

ARBİTRAJ FİYATLAMA TEORİSİ'NDE KULLANILAN ÜLKE DÜZEYİNDE VE İŞLETME DÜZEYİNDE FAKTÖRLERİN GÖZDEN GEÇİRİLMESİ VE GELİŞMEKTE OLAN ÜLKELER İÇİN BÜYÜK VERİ SETİ İLE HIZLI BİR TEST

Dr. Öğr. Üyesi Doğuş Emin

Ankara Sosyal Bilimler Üniversitesi
dogus.emin@asbu.edu.tr

ÖZET

Bu çalışmanın öncelikli amacı Arbitraj Fiyatlama Teorisi'nde kullanılan ülke düzeyinde ve işletme düzeyinde şeklinde iki gruba ayrılmış risk faktörlerini gözden geçirmektir. Bu bağlamda literatürde temel teşkil eden ve bu değişkenleri kullanan çalışmaların gözden geçirilmesi ve özeti yapılacaktır. Çalışmanın