		Regulatory Quality		Government Effectiveness		Control of Corruption		Rule of Law		WBInst_5		WBInst_3	
	βΔRate _ΔX	βΔRate	βΔRate _ΔX	βΔRate	βΔRate _ΔX	βΔRate	βΔRate_ ΔX	βΔRate	βΔRate _ΔX	βΔRate	βΔRate _ΔX	βΔRate	βΔRate _ΔX	βΔRate
Institutional Var	11.021**	0.003	22.428***	0.021	19.663***	0.003	14.199***	0.008	18.555***	0.003	18.139***	0.008	18.494***	0.010
	(2.270)	(0.184)	(4.156)	(1.117)	(3.537)	(0.180)	(3.626)	(0.587)	(3.457)	(0.164)	(3.549)	(0.456)	(3.825)	(0.615)
Minf	5.035*	-0.011	7.437***	-0.007	7.000***	-0.010	6.102**	-0.009	6.653***	-0.010	6.605***	-0.010	6.771***	-0.009
	(1.993)	(-1.381)	(3.273)	(-0.890)	(2.910)	(-1.279)	(2.676)	(-1.226)	(2.787)	(-1.311)	(2.805)	(-1.207)	(2.951)	(-1.147)
Mrgdp	1.061	0.010*	-0.205	0.010*	0.217	0.010*	0.654	0.010*	0.418	0.010*	0.519	0.010*	0.338	0.010*
	(0.602)	(1.962)	(-0.137)	(1.819)	(0.137)	(1.932)	(0.418)	(1.962)	(0.263)	(1.943)	(0.329)	(1.946)	(0.220)	(1.927)
Munemp	-1.086	0.002	-1.354*	0.001	-1.192	0.001	-1.005	0.002	-0.912	0.002	-1.083	0.002	-1.063	0.002
	(-1.182)	(0.549)	(-1.737)	(0.492)	(-1.445)	(0.540)	(-1.226)	(0.578)	(-1.092)	(0.554)	(-1.313)	(0.558)	(-1.322)	(0.567)
Constant	-8.981	-0.072**	-30.664***	-0.102**	-31.224**	-0.075*	-23.872**	-0.084**	-29.747**	-0.075*	-26.093**	-0.082**	-28.839**	-0.087**
	(-0.940)	(-2.508)	(-2.901)	(-2.762)	(-2.580)	(-1.851)	(-2.322)	(-2.439)	(-2.485)	(-1.867)	(-2.390)	(-2.246)	(-2.649)	(-2.340)
Obs	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Adj R²	0.308	0.003	0.502	0.047	0.440	0.003	0.449	0.015	0.432	0.003	0.441	0.009	0.469	0.016

Table 7. Cross-country Analysis: Financial Transparency Measures

This table reports results of cross-country regressions of the aggregate earnings news beta ($\beta\Delta MP\_\Delta X$), the market reaction beta ($\beta\Delta MP$), and the predictability of aggregate earnings (*Predictability*) on measures of financial transparency. *Factor1* is a summary measure of financial transparency from Bushman et al. (2004). *Discl* is a measure of disclosure intensity regarding some proprietary information including R&D, capital expenditure, and segment data from Bushman et al. (2004). *Cifar* is a measure of comprehensiveness of financial information disclosure, developed by the Center for Financial Analysis and Research. The sample consists 31 countries for the period 1988-2016. *t*-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. All other variables are defined in Appendix A.

	$\beta\Delta MP\_\Delta X$			$\beta\Delta MP$			Predictability		
Factor1	10.755**			0.015			0.067		
	(2.344)			(1.093)			(1.569)		
Discl		0.464**			-0.000			0.003	
		(2.226)			(-0.085)			(1.398)	
Cifar			0.591			0.001			0.001
			(1.380)			(0.880)			(0.172)
Minf	4.572**	4.373*	3.410	-0.007	-0.010	-0.008	0.006	0.004	-0.004
	(2.074)	(1.983)	(1.519)	(-1.008)	(-1.376)	(-1.262)	(0.289)	(0.200)	(-0.199)
Mrgdp	0.301	0.200	0.482	0.008*	0.009*	0.009*	-0.001	-0.002	-0.001
	(0.197)	(0.130)	(0.298)	(1.800)	(1.795)	(1.848)	(-0.095)	(-0.132)	(-0.040)
Munemp	-0.447	-0.686	-0.470	0.002	0.002	0.002	-0.002	-0.004	-0.002
	(-0.560)	(-0.839)	(-0.552)	(0.903)	(0.939)	(0.859)	(-0.316)	(-0.487)	(-0.241)
Constant	-4.633	-38.980*	-40.918	-0.084***	-0.068	-0.155	0.131*	-0.067	0.128
	(-0.626)	(-1.951)	(-1.257)	(-3.673)	(-1.087)	(-1.625)	(1.902)	(-0.360)	(0.429)
Obs	31	31	31	31	31	31	31	31	31
Adj R^2	0.287	0.275	0.196	0.022	-0.023	0.007	-0.036	-0.055	-0.133

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