Are Reporting Incentives and Accounting Standards Substitutes or Complements in Achieving Accounting Comparability?

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Abstract

We find that they are complements. We subject our sample of 15 European Union (EU) countries to two regulatory changes: (i) the adoption of the common euro currency in 1999 that resulted in a convergence in reporting incentives and (ii) the subsequent adoption of International Financial Reporting Standards (IFRS) in 2005 that resulted in a convergence in accounting standards. We first document that the convergence in reporting incentives brought about by euro adoption increased financial reporting convergence. To examine the interaction between reporting incentives and accounting standards, we condition the effect of IFRS adoption in 2005 on euro membership. We uncover greater financial reporting convergence after IFRS adoption but only in euro countries, suggesting that the convergence in reporting incentives and the convergence in accounting standards act as complements. In cross-sectional tests we find that our results are primarily driven by capital market integration via arms-length financing rather than product market integration. Our findings are relevant to academics as well as regulators evaluating the implications of convergence in accounting standards around the world.

Key words: Reporting incentives, accounting standards, IFRS, comparability, euro, European Union.

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1. Introduction

How does one bring about convergence in financial reporting outcomes across countries?[1] There is evidence that two mechanisms can be used to accomplish this – (i) introducing a common set of accounting standards (as seen by IASB's recent approach with IFRS), and (ii) converging firms' reporting incentives (as documented by a vast body of accounting research, starting with Ball et al., 2000, 2003). While plentiful evidence exists on each of these mechanisms, less is known about the interaction between them. Several questions remain unanswered in this context: if countries were to converge incentives, would they then benefit less from converging standards? Or would they benefit more? In other words, are the convergence in incentives and the convergence in standards substitutes or complements? These issues are likely to be of interest to several constituents such as academics interested in international accounting, regulators striving to achieve greater reporting convergence across countries, as well as market participants that rely on financial reporting information for their investment decisions.

Our study seeks to provide evidence on these questions. To do so, we first identify a setting where reporting incentives converge while standards remain constant, followed by a setting where standards converge while reporting incentives remain constant (Schipper, 2005). Specifically, we use the adoption of the common euro currency within the European Union (EU) in 1999 as the former and the adoption of IFRS by these countries in 2005 as the latter. These settings allow us to not only examine how an initial convergence in reporting incentives affects financial reporting outcomes, but, more importantly, how this convergence in incentives interacts with a subsequent convergence in accounting standards.

[1] By convergence in reporting outcomes, we mean firms reporting similar earnings when faced with similar economic events. We operationalize this construct using a measure of accounting comparability introduced by DeFranco, Kothari and Verdi (2011) and supplement it with information transfer as an alternative proxy.

Our first set of analyses investigates changes in accounting comparability around the euro adoption. The adoption of the euro brought about convergence in firms' product markets as well as in their capital markets. The former stemmed from greater bilateral trade among member countries (Rose, 2000; Micco et al., 2003) while the latter resulted from increased cross-border financing via greater capital mobility across the Eurozone (Rajan and Zingales, 2003). To the extent financial reporting is shaped by the underlying economic environment in which firms operate, segmentation in product and capital markets can deter financial reporting convergence, despite countries' efforts to converge accounting standards (Ball, 2006). Consequently, one way to achieve convergence in reporting outcomes is through a convergence in these underlying economic determinants (Ball, 2006).[2] Thus, we predict that the introduction of the euro, by increasing (product and capital) market integration, resulted in a convergence in reported outcomes.

Our second set of analyses, and our main research question, studies the interaction between incentives and standards in the context of IFRS adoption *conditional* on the preceding adoption of the euro. Ball (2006) states that incentives and standards can be either complements or substitutes. On one hand, converging standards can bring about a convergence in outcomes when the underlying economic environment is similar. For example, Hail, Leuz and Wysocki (2010) allude to complementarity by noting that the effect of IFRS adoption is likely to be stronger in countries with stricter enforcement regimes and those that provide stronger reporting incentives. On the other hand, the convergence in standards could have a stronger effect in countries where the convergence in incentives has not already made reported outcomes more comparable. In particular, if adhering to a common set of accounting rules (IFRS in our setting) reduces managerial discretion

[2] As we illustrate in Section 2, an example would be a scenario in which external finance switched from local banks in the pre-euro era to a pool of cross-border (arms-length and dispersed) investors after the adoption of the euro.

and inhibits managers' ability to obfuscate accounting information, then such effects are likely to be pronounced in countries where managers had a higher likelihood on engaging in such activities, namely countries with weaker reporting incentives (Ball, 2006; Hail, Leuz and Wysocki, 2010).[3]

The introduction of the euro within the EU provides an ideal setting to answer our research questions for several reasons. First, countries' decision to adopt the euro was driven by political factors made several years in advance and can be regarded as exogenous to accounting practices at the time of adoption.[4] Second, the IFRS adoption effects have been shown to be concentrated within the EU (Daske et al., 2008; Christensen et al., 2013, among others) and our setting focuses on *within-EU* variation, arguable a relatively more homogeneous set of countries. Yet, the EU provides a rich cross-country heterogeneity with several wealthy and less-wealthy countries all converging accounting standards (Schipper, 2005) allowing for the examination of a somewhat controlled but still rich set of countries. Third, out of the 27 countries in the EU, 11 adopted the euro in 1999 (and Greece in 2001) but 15 did not, giving us a set of treatment and control groups within the EU to operationalize a difference-in-differences (henceforth DiD) research design.

We test our two research questions using a panel dataset of 33,815 industry-country-pair-year observations for 15 EU countries (11 adopters and 4 non-adopters) for the period from 1994 to 2007. To empirically capture convergence in reported outcomes, we use the measure of accounting comparability developed by De Franco et al. (2011), and used in a similar international context by Barth et al. (2012) and Yip and Young (2012). This measure attempts to capture FASB's

[3] In fact, consistent with both explanations, prior research has suggested that economic consequences around IFRS are stronger in countries with strong enforcement (Daske et al., 2008; Li, 2010; Christensen et al., 2013) as well as in countries with the largest changes in accounting standards (Byard, Li and Yu, 2011; Oskan, Singer and Yu, 2013).

[4] An important issue in the macroeconomics literature is the direction of causality between bilateral trade and euro adoption (Glick and Rose, 2002). Micco et al. (2003), among others, document a distinct "euro effect" on bilateral trade of around 8% to 16% — which is the discontinuity that we exploit. The direction of causality is less contentious in our setting as we use the euro to test the effects on financial reporting behavior. In other words, our identification strategy requires that the adoption of the euro capture convergence in reporting incentives and that the adoption decision itself not be driven by accounting comparability.

notion of comparability, which refers to the extent to which similar transactions translate into similar financial statements. Firms are deemed to be comparable when, given a similar set of economic transactions (proxied by stock returns and cash flows), they report similar income (proxied by earnings).[5] We also supplement our analyses using information transfer as an alternative proxy for comparability following Yip and Young (2012) and Wang (2014).

Our main results are as follows. Using a difference-in-differences (DiD) specification we first show that, around the introduction of the euro in 1999, euro adopters experienced an increase in accounting comparability when compared to non-euro adopters. To give a sense of economic significance, before the adoption of the euro, a pair of industries in our euro sample differ in terms of predicted income by about 8% of equity. After the adoption of the euro, this difference reduced by 1.55%, a relative change of 19%. This result is consistent with the convergence in incentives converging reported outcomes. Second, we shift our focus to the adoption of IFRS by these EU countries in 2005 and condition this event on euro membership. We find that reporting incentives and accounting standards act as complements. In particular, accounting comparability amongst euro members increased after IFRS adoption by another 1.23% (a relative change of 15%), while it remained unchanged for non-euro members. These findings are robust to several control variables including firm-specific fundamentals such as size, leverage and growth opportunities (Khan and Watts, 2009), a measure of cash flow comparability to better isolate the actual component of earnings comparability (Collins, Hribar and Tian, 2013), and country-specific institutional splits such as local accounting standards (Bae et al., 2008), ex-ante enforcement (Daske et al., 2008) or changes in enforcement (Christensen et al., 2013).

[5] While we use the term "accounting comparability" to be consistent with prior studies, our measure, strictly speaking, captures earnings comparability.

Having established our main results, we dig further to isolate the mechanism(s) driving these results. Prior studies (e.g., Ball et al. 2000, 2003; Leuz et al., 2009) find that reporting incentives stem from arms-length financing from dispersed, uninformed investors who use financial reporting information for their lending and monitoring decisions. Consistent with this mechanism, we find that the increases in accounting comparability after euro adoption and IFRS adoption are concentrated in country-pairs with increases in foreign portfolio financing around euro adoption (i.e., financing from cross-border uninformed investors). In contrast, when we partition our sample on changes in bilateral trade – our proxy for product market integration – we find a modest differential effect around euro adoption but no differential effect around the adoption of IFRS. Specifically, we find similar post-IFRS adoption increases in accounting comparability across sub-samples based on changes in bilateral trade. This suggests that the shift in financing to cross-border investors appears to drive the increases in accounting comparability we document, rather than these changes stemming merely from integration in the underlying economics.

