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Evolution of earnings-to-price ratios: International evidence

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ABSTRACT

In this paper, we examine the pattern of historical evolution of international earnings-to-price ratios for a sample of 17 developed markets over the period 1980–2008. Using a measure of distance between earnings-to-price ratios of international stock markets, we find that earnings-to-price ratios of 17 markets have significantly converged toward each other during the sample period. Specifically, the average distance for our sample markets has decreased by about 70% during this period. Our analysis indicates that the convergence in earnings-to-price ratios reflects increasing capital market integration rather than more alignment in industrial structure among these markets.

1. Introduction

As international capital markets are becoming more integrated, stock markets may behave in a more concerted manner. In fact, previous studies provide evidence that the international stock market correlation has increased over time with deepening international market integration (Longin and Solnik (1995), Solnik and Roulet (2000)). It is also documented that both returns and risks of international stock markets have converged significantly toward each other in recent years (Eun and Lee (2010)).

As international stock markets tend to move together and show similar characteristics, the valuation of international markets may exhibit a systematic behavior. Indeed, Bekaert, Harvey, Lundblad, and Siegel (2007) argue that price-to-earnings ratio for an industry should be the same across countries if growth opportunities are priced in internationally integrated markets. In this vein, Bekaert, Harvey, Lundblad, and Siegel (2009) use the weighted sum of the absolute differences between global and local earnings-to-price ratios[1] for industries as a measure of segmentation for a market. They show that their measure of segmentation decreased over time for their sample markets, which implies increasing market integration.

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[1] Earnings-to-price ratio is computed as the reciprocal of price-to-earnings ratio.

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However, even in internationally integrated markets, the observed price-earnings-ratios across markets may differ from each other due to the differences in the industrial structures. As Bekaert et al. (2007) point out, an integrated country may have higher price-to-earnings ratio than other countries when the country has more weights in industries with higher growth opportunities than other countries. Therefore, international price-to-earnings ratios may not necessarily converge if the industrial structures across markets have been maintained or become even more dissimilar over time.

In this paper, we examine whether or not there has been a trend in the valuation of international stock markets. For this purpose, we use earnings-to-price ratio,[2] which measures how much investors are willing to pay per dollar of current earnings, because the ratio is used for other studies and also widely used as a valuation tool for stocks relative to other stocks in terms of growth opportunities and risk.

Specifically, we study the evolution of earnings-to-price ratios for 17 developed markets during the period 1980–2008. We examine whether or not international earnings-to-price ratios have converged toward each other during this period and if they have converged, investigate whether the convergence can be explained by either increasing market integration among these markets or more alignment in their industrial structure.

To study these issues, we introduce a distance measure in order to quantify how much a market differs from other markets in terms of its earnings-to-price ratio. Our focus here is on whether there is a statistically significant downward time-trend in this distance measure, which would then suggest a convergence in earnings-to-price ratios among international stock markets.

The key findings of our paper can be summarized as follows. First, earnings-to-price ratios for our sample of 17 markets have, indeed, converged significantly toward each other during the period 1980–2008. More precisely, the average earnings-to-price distance among our sample markets has decreased by about 70% during the period.

Second, the convergence in earnings-to-price ratios reflects increasing capital market integration rather than more alignment in industrial structure. For this analysis, as a measure of international market integration, we use the adjusted R^2 of a global multi-factor model suggested by Pukthuanthong and Roll (2009). In addition, to measure how much industrial structure of a country differs from those of other countries, we use the sum of the absolute differences between the country-specific industry weights and world industry weights suggested by Bekaert et al. (2007).

It is noted that there is a strand of literature focusing on accounting aspects of price-to-earnings ratio. In light of this literature, we discuss whether the observed convergence in earnings-to-price ratios may result from the convergence in international accounting practices. We find that most of the convergence in earnings-to-price ratios for our sample markets occurred in the 1980s, when there were still substantial differences in accounting practices among them. Thus, our result is not consistent with a hypothesis that harmonization in accounting practices is the main driver of the convergence in earnings-to-price ratios.

The rest of the paper is organized as follows. Section 2 presents our hypotheses and Section 3 describes the data as well as the econometric methodology. Section 4 provides the test results of the convergence among our sample of stock markets. Section 5 discusses the drivers of convergence in the earnings-to-price ratios. Section 6 provides discussions on harmonization in international accounting and the convergence in the earnings-to-price ratios. Section 7 concludes with a summary of our findings.

2. Hypotheses

The objectives of this paper are (i) to study the evolution of market-level earnings-to-price ratios over time and across a wide range of countries, and (ii) to examine what explains the evolution of the ratios. We develop our hypotheses around two questions that guide our analyses.

The first question is *whether* the earnings-to-price ratio at the country-wide index level has had a time-trend toward the international average. The reason we expect a time-trend in the earnings-to-price ratio is the following. Over the past few decades, we have witnessed some important changes in the world financial markets. Three such changes are of interest here: 1) integration of the capital markets, 2) increasing similarity in industrial structures across countries, and 3) a move towards international harmonization of accounting practices.

[2] Since the magnitude of price-to-earnings ratio is far larger than the corresponding earnings-to-price ratio, we use earnings-to-price ratio rather than price-to-earnings ratio in this study to reduce the impact of outliers on our analysis.