As an additional falsification test, we partition our sample based on changes in foreign *direct* financing (i.e., investors who acquire large stakes and have access to private information). In contrast to our portfolio financing results, we find that differences in accounting comparability around our two events are not explained by changes in foreign direct financing. These results further suggest that our results are not driven by the overall global integration of capital markets, but rather by changes in the specific kind of investors that demand more transparent financial reporting.

In addition to the above cross-sectional splits, we perform several sensitivity tests. First, we use information transfers around earnings announcements (following Wang, 2014) as an alternative measure of accounting comparability. We find, consistent with our earlier results, that

the increase in information transfers after IFRS adoption is economically stronger for euro-pairs than for non-euro pairs.[6] Second, we follow Bertrand and Mullainathan (2003) and allow for a non-linear (yearly) effect even prior to the euro adoption. The idea is that, if our results reflect a time trend (e.g., a gradual change towards market integration) we would expect a gradual increase in comparability as opposed to a discontinuity subsequent to the euro adoption. We find no difference in accounting comparability between euro and non-euro adopters in the period leading up to euro adoption. Rather, the effect exists only in the years following adoption consistent with a causal interpretation. Last, we perform a series of testing regarding the implementation of the DeFranco et al. methodology in an international setting. We show that our inferences are robust to using cash flow from operations rather than stock returns to capture underlying economics and to controlling for differences in stock liquidity, risk free rates, and growth rates.[7]

Our study is related, and yet distinct, from a vast prior literature. First, our examination around the euro builds on a literature that studies the influence of reporting incentives on reporting behavior (e.g., Ball, Kothari and Robin, 2000; Ball, Robin and Wu, 2003; Ball and Shivakumar, 2005; Burgsthaler, Hail and Leuz, 2006; Jayaraman, 2012, among others).[8] The key distinction between our paper and this line of research is that we study the dynamic *integration* in reporting incentives on the *similarity* of reporting behavior, namely our measures of accounting comparability across countries.

[6] As this measure is driven both by the underlying fundamentals and the accounting of these fundamentals, we use this measure only around IFRS adoption, where there was a shock to the reporting system.

[7] A separate argument is that the ability of stock returns to capture similar underlying economics differs across industries (the unit of comparison in our sample). For example, stock returns might represent revenues from assets-in-place for the retailing industry but growth opportunities for the pharmaceutical industry. Our research design partially mitigates this concern because our fixed-effects structure captures all time-invariant differences across industries and countries. We further address this concern with cross-sectional tests.

[8] We focus on studies outside the U.S. as it more closely relates to our paper. However, other papers study the influence of reporting incentives on outcomes within the U.S. (see Dechow et al., 2010 and Beyer et al., 2010) for reviews).

Second, our IFRS tests build on a literature that studies the influence of reporting incentives on the consequences around IFRS. For example, Christensen et al. (2013) and Daske et al. (2013) document substantial cross-sectional variation in the economic consequences of IFRS adoption based on *concurrent* changes in reporting incentives around IFRS. Our paper differs from this literature in that we use a *preceding* change in reporting incentives to study the interaction between incentives and standards around the adoption of IFRS. Although we reach a similar conclusion to these studies ─ that incentives and standards play a complementary effect, we believe our setting allows for a better isolation of the effects of standards and incentives.[9]

Last, our study relates to a literature that studies the cross-sectional variation in the outcomes around IFRS as a function of ex-ante cross-country differences (e.g., Daske et al., 2008; Byard et al., 2011; DeFond et al., 2011; among others). Compared to these studies, we identify a time-series change in country-level incentives and explicitly control for time-invariant country institutions. Thus, our findings highlight an additional capital-markets based incentive feature (triggered by the adoption of the euro) that is distinct to the effects previously documented in the literature. Overall, our findings highlight the interaction between capital market integration and the harmonization of reporting standards in shaping accounting comparability.

Section 2 presents the motivation and hypotheses. Section 3 outlines the empirical design and Section 4 describes the results. Section 5 discusses robustness tests and Section 6 concludes.

[9] For example, Christensen et al. (2013) document stronger IFRS effects for countries that also tightened enforcement around the adoption of IFRS. While such result is consistent with incentives having an effect, it does not allow them to isolate IFRS effects when incentives are in place. We attempt to do so by looking at the IFRS effect for the sample of countries that have previously adopted the euro.

2. Motivation and Hypothesis Development

There has been a resurgence of interest in financial reporting convergence in recent years, most notably due to the adoption of IFRS by several countries. A motivating factor driving IFRS adoption is the idea that a convergence in accounting standards can result in a convergence in financial reporting outcomes. Consistent with this argument, Barth et al. (2012), Yip and Young (2012) and Wang (2014) show that accounting comparability increased subsequent to the adoption of IFRS. However, there is no consensus on the mechanisms that are driving these outcomes. For example, changes in outcomes around IFRS adoption have been attributed to pre-existing institutional features (Daske et al., 2008) and more recently to concurrent improvements in enforcement (see Christensen et al., 2013 and response by Barth and Israeli, 2013).

As noted by Schipper (2005), an important unanswered question is the relation between accounting standards and reporting incentives and the extent to which they are either complements or substitutes. To shed light on this question, we use the introduction of the common euro currency within the European Union (EU) in 1999 as a shock to convergence in reporting incentives that precedes the convergence of accounting standards via IFRS adoption in 2005. This setting enables us to examine – (i) how the convergence in incentives brought about by euro adoption in 1999 affects convergence in reported outcomes, and (ii) how this convergence in incentives interacts with a subsequent convergence in standards, i.e., when these countries adopted IFRS in 2005. In the following sections, we motivate the use of the euro as our shock to the convergence in reporting incentives and follow that up with a discussion of our hypotheses.

2.1. Adoption of the euro and financial reporting convergence

The European Union which was formed as part of the Maastricht Treaty of 1992 instituted the common euro currency in 1999 as the culmination of efforts to achieve greater economic

integration among its members. EU countries were allowed to adopt the common currency as long as they met certain criteria known as the convergence criteria that would ensure price stability within the region.[10]

Two channels through which a common currency has been shown to affect economic integration are through the capital market (via cross-border financing) and through the product market (via bilateral trade). With respect to capital markets, Rajan and Zingales (2003) argue that firms were reluctant to issue large amount of long-term bonds denominated in foreign currencies because of the foreign exchange risk involved in repayments. They find that the introduction of the euro resulted in a tripling of the amount of domestic and international corporate debt issued by euro members, and conclude that the euro had a large effect in promoting the development of cross-border financing.

With regard to product markets, a large literature in macroeconomics studies the effect of currency unions on bilateral trade. Rose (2000) finds that countries with a common currency experience a substantial increase in trade and Micco et al. (2003) document an increase of 8% to 16% in bilateral trade after euro adoption.[11] Frankel and Rose (1998) find that greater bilateral trade between two countries results in greater macroeconomic commonality using real GDP and industrial production correlations. They use an instrumental variables methodology and confirm that the direction of causality runs from bilateral trade to macroeconomic commonality.

Our first hypothesis studies the change in accounting comparability around the adoption of the euro. Specifically, we expect the increase in (capital and product market) integration

[10] The convergence criteria broadly encompassed fiscal and budgetary restrictions such as not having high inflation rates, government deficit not exceeding 3% of GDP, government debt to GDP being less than 60%, long-term interest rates not being more than 2% higher than benchmark, and exchange rates being within a 15% range for two years.
[11] This finding is not noncontroversial. For example, Bekaert et al. (2013) argue that EU membership rather than the adoption of the euro resulted in greater economic and financial integration, while Bris et al. (2009) confirm the effect of euro adoption on economic integration documented by Micco et al. (2003).

subsequent to the adoption of the euro to increase accounting comparability. To illustrate, take the case of capital market integration. Given that cross-border capital providers rely more on financial reporting information than domestic banks to monitor borrowers (Ball et al., 2000; Leuz et al., 2009), we expect the integration in cross-border financing to affect the demand for financial reporting. Specifically, firms' financial reporting attributes in the pre-adoption period are likely to have been shaped by the idiosyncratic information demands of their local financiers (i.e., banks) whereas, after the adoption of the euro, these reporting attributes would now be partially determined by cross-border investors. A key assumption here is that such investors, despite being dispersed and from international equity and debt markets, have a homogeneous preference for financial reporting due to the arm's-length nature of their investment, where they lean on financial reporting for their monitoring and lending decisions.[12] In other words, the integration in the demand for financial reporting from cross-border investors across the adopting countries would result in greater accounting comparability among these countries. These arguments lead to our first hypothesis, which is as follows:

H1: Euro adoption resulted in greater accounting comparability.

2.2. Interaction between the euro and IFRS adoption

In this section, we use mandatory IFRS adoption in 2005 to capture convergence in accounting standards and discuss the interaction between the euro (our measure of the convergence in reporting incentives) and IFRS adoption.

[12] Another implicit assumption behind this argument is that local capital providers have idiosyncratic preferences. To the extent that their preferences are also homogeneous (e.g., a low demand for financial reporting transparency) we would not find a change in accounting comparability to be influenced by the change in investor demands from local to cross-border financing.

Convergence in incentives and convergence in standards can be either complements or substitutes. On one hand, Ball (2006) argues that these are complements because the harmonization of accounting standards via the adoption of IFRS will result in greater accounting comparability when the underlying economic environment is more similar. For example, suppose that firms in two countries have similar incentives for financial reporting but are forced to use difference accounting methods (say different depreciation methods due to different tax-conformity requirements between countries). By adopting the same accounting standards these firms (which have the same reporting incentives) can self-select into more similar depreciation choices.[13] Such a change would be less likely to occur in firms with different reporting incentives because IFRS, as with any accounting standards, allow for substantial discretion that the adoption of one standard might not ensure the same accounting choices.[14]

An alternative argument is that the adoption of IFRS will bring about greater comparability in countries where incentives have not yet converged firms' financial reporting outcomes. For example, Ball (2006) also notes that the implementation of IFRS promises more accurate, comprehensive, and timely financial statement. Thus, the convergence in accounting standards could curb firms' earnings management incentives, by increasing the disclosure requirements. For example, in certain countries such as Greece the adoption of IFRS required firms to report related party transactions, discontinued operations, segment reporting, and cash flow statements (Bae et al., 2008). To the extent that firms with high reporting incentives were already disclosing some of this information voluntarily, the adoption of IFRS would be less impactful to them. Given these

[13] A related argument is that IFRS allows for more flexibility than local GAAP rules that preceded IFRS in the EU. Such flexibility allows high incentive firms to self-select into a higher transparency regime.
[14] Implicit in this example is an assumption backed by prior studies that, when given discretion within accounting standards, firms with different incentives would likely make different accounting choices.

opposing arguments, we do not make a directional prediction on how euro membership and mandatory IFRS adoption interact. Our second hypothesis (stated in the null) is:

H2: The effect of mandatory IFRS adoption on accounting comparability is unrelated to euro membership.

3. Sample, research design and variable descriptions

3.1. Sample

We obtain our data from several sources – accounting data from Worldscope, stock return data from Datastream, euro adoption dates from Bekaert et al. (2013), IFRS adoption dates from Daske et al. (2008), and macroeconomic variables from the World Development Indicators (WDI) database of the World Bank, the Trade and Coordinated Portfolio Investment Survey (CPIS) and the Trade and Coordinated Direct Investment Survey (CDIS) databases of the IMF. As described in more detail below, our notion of financial reporting convergence refers to similarity in accounting practices among firms, which we estimate at the industry-country-pair-year level. Thus, we use data at the firm-year level to collapse them to an industry-country-pair-year level for the estimation of accounting comparability. To avoid the influence of firms' voluntary adoption choices, we remove firms that voluntarily adopted IAS or U.S. GAAP from the sample.[15] The data on voluntary adopters come from Daske et al. (2013). In addition, we exclude financial institutions as their accruals differ from other industries and also utilities as these firms operate in regulated environments.

The final sample comprises 33,815 industry-country-year pair observations over the period 1994 to 2007 and spans 15 EU countries. Table 1, Panel A shows that of these 15 countries, 11

[15] As voluntary adoption of international standards entails selection issues, we exclude these firms. While euro membership is also a choice, it was driven by political factors of adopting countries rather than reporting considerations of specific firms. Voluntary adopters provide an ideal counterfactual, but as there are far fewer firms in this sample, it makes estimating accounting comparability at the industry-level problematic.

(Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, and Spain) adopted the euro while 4 (Denmark, Poland, Sweden, and the United Kingdom) did not.[16] The sample representation by country indicates that none of the countries dominates the sample. This is expected as we aggregate firm-year observations at the industry level leading to a more balanced sample. The remaining columns in Panel A tabulate country-level institutional characteristics that have been shown to influence IFRS adoption effects. These include local accounting standards (*ACCSTD*) defined as per Bae et al. (2008), rule of law (*RULELAW*) as shown by Daske et al. (2008) and changes in enforcement around IFRS adoption *(*Δ*ENF*) as shown by Christensen et al. (2013). We control for these factors in our empirical specifications.

Panel B breaks the sample down by euro and non-euro industry pairs. The treatment group comprises both countries adopting the euro (shaded in dark) and includes 16,772 industry-country-year pair observations. The remaining two cells indicate the control group. These comprise 14,312 observations where one of the two countries adopted the euro and 2,731 observations where neither country in the pair adopted the euro. Our results are robust to deleting the "off-diagonal" observations and comparing Euro:Euro with NonEuro:NonEuro.

3.2. Research design

To examine the effect of the euro on accounting comparability and its interaction with IFRS adoption, we estimate the following DiD specification:

$$\begin{aligned} ACCTCOMP = {} & \omega_0 EURO + \omega_1 YR99\_04 + \omega_2 EURO * YR99\_04 + \omega_3 YR05\_07 \\ & + \omega_4 EURO * YR05\_07 + Controls + \varepsilon \end{aligned} \quad (1)$$

[16] Out of the 27 EU countries, we lose one euro adopter – Luxembourg – due to insufficient data. We also exclude 5 countries that more recently adopted the euro (Slovenia in 2007, Cyprus and Malta in 2008, Slovak Republic in 2009 and Estonia in 2011) and 6 non-adopters (Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania and Romania) due to insufficient data. While our sample includes Poland that joined the EU in 2004, our results are robust to excluding it.

where, *ACCTCOMP* indicates accounting comparability as defined in DeFranco et al. (2011). *EURO* is an indicator variable coded as '1' when both countries in the pair adopt the euro, and 0 when either one or none does. *YR99_04* is an indicator variable that is set to 1 (0) for the five years after (before) euro adoption.[17] Similarly, the indicator *YR05_07* is set to 1 (0) for the three years after (before) IFRS adoption.[18] The *EURO* indicator captures differences in accounting comparability between euro and non-euro countries in the pre-euro-adoption period. The change in accounting comparability around euro (IFRS) adoption is captured by the *YR99_04* (*YR05_07*) indicator as it compares the value of accounting comparability in the 1994-1998 (1999 to 2004) period when *YR99_04* (*YR05_07*) takes the value 0 to the 1999-2004 (2005-2007) period when *YR99_04* (*YR05_07*) takes the value 1. The main variables of interest are the DiD estimates *EURO*YR99_04* and *EURO*YR05_07* which capture the incremental effect of euro adoption and IFRS adoption respectively on euro countries, i.e., the treatment group as compared to the non-euro countries, i.e., the control group. We cluster all standard errors by country-pair.

In addition, we estimate a fixed-effects specification that includes industry-country-pair and year effects. Specifically we estimate the following:

$$ACCTCOMP = \alpha_{ic} + \beta_t + \omega_2 EURO*YR99\_04 + \omega_4 EURO*YR05\_07 + Controls + \varepsilon \quad (2)$$

where α_{ic} and β_t are industry-country-pair and year fixed effects, respectively.[19] As the *EURO* indicator does not vary over time for a given industry-country-pair, it gets subsumed by the

[17] We use *YR99_04* for expositional ease but set it to 1 for years 2001-2004 when either one or both industries of the country-pair hail from Greece due to the latter's adoption of the euro in 2001.
[18] We use three rather than five to avoid overlap with the recent financial crisis.
[19] The industry-country-pair fixed effects control for all time-invariant heterogeneity within-country-across-industries (e.g., manufacturing vs. technology firms in France), within-industry-across countries (e.g., manufacturing firms in France vs. manufacturing firms in Germany) and also across-industries-across countries (e.g., manufacturing firms in France vs. technology firms in Germany). They are finer and thus subsume separate country and industry effects.

industry-country-pair fixed effects. Similarly, the year fixed effects subsume the *YR99_04* and *YR05_07* indicators. Consequently, these main effects drop out of eq. (2).

As euro adoption is hypothesized to increase accounting comparability (hypothesis *H1*), the coefficient on ω_2 in (1) and (2) is expected to be positive. With respect to the interaction between the euro and IFRS adoption (hypothesis *H2*), the substitutive effect predicts $\omega_4 < 0$ while the complementary effect predicts $\omega_4 > 0$.

3.3. Primary variables

3.3.1. Accounting comparability (ACCTCOMP)

Our measure of accounting comparability (*ACCTCOMP*) is adapted from De Franco et al. (2011) who define it as the similarity between two firms' reported earnings given a common set of economic events (proxied by stock returns). This measure attempts to isolate the accounting mapping by measuring the closeness of two firms' reporting functions that translate their economic events (proxied by stock returns) to reported outcomes (proxied by earnings).[20]

Following Barth et al. (2012), we adapt *ACCTCOMP* to estimate it cross-sectionally across industry-country-pair observations each year (rather than in the time-series by firm as done in DeFranco et al.). This allows us to capture time-series variation in accounting comparability, which we use as a dependent variable in our DiD research design. To isolate the accounting function from the underlying fundamentals, we follow Khan and Watts (2009) and include firm size measured as natural logarithm of total assets (*SIZE*), leverage measured as the ratio of short- and long-term debt to assets (*LEV*) and growth opportunities measured as the ratio of book to market value of equity (*BM*) to control for differences in underlying fundamentals. Specifically,

[20] Below, we perform sensitivity checks to assess the robustness of the De Franco et al. (2011) methodology.

we first estimate the following cross-sectional regression for each industry-country-year (based on one-digit ICB codes) with at least 10 firms:

$$\begin{aligned} EPS_{ck,i,t} = {} & \alpha_{ck,t} + \beta_{ck,t} RET_{ck,i,t} + \alpha_{ck,t} SIZE_{ck,i,t} + \delta_{ck,t} LEV_{ck,i,t} + \eta_{ck,t} BM_{ck,i,t} \\ & + \kappa_{ck,t} RET * SIZE_{ck,i,t} + \mu_{ck,t} RET * LEV_{ck,i,t} + \upsilon_{ck,t} RET * BM_{ck,i,t} + \varepsilon_{ck,i,t} \end{aligned} \quad (3)$$

$EPS_{ck,i,t}$ represents earnings per share at year *t* scaled by the beginning period stock price for firm *i* in industry *k* in country *c* and *RET* represents the stock return for the firm during the 15-month period starting at the beginning of the fiscal year and ending three months after the fiscal year end. *SIZE*, *LEV* and *BM* are defined above. In eq. (3) we de-mean *SIZE*, *LEV* and *BM* at the industry-country-year so that the estimated coefficient on *RET* captures the sensitivity of earnings on returns to the average firm in each industry-country-year group with respect to these three attributes.

In eq. (3), the accounting function for industry *k* in country *c* in year *t* is proxied by $\hat{\alpha}_{ck,t}$ and $\hat{\beta}_{ck,t}$. This accounting function, which DeFranco et al. (2011) term the "accounting mapping," captures the extent to which an economic event (proxied by stock returns) is recognized in the financial statements (proxied by earnings). A similar mapping is generated for each country-industry-year (i.e., $\hat{\alpha}_{dk,t}$, $\hat{\beta}_{dk,t}$) in our sample. We compute the accounting comparability between industry *k* in country *c* and industry *k* in country *d* in a given year as follows:

$$EARNMAP_{c-d,k,t} = -1 * \left| \left[\hat{\alpha}_{c,k,t} + \hat{\beta}_{c,k,t} \overline{RET}_{c-d,k,t} \right] - \left[\hat{\alpha}_{d,k,t} + \hat{\beta}_{d,k,t} \overline{RET}_{c-d,k,t} \right] \right| . \quad (4)$$

Accounting comparability between industry *k* in country *c* and industry *k* in country *d* is the difference between the expected earnings of each industry-country pair, *given the average stock return in these two industry-country pairs*. In other words, eq. (4) computes the difference in the predicted earnings in the hypothetical scenario that both industries had the same stock return. That is, using stock returns as our measure of economic events, we attempt to hold the latter

constant and estimate accounting comparability as the difference in the accounting mapping between two industry-countries at a given point in time.[21] Following DeFranco et al., we multiply this measure by -1 so that larger values indicate greater accounting comparability.

Before we proceed, we note that *ACCTCOMP* is similar in some sense to the well-known "ERC" metric used in prior studies (Collins and Kothari, 1989). Thus, it is possible that *ACCTCOMP* might be driven by the underlying fundamentals that drive ERCs, as opposed to differences in the accounting mapping. For example, it could be driven by differences in the risk-free rate, in growth opportunities, and also by differences in market efficiency across countries and over time.

To mitigate this concern, we do several things: first, as described earlier, we control for firm-level differences in *SIZE*, *LEV* and *BM* while estimating the accounting mapping function. Second, in Section 3.3.2 below, we control for cross-country variation in the well-known determinants of ERCs as well as for differences in market efficiency (more on this below). Third, we follow Collins, Hribar and Tian (2013) and estimate a comparability measure using cash flows rather than earnings and include it as an additional control in all our specifications. That is, we contrast the mapping of stock returns to earnings as done in accrual accounting to the mapping of these returns to cash flows as done in cash accounting. We contend that to the extent that our results reflect the *reporting* of the underlying events, we would expect it to manifest in earnings and not cash flows; and that including cash flow comparability helps control for the confounding effects of the underlying events themselves. We estimate the cash flow mapping function (*CFOCOMP*) analogously to the estimation of *ACCTCOMP* with the only difference being that

[21] In DeFranco et al.'s (2011) methodology, the intercept α captures the conditional average earnings to price ratio in the regression, whereas the coefficient β captures the earnings response coefficient. As an alternative methodology, we compute *ACCTCOMP* simply as differences in β times *RET,* i.e., we do not include differences in α. Our inferences are similar to those presented in the paper.

we replace earnings in eq. (3) with cash flows and include *CFOCOMP* as an additional control variable in all the specifications.[22]

3.3.2. Control variables

In addition to controlling for cash flow comparability (*CFOCOMP*), we include the number of firms (*FIRMS*) in each industry-country-year pair to control for shifts in industry structure around euro and IFRS adoptions and also for changes in sample composition over the sample period. To ensure that our inferences are not confounded by differences in market efficiency across countries and over time, we control for stock liquidity using the proportion of zero return days (*ZRET_DIFF*).[23] As our measure of accounting comparability is similar in spirit to an ERC, we control for factors shown to be related to ERCs (Collins and Kothari, 1989). In particular, we control for differences in the risk-free rate, risk, and growth using differences in the annual 10-year treasury yield (*RF_DIFF*), earnings-to-price ratio (*EP_DIFF*) and the book-to-market ratio (*BM_DIFF*) respectively.[24,25]

In addition, we control for time-varying macroeconomic factors that could be related to countries' decision to adopt the euro. In particular, we control for differences in the level and growth of GDP (*GDP_DIFF* and *GDPGROW_DIFF*) and annual inflation (*INFL_DIFF*). We also control for differences in financial market development across countries by including the absolute

[22] In addition, we perform cross-sectional tests in Section 4.3 and additional robustness tests in Section 5.2 to further control for differences in fundamentals that could drive variation in our measure of comparability.
[23] In sensitivity tests, we include *ZRET_DIFF* in the *ACCTCOMP* estimation of eq. (3) and find consistent results.
[24] To mitigate the influence of large outliers, we use the industry median *EP* ratio rather than the mean.
[25] We control for these determinants in the DiD specification, as it is tricky to deal with these factors in the first stage, i.e., at the time of the estimation of the reverse regression in DeFranco et al. in Eq. 3. Take risk-free rate as an example, in the first stage the model is estimated in the cross-section for each country-industry. Thus we cannot control for risk-free rate at that stage because the risk free rate is constant for all firms in a given country-industry. However, in the second stage when we use *pairs* of country-industry, risk-free rate differentials will exist and there is a need to control for it.

value of the difference in the equity market cap of listed firms to GDP (*MKTCAP_DIFF*) and stock turnover of listed firms to GDP (*TURNOVER_DIFF*). As the euro resulted in greater cross-border financial integration, the inclusion of these variables helps control for domestic market factors.[26]

Finally, we include year and industry-country-pair fixed effects to control for EU-wide macroeconomic events and time-invariant differences at the industry-country-pair level. The inclusion of industry-country-pair effects is especially important given that *ACCTCOMP* is likely to differ systematically across industries and countries (industry-specific effects such as differences in operating cycles across industries; country-specific effects such as differences in language, geographical location, culture), respectively. These fixed effects capture any such time-invariant, cross-sectional differences across industry-country-pairs allowing us to identify an (arguably) causal effect of euro adoption on accounting comparability. Thus, the inclusion of industry-country-pair effects implies that our identification strategy exploits *within-industry-country-pair* variation in reporting incentives and in accounting standards.

3.4. Descriptive statistics

Table 2 presents descriptive statistics. The first section contains the main variables – accounting comparability (*ACCTCOMP*), and the euro indicator (*EURO*). *ACCTCOMP* has a mean value of -10.334, which represents a difference in predicted earnings to the tune of 10.3% of market value. There is, however, wide cross-sectional variation within the sample. The least comparable pair differs by 164% of market value while the most is fully comparable at 0.00%. Close to half the sample comprises industry-pairs where both industries are from countries that adopted the euro, as seen from the mean value of 0.496 for the *EURO* indicator.

[26] While including time-varying macroeconomic factors in addition to fixed effects aids in identifying the euro effect, a concern is that they might be overcorrecting, as euro adoption reduces GDP correlations (Frankel and Rose, 1998).

The next set of controls is defined at the industry-country-pair level. The mean cash flow comparability (*CFOCOMP*) is -13.207 which indicates an average difference in cash flows to the tune of 13.2%, of equity. The average industry pair has 131 firms in both industries combined, with the minimum at 25 and the maximum at 547. The difference in the percentage of zero return days between the two industries is around 14%, as seen by the mean *ZRET_DIFF* of 0.139. The final set presents macroeconomic controls defined at the country-pair level – risk-free rate, the level and growth in GDP, financial market development and inflation. For observations that are in the same country, these values take the value of zero (as depicted by the minimum). Overall, the sample depicts rich heterogeneity with respect to economic characteristics.

4. Results

4.1. Graphical evidence

We start our results section with a graph. We plot the yearly average values of accounting comparability (orthogonalized with respect to the controls, but not industry-fixed effects so as to identify euro and non-euro effects, nor year fixed effects so as to allow for non-zero time-series means) for euro and non-euro country-pairs in our sample. The x-axis in Figure 1 represents the year and the y-axis plots the average value of *ACCTCOMP* with the solid line representing the euro countries and the dashed line indicating the non-euro countries.

The graph clearly illustrates three points – first, euro countries and non-euro countries depict a similar trend of decreasing accounting comparability and in fact are virtually indistinguishable in the pre-euro adoption period until 1998. Second, in the post-adoption period starting from 1999 and onwards, non-euro countries continue along their decreasing trend, while euro countries depict a sharp reversal in this trend. The trend for euro adopters becomes flat in

1999 and starts increasing from 2000 onwards – consistent with hypothesis *H1*.[27] The difference between the two groups is what our DiD estimation will pick up, and the graphical evidence depicts this effect. Third, moving ahead in time to 2005, we find a gradual increase in accounting comparability for euro countries from 2005 onwards. While non-euro countries experience a sharp increase in 2005, this effect is reversed the subsequent year. Overall, the graphical evidence suggests increased accounting comparability after euro adoption and a complementary effect between euro membership and IFRS adoption.

4.2. Multivariate evidence

4.2.1. Overall results

Table 3 presents multivariate regression results. We estimate a baseline model on the full sample without industry-country-pair fixed effects. As expected, the coefficients on most of the difference variables are negative, where a larger difference in the underlying variable correlates with lower accounting comparability. The only exceptions are *TURNOVER_DIFF* which comes in positive but insignificant, and *INFL_DIFF* which is positive and significant. Not surprisingly, there is a positive correlation between accounting comparability and cash flow comparability.

Model (2) presents results of eq. (3) augmented with industry-country-pair fixed effects but restricts the sample around euro adoption from 1994 to 2004. Model (3) presents results around IFRS adoption from 2002 to 2007. Finally, Model (4) and Model (5) present the full-sample results with the former including year fixed effects and the latter including year and industry-country-pair effects.

[27] The graph also indicates a temporary drop in accounting comparability for both groups in 2003, with a subsequent reversal in the next two years. We conjecture that this drop is most likely attributable to the dot-com bust. We note, however, that such disparity will be mitigated in our regression analysis due to the inclusion of year fixed effects. We also verify that our inferences are robust to deleting the year 2003.

The overall results paint a clear picture – there is a differential change in accounting comparability around euro adoption for euro adopters as compared to non-euro adopters, as seen by the positive (1.641) and significant coefficient (*p*-value of 0.005) on *EURO*YR99_04* in Model (2). Accounting comparability for non-euro adopters actually decreased during this period, as seen by the negative (-2.509) and significant coefficient (*p*-value <0.001) on *YR99_04*, while the euro adoption attenuating this drop for the adopters (i.e., decreasing only by 0.85 (2.509-1.641)).[28] The coefficient of 1.641 on *EURO*YR99_04* corresponds to a 20% increase in accounting comparability, given a pre-adoption mean of -8.01 for euro adopters.

Model (3) presents results of the effect of IFRS adoption on accounting comparability and the role of the euro in this context. The coefficient on *YR05_07* is insignificant (*p*-value = 0.298) while that on *EURO*YR05_07* is positive (coefficient = 1.661) and statistically significant (*p*-value = 0.014). This indicates that while there is no change in accounting comparability around IFRS adoption for non-euro countries, euro countries experience an increase. We interpret this evidence as suggesting that reporting incentives and accounting standards act as complements, in that, the convergence in accounting standards brings about a larger convergence in reported outcomes when countries have similar reporting incentives. We verify that the euro is not merely capturing institutional variables shown to be related to the IFRS effect by controlling for ex-ante differences in accounting standards using the Bae et al. (2008) measure (*ACCSTD*YR05_07*), the ex-ante level of enforcement using the rule of law index of Kaufman et al. (2007) (*RULELAW*YR05_07*) and concurrent changes in enforcement based on Christensen et al. (2013) (Δ*ENF*YR05_07*).[29]

[28] The decrease in accounting comparability for non-euro countries is consistent with Micco et al., (2003) who report a decrease in cross-border flows for non-euro adopters during this period and attribute it to the global economic slowdown. They also note that the adoption of the euro mitigated this slowdown in cross-border flows.

[29] Our results are robust to controlling for two-way effects – i.e., strong rule of law *and* greater accounting distance.

Model (4) presents the euro and adoption events in a single specification and shows that our inferences are unaltered. The coefficients on *EURO*YR99_04* and *EURO*YR05_07* remain positive and significant, indicating a differential trend in accounting comparability for euro members after euro adoption as well as IFRS adoption. Non-euro countries continue to depict no change in accounting comparability around IFRS adoption, as seen by the fact that the coefficient on *YR05_07* is not significantly different from *YR99_04* (*p*. value of 0.510).[30] Finally, our results are robust to the inclusion of year fixed effects, as seen by the positive and significant coefficients on *EURO*YR99_04* and *EURO*YR05_07* in Model (5). Further, the coefficient on the latter (2.783) is statistically larger than that on the former (1.549) with a *p*. value of 0.027. Overall, our results are consistent with the convergence in reporting incentives influencing financial reporting convergence and reporting incentives playing a complementary role with accounting standards.

4.2.2. Role of capital market integration and product market integration

In this section, we explore cross-sectional variation in the euro adoption effect to verify whether this effect is driven by capital-market incentives stemming from cross-border financing or merely from the integration in underlying fundamentals brought about by greater product market integration. To do so, we split our sample of euro adopters based on changes in the extent of bilateral Foreign Portfolio Investment (*FPI*) between the pre and post euro adoption periods. We use *FPI* as our measure of cross-border financing as it represents cross-border transactions and positions involving debt or equity securities, other than those included in Foreign Direct

[30] We note that the sample period in Model (3) is from 2002 to 2007. Thus, this analysis compares comparability around IFRS and ignores the comparability levels in the pre-euro period. In Model (4) the sample period is extended such that the baseline now becomes the pre-euro period of 1994 to 1998.

Investment (*FDI*).[31] We calculate the change in bilateral *FPI* flows between the pre and post periods for each euro-country-pair using data from the IMF Coordinated Portfolio Investment Survey (CPIS). We decompose the *EURO* indicator into *EURO_HI_FPI* and *EURO_LO_FPI* based on increases (vs. non-increases) in *FPI* around euro adoption and estimate our full-period, fixed-effects estimation across these subsamples. Using the full sample helps us examine the role capital market integration not only around euro adoption but also around IFRS adoption.

Similarly, we follow the macroeconomics literature (Rose, 2000; Micco et al., 2003) and use bilateral trade (*TRADE*) defined as total imports and exports between the country-pair as our measure of product market integration. We obtain bilateral trade data from the Direction of Trade Statistics (DOTS) database of the IMF and calculate the change in *TRADE* between the pre and post periods for each euro-country-pair. Similar to *FPI*, we decompose the *EURO* indicator into *EURO_HI_TRD* and *EURO_LO_TRD* based on increases in *TRADE* around euro adoption.

Our third and final split uses change in Foreign Direct Investment (*FDI*) as a counterfactual to Foreign Portfolio Investment (*FPI*). Since *FDI* captures financing by investors who acquire a large ownership stake in the firm and are therefore privy to private information, we reason that changes in this form of foreign ownership would not be related to changes in the demand for financial reporting, and should serve as a close counterfactual to our *FPI* results.

Panel A of Table 4 begins with descriptive statistics for the 7,834 euro country-pairs with available data. Consistent with the euro integrating capital markets, the average change in *FPI* around euro adoption (Δ*FPI*) is 1.260, which translates to an increase of 126%. Further, the euro also resulted in greater product market integration to the tune of 6.8% as seen by the mean value

[31] *FDI*, on the other hand, represents cross border investment that affords the lender control or a significant degree of influence over the borrower, based on 10% of the voting power as the cutoff to determine control and influence.

of Δ*TRADE* of 0.068. We also report a significant increase of 63.4% in *FDI* flows after euro adoption consistent with a general increase in cross-border flow across countries over this period.

Panel B presents results of the cross-sectional splits. Model (1) splits the *EURO* indicator into country-pairs with high and low *FPI* (*EURO_HI_FPI* and *EURO_LO_FPI*). Model (2) partitions the sample based on trade (*EURO_HI_TRD* and *EURO_LO_TRD*) and Model (3) splits the sample based on *FDI* (*EURO_HI_FDI* and *EURO_LO_FDI*). Each of these indicators is interacted with *YR99_04* and *YR05_07* to gauge their effects on accounting comparability around euro adoption and IFRS adoption, respectively.

Turning to the *FPI* splits in Model (1), the coefficient on *EURO_HI_FPI*YR99_04* is positive and significant (coefficient of 2.141 and *p*-value <0.001) while that on *EURO_LO_FPI*YR99_04* is positive but insignificant (coefficient of 0.705 and *p*-value of 0.385). These coefficients are significantly different from each other with a *p*. value of 0.078 and indicate that euro adoption in 1999 increased accounting comparability only in countries experiencing increases in *FPI* inflows. This result is consistent with the role of financing-based reporting incentives proposed by Ball et al. (2000) where the shift in financing to cross-border financiers (who are generally not privy to private information and rely on publicly available financial reporting information) drives the increases in accounting comparability around euro adoption. Further, consistent with our complementarity inference, the coefficient on *EURO_HI_FPI*YR05_07* is positive and significant while that on *EURO_LO_FPI*YR05_07* is insignificant (with these coefficients being significantly different from each other). This suggests that the increase in accounting comparability around IFRS adoption is concentrated in country-pairs that experienced increases in *FPI* inflows around euro adoption.

Turning to the results in Model (2), there is some evidence that product market integration plays a role in driving accounting comparability around euro adoption, but not around IFRS adoption. In particular, the coefficient on *EURO_HI_TRD*YR99_04* is 2.580 and larger than that on *EURO_LO_TRD*YR99_04* which is 1.513 (although both coefficients are statistically different from zero). However, the increase in accounting comparability around IFRS adoption is virtually indistinguishable between the *EURO_HI_TRD* and *EURO_LO_TRD* groups (coefficient on the interaction of *YR05_07* with the former is 3.666 while that with the latter is 3.451). This suggests that product market integration is unlikely to be driving our complementarity inference around the adoption of IFRS.

More poignant are results in Model (3) based on *FDI* splits. In contrast to the results for *FPI*, we find increases in accounting comparability around euro adoption as well as IFRS adoption for both sets of country-pairs – those with increases in *FDI* as well as those without. The increases are in fact more pronounced for the latter category. These results suggest that our inferences are unique to cross-border financing from arms-length investors are not due to the overall integration in world capital markets.[32]

We summarize these results as follows – the effect of euro adoption on accounting comparability appears to be driven by increases in arms-length financing, as proxied by foreign portfolio financing. Further, consistent with the complementarity between accounting standards and reporting incentives, increase in accounting comparability are observed only in country-pairs with increases in foreign portfolio financing around the euro adoption

[32] In untabulated tests, we re-run our *FPI* analyses after orthogonalizing it with respect to bilateral trade and/or *FDI*. Our results continue to depict an increase in accounting comparability around both euro adoption and IFRS adoption only for high-*FPI* countries but not for low-*FPI* countries.

5. Robustness tests

5.1. Information transfer as an alternative measure

In this section we assess the sensitivity of our results to an alternative measure of comparability, namely the degree of information transfer between two firms (Wang, 2014). Our analysis closely follows the implementation in Wang (2014). [33] The dataset contains pair-wise transnational information transfer for a sample of European firms during the sample period of January 1, 2001 to December 31, 2008. Using Fama-French 30 industry groups, we first identify the announcing firm (Firm 1) as the three largest firms based on market capitalization in a given industry-year. Non-announcing firms (Firm 2) are firms other than the announcing firm in the same industry-year but domiciled in a different country.[34] Consistent with our analyses above we further require that both announcing and non-announcing firms be a member of the European union and that the firm has not voluntarily adopted IFRS before the mandate. The final sample consists of 5,266 firm-pair observations from 19 European countries (12 euro countries and 7 non-euro countries).[35] We then estimate the following model:

$$CAR_2 = \alpha_0 + \alpha_1 YR05\_07 + \gamma_1 UE_1 + \gamma_2 YR05\_07 * UE_1 + \sum \beta_k Ctrls_k + \varepsilon_2 \quad (5)$$

where CAR_2 is the cumulative abnormal return for firm 2 during the three-day window around the earnings announcement of firm 1, UE_1 is the unexpected earnings released by firm 1, *YR05_07* is an indicator coded as '1' for the years subsequent to the mandatory adoption of IFRS (2005 to 2007), and *Ctrls* is a set of control variables following Wang (2014). The coefficient of interest is

[33] We are grateful to Clare Wang for providing the data for this test. See Section 4.2 in her paper for a detailed description of the methodology.

[34] To maximize the power of her tests, Wang (2014) also requires non-announcing firms to have non-zero foreign sales and that their earnings releases do not fall within two days of the announcing firm earnings announcement date.

[35] The 12 Euro countries are Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain. The seven non-euro countries are Czech Republic, Denmark, Norway, Poland, Sweden, Switzerland, and the United Kingdom. We note that the sample of countries for this test is larger than the sample in our main tests. We obtain similar results if we restrict this analysis to the same countries included in our earlier analyses.

γ_2 which measures the change in information transfer subsequent to the adoption of IFRS. We then test our Hypothesis 2 by partitioning our sample between firm-pairs within the euro vs. non-euro pairs.

Table 6 presents these results. Model 1 is analogous to the regression in Table 3 Model 3 in Wang (2014). We find a positive but insignificant coefficient on UE1 consistent with a muted transnational information transfer in our sample. In model 2, we include an interaction term for the period subsequent to the adopyion of IFRS. The positive and significant coefficient of 0.028 is consistent with the main findings in Wang (2014) and show that IFRS is associated with a significant increase in information transfer subsequent to the adoption of IFRS. In models 3 and 4 we partition our sample into firm-pairs within the euro vs. non-euro pairs, respectively. We find that the change in comparability for the euro sample is about twice the size of the change in comparability for non-euro pairs (coefficients on the interaction term of 0.044 vs. 0.023). However, using seemingly unrelated regressions, we cannot reject the null that these coefficients are statistically different (p-value of 0.28). Overall these results are consistent in direction with our previous findings but are statistically insignificant.

5.2. Time-trends around euro adoption

A potential concern, given the global divergence in bilateral trade around euro adoption, is that our results are merely reflecting ongoing time trends that might have started prior to euro adoption. To mitigate this concern, we follow Bertrand and Mullainathan (2003) and examine the dynamic effect of euro adoption. We create indicator variables to denote the two years immediately preceding euro adoption (*YR97* and *YR98*) and interact it with *EURO*.

Table 7 presents these results. The coefficients on *EURO*YR97* and *EURO*YR98* are both insignificant indicating no differential trend in accounting comparability between euro adopters and non-adopters in the years leading up to euro adoption. The coefficient on EURO*YR99_04 continues to remain positive and significant. These results better identify the effect of euro adoption on accounting comparability and help disentangle the euro adoption effect from a possible time-trend effect.[36]

6. Conclusion

We study the interaction between reporting incentives and accounting standards and ask whether convergence in incentives and convergence in accounting standards are substitutes or complements. Using the common euro currency introduced in the EU in 1999 to capture convergence in incentives and the subsequent adoption of IFRS by these countries in 2005 as the convergence in accounting standards, we find evidence of complementarity. Specifically, financial reporting convergence increases after euro adoption and is driven by cross-border, arms-length financing – confirming that the convergence in incentives results in a convergence in reported outcomes. Further, we find an increase in financial reporting convergence around IFRS adoption in euro countries, and this increase being concentrated in country-pairs with an increase in cross-border financing around the euro adoption. This indicates that the convergence in accounting standards converges reported outcomes only in countries where (financing-based) reporting incentives have also converged.

[36] In unreported results, we examine whether our results are due to other country-level changes. To do this, we use insider trading enforcement to capture overall changes in enforcement (following Hail et al., 2013; Jayaraman, 2012). We define *ITENF* to denote country pairs where both countries enforced insider trading laws for the first time during our sample period and interact it with *YR99_04*. The coefficient on *EURO*YR99_04* remains positive and significant, while that on *ITENF*YR99_04* is negative and significant, indicating that inside trading enforcement reduces accounting comparability with other countries in the sample.

Our paper contributes to the international accounting literature. In contrast to prior studies that examine the role of incentives *versus* standards, we document the interaction between the two and find that both incentives *and* standards matter and do so in a mutually reinforcing way. An implication of our results is that efforts to increase accounting comparability amongst countries are likely to be more successful if adopters are economically more integrated. Conversely, declines in economic integration (as seen by the recent euro zone crisis) could lead to deterioration in accounting comparability, despite the harmonization of accounting standards over the past several years. Our findings are relevant to academics, regulators, and standard setters as countries such as the U.S. contemplate switching to IFRS in the coming years.

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Table 1: List of euro adopters and non-adopters within the EU

Panel A: List of countries

Data on euro adopters and non-adopters are from Table 1 of Bekaert et al. (2013). *ACCSTD* denotes the average distance between local GAAP and IFRS, as estimated by Bae et al. (2008).*RULELAW* denotes the rule of law index of Kaufmann et al. (2007). Δ*ENF* is an indicator variable that takes the value of 1 if the country has undertaken changes in enforcement around IFRS adoption as defined in Christensen et al. (2013).

Countries	**Adoption year**	**Obs.**	***ACCSTD***	***RULELAW***	**Δ*ENF***
Adopters:					
Austria	1999	1,187	12	1.543	0
Belgium	1999	2,079	13	1.288	0
Finland	1999	2,258	15	1.862	1
France	1999	3,519	12	1.216	0
Germany	1999	3,212	11	1.511	1
Greece	2001	2,070	17	0.998	0
Ireland	1999	2,014	1	1.619	0
Italy	1999	1,711	12	1.051	0
Netherlands	1999	2,655	4	1.744	1
Portugal	1999	1,273	13	1.226	0
Spain	1999	2,174	16	1.312	0
Total/Avg.		**24,152**	**11**	**1.397**	
Non-adopters:					
Denmark	–	1,708	11	1.764	0
Poland	–	1,391	12	0.717	0
Sweden	–	2,789	10	1.620	0
United Kingdom	–	3,775	1	1.666	1
Total/Avg.		**9,663**	**9**	**1.442**	
Entire sample		**33,815**			

Panel B: Breakdown by euro and non-euro

NonEuro:NonEuro (Euro:Euro) denotes obs. where neither (both) country is part of the euro. Euro:NonEuro denotes obs. where one of the two countries is part of the euro. *EURO* is set to 1 for Euro:Euro obs. and 0 for all other obs..

	Obs.
NonEuro : NonEuro	2,731
Euro : NonEuro	14,312
Euro : Euro	16,772
Total	**33,815**

Table 2: Descriptive statistics

ACCTCOMP represents accounting comparability as defined in De Franco et al. (2011). *EURO* takes the value of 1 when both countries in the industry-pair adopt the euro; 0 when one or none of the countries adopts the euro. *CFOCOMP* denotes cash flow comparability and is defined similar to *ACCTCOMP* except that it uses cash flows rather than earnings. *FIRMS* denotes the total number of firms in both industries of the industry-pair. *ZRET_DIFF* captures the difference in the percentage of zero return days. *EP_DIFF* and *BM_DIFF* denote differences in the earnings-to-price and book-to-market ratios respectively. The country-pair level variables denote the differences in the risk-free rate (*RF_DIFF*), level of GDP (*GDP_DIFF*), growth in GDP (*GDPGROW_DIFF*), equity market capitalization scaled by GDP (*MKTCAP_DIFF*), stock turnover of listed firms scaled by GDP (*TURNOVER_DIFF*), and annual inflation (*INFL_DIFF*).

	Obs.	**Mean**	**Median**	**S.D.**	**Min**	**Max**
ACCTCOMP	33,815	-10.334	-7.285	10.355	-163.793	-0.000
EURO	33,815	0.496	0.000	0.500	0.000	1.000
Industry-country-pair controls:						
CFOCOMP	33,815	-13.207	-10.085	11.825	-62.461	-0.190
FIRMS	33,815	131.320	87.000	112.447	25.000	547.000
ZRET_DIFF	33,815	0.139	0.117	0.105	0.002	0.442
EP_DIFF	33,815	0.051	0.036	0.051	0.001	0.314
BM_DIFF	33,815	0.480	0.324	0.474	0.005	2.350
Country-pair controls:						
RF_DIFF	33,815	0.458	0.157	0.921	0.000	11.388
GDP_DIFF	33,815	1.194	1.076	0.884	0.000	3.274
GDPGROW_DIFF	33,815	1.469	1.109	1.392	0.000	8.739
MKTCAP_DIFF	33,815	0.562	0.466	0.462	0.000	3.355
TURNOVER_DIFF	33,815	0.556	0.415	0.475	0.000	2.351
INFL_DIFF	33,815	1.366	1.046	1.837	0.000	39.541

Table 3: The effect of euro adoption and IFRS adoption on accounting comparability

The dependent variable is accounting comparability (*ACCTCOMP*). *EURO* takes the value of 1 when both countries in the industry-pair adopt the euro; 0 when one or none of the countries adopts the euro. *YR99_04* denotes the years 1999 to 2004 and represents the post-euro period. Similarly, *YR05_07* denotes the years 2005 to 2007 and represents the post-IFRS period. Detailed variable definitions are in Table 2. All specifications except Model (1) include industry-country-pair fixed effects and robust standard errors clustered by country-pair. In addition, model (5) also includes year fixed effects.

	Base model (1)		Euro adoption (2)		IFRS adoption (3)		Entire sample (4)		Entire sample (5)	
	Coeff.	*p*-val.	Coeff.	*p*-val.	Coeff.	*p*-val.	Coeff.	*p*-val.	Coeff.	*p*-val.
YR99_04 **(1)**			**-2.509**	**<0.001**			**-2.952**	**<0.001**	**–**	**–**
EURO*YR99_04 **(2)**			**1.641**	**0.005**			**1.072**	**0.044**	**1.549**	**0.002**
YR05_07 **(3)**					**0.868**	**0.298**	**-3.383**	**<0.001**	**–**	**–**
EURO*YR05_07 **(4)**					**1.661**	**0.014**	**2.045**	**0.001**	**2.783**	**<0.001**
*ACCSTD*YR05_07*					0.056	0.460	0.079	0.194	0.084	0.161
*RULELAW*YR05_07*					0.938	0.528	2.504	0.033	1.042	0.376
*ΔENF*YR05_07*					2.111	0.006	1.746	0.004	1.476	0.018
CFOCOMP	0.120	<0.001	0.102	<0.001	0.077	<0.001	0.110	<0.001	0.070	<0.001
FIRMS	0.004	<0.001	-0.015	<0.001	-0.022	0.002	-0.007	<0.001	0.004	0.122
ZRET_DIFF	-3.740	0.001	0.749	0.654	9.710	0.006	3.671	0.015	1.908	0.175
RF_DIFF	-0.528	<0.001	0.374	0.012	-2.194	0.024	0.323	0.016	0.344	0.011
EP_DIFF	-0.409	<0.001	-0.211	<0.001	-0.276	<0.001	-0.224	<0.001	-0.311	<0.001
BM_DIFF	-4.966	<0.001	-3.922	<0.001	-4.079	<0.001	-4.423	<0.001	-4.392	<0.001
LEV_DIFF	-0.132	<0.001	-0.075	0.027	0.064	0.077	-0.091	0.001	-0.069	0.007
TA_DIFF	-0.013	0.877	-1.245	<0.001	-1.696	<0.001	-1.020	<0.001	-0.887	<0.001
GDP_DIFF	-0.025	0.148	0.489	0.078	-0.739	0.215	-0.183	0.316	-0.703	<0.001
GDPGROW_DIFF	-0.303	0.001	-0.023	0.863	-0.209	0.239	0.033	0.755	0.217	0.050
MKTCAP_DIFF	-0.287	0.353	0.752	0.262	-3.069	0.015	0.104	0.847	-0.927	0.076
TURNOVER_DIFF	0.269	0.334	0.211	0.562	1.085	0.272	0.379	0.258	-0.515	0.109
INFL_DIFF	0.168	<0.001	0.128	0.007	0.190	0.325	0.132	0.003	0.116	0.011
p. value of (1) = (3)							0.510			
p. value of (2) = (4)							0.091		0.027	
Ind-ctry-pair effects	No		Yes		Yes		Yes		Yes	
Year effects	Yes		No		No		No		Yes	
Adj. R^2	0.23		0.30		0.31		0.28		0.32	
Obs.	33,815		22,511		19,817		33,815		33,815	

Table 4: Role of capital market integration (*FPI*)

This panel presents descriptive statistics for the sub-sample of euro-country pairs with available data. Δ*FPI* indicates the percentage change in Foreign Portfolio Investment between the pre and post euro adoption periods. Similarly, Δ*TRADE* and Δ*FDI* denote the percentage change in bilateral trade (defined as the sum of exports and imports) and in Foreign Direct Investment respectively. The *FPI* (*FDI*) data are obtained from the CPIS (CDIS) database while *TRADE* is obtained from the DOTS database.

Panel A: Descriptive statistics (*EURO* pairs)

	Obs.	**Mean**	**Median**	**S.D.**	**Min**	**Max**
Δ*FPI*	7,834	1.260	0.891	1.353	-0.347	7.333
Δ*TRADE*	7,834	0.068	-0.003	0.338	-0.245	1.965
Δ*FDI*	7,834	0.634	0.517	0.543	-0.966	1.829

Panel B: Results

The dependent variable is accounting comparability (*ACCTCOMP*) defined as per De Franco et al. (2011). *EURO* takes the value of 1 when both countries in the industry-pair adopt the euro and 0 when one or none of the countries does. *YR99_04* denotes the years 1999 to 2004 and represents the post-euro adoption period. Similarly, *YR05_07* denotes the years 2005 to 2007 and represents the post-IFRS adoption period. Model (1) splits the *EURO* indicator into country-pairs with an increase in *FPI* (*EURO_HI_FPI*) between the pre and post euro adoption periods and those without such an increase (*EURO_LO_FPI*). Similarly, Model (2) splits the *EURO* indicator into country-pairs with an increase in bilateral trade (*EURO_HI_TRD*) versus those without an increase (*EURO_LO_TRD*). Model (3) performs a similar split of the *EURO* indicator based on an increase (*EURO_HI_FDI*) versus non-increase (*EURO_LO_FDI*) in *FDI*. Detailed variable definitions are in Table 2. All specifications include year and industry-country-pair fixed effects as well as robust standard errors clustered by country-pair.

		Splitting into *HI* and *LO FPI*		Splitting into *HI* and *LO TRADE*		Splitting into *HI* and *LO FDI*	
		Model (1)		Model (2)		Model (3)	
		Coeff.	*p*-val.	Coeff.	*p*-val.	Coeff.	*p*-val.
EURO_HI_FPI*YR99_04	**(1)**	**2.141**	**<0.001**				
EURO_LO_FPI*YR99_04	**(2)**	**0.705**	**0.385**				
EURO_HI_FPI*YR05_07	**(3)**	**3.824**	**<0.001**				
EURO_LO_FPI*YR05_07	**(4)**	**0.474**	**0.642**				
EURO_HI_TRD*YR99_04	**(5)**			**2.580**	**<0.001**		
EURO_LO_TRD*YR99_04	**(6)**			**1.513**	**0.011**		
EURO_HI_TRD*YR05_07	**(7)**			**3.666**	**<0.001**		
EURO_LO_TRD*YR05_07	**(8)**			**3.451**	**<0.001**		
EURO_HI_FDI*YR99_04	**(9)**					**1.822**	**0.001**
EURO_LO_FDI *YR99_04	**(10)**					**3.037**	**<0.001**
EURO_HI_FDI *YR05_07	**(11)**					**3.138**	**<0.001**
EURO_LO_FDI *YR05_07	**(12)**					**5.599**	**<0.001**
p. value of (1=2); (5=6); (9=10)		0.078		0.069		0.043	
p. value of (3=4); (7=8); (11=12)		0.001		0.772		0.004	
p. value of (1=3); (5=7); (9=11)		0.016		0.133		0.051	
Controls		Yes		Yes		Yes	
Ind-ctry-pair effects		Yes		Yes		Yes	
Year effects		Yes		Yes		Yes	
Adj. R^2		0.36		0.36		0.36	
Obs.		17,291		17,291		17,291	

Table 6: Information transfer as an alternative measure

The table reports the effect of IFRS adoption on information transfer conditional on the adoption of the Euro. Models 1 and 2 test the information transfer effects for the full sample. Model 3 tests the information transfer effects for the sample of firm-pairs within the euro countries. Model 4 repeats the analysis for the sample of non-euro firm pairs. The table reports OLS coefficient estimates and p-values clustered by country-pair. The model includes additional interaction variables, country-, industry-, year-, and month-fixed effects in the regression, but do not report the coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

	Entire sample (1)		Entire sample (2)		*EURO*=1 (3)		*EURO*=0 (4)	
	Coeff.	*p*-val.	Coeff.	*p*-val.	Coeff.	*p*-val.	Coeff.	*p*-val.
UE_1	0.004	0.347	-0.001	0.844	0.002	0.881	-0.001	0.714
UE_1*POST			**0.028**	**0.004**	**0.044**	**0.015**	**0.023**	**0.017**
POST			-3.669	0.211	-7.804	0.252	-3.620	0.241
CAR_1	0.055	0.076	0.052	0.100	-0.025	0.742	0.074	0.049
$LOSS_1$	1.368	0.115	1.139	0.161	3.780	0.010	-0.476	0.585
$SIZE_1$	-0.204	0.482	-0.237	0.401	-0.496	0.543	-0.280	0.400
$ANNLAG_1$	-0.016	0.443	-0.010	0.644	0.026	0.598	-0.027	0.149
$SIZE_2$	0.218	0.006	0.223	0.006	0.270	0.042	0.136	0.085
$NUMEST_2$	-0.012	0.509	-0.011	0.569	0.051	0.141	-0.017	0.501
LEV_2	-0.852	0.166	-0.887	0.150	-0.499	0.628	-0.880	0.269
BM_2	0.051	0.767	0.043	0.806	0.653	0.163	-0.214	0.283
CORR	-2.075	0.057	-2.173	0.048	-4.299	0.043	-0.828	0.211
FYOVLP	0.000	0.991	0.000	0.979	0.010	0.130	-0.002	0.802
TRADE	-2.687	0.620	-2.513	0.651	3.246	0.550	0.996	0.821
Constant	2.049	0.616	2.322	0.580	-2.399	0.804	4.877	0.364
Observations	5,266		5,266		1,710		3,556	
*UE*POST EURO*=1 and *EURO*=0					0.28 (p-value)			
R-squared	0.0246		0.0266		0.0643		0.0288	
ctry ind year month FEs	YES		YES		YES		YES	
POST x Controls	YES		YES		YES		YES	

Table 7: Dynamic effects around euro adoption

The dependent variable is accounting comparability (*ACCTCOMP*) defined as per De Franco et al. (2011). *EURO* takes the value of 1 when both countries in the industry-pair adopt the euro; 0 when one or none of the countries adopts the euro. *YR99_04* denotes the years 1999 to 2004 and represents the post-euro adoption period. *YR97* and *YR98* denote the two years preceding the year of euro adoption. All other variables are as defined in Table 2. All specifications include year and industry-country-pair fixed effects as well as robust standard errors clustered by country-pair.

	Model (1)	
	Coeff.	*t*-stat
YR97	1.901	<0.001
YR98	-0.743	0.229
YR99_04	-2.290	<0.001
EURO*YR97	**0.216**	**0.749**
EURO*YR98	**-0.092**	**0.917**
EURO*YR99_04	**1.793**	**0.008**
CFOCOMP	0.102	<0.001
FIRMS	-0.015	<0.001
ZRET_DIFF	0.780	0.630
RF_DIFF	0.359	0.015
EP_DIFF	-0.204	<0.001
BM_DIFF	-3.835	<0.001
LEV_DIFF	-0.068	0.047
TA_DIFF	-1.286	<0.001
GDP_DIFF	0.506	0.067
GDPGROW_DIFF	-0.100	0.455
MKTCAP_DIFF	0.689	0.313
TURNOVER_DIFF	0.193	0.594
INFL_DIFF	0.147	0.003
Ind-ctry-pair effects	Yes	
Year effects	Yes	
Adj. R^2	0.30	
Obs.	22,511	

Figure 1: Accounting comparability by euro membership over the sample period

The x-axis represents the years of the sample and the y-axis plots the average value of *ACCTCOMP* as defined in DeFranco et al. (2011). The solid line represents the euro countries (*Euro*) when both countries in the industry-pair adopted the euro and the dashed line indicates the non-euro countries (*Non euro*) when one or none of the countries adopted the euro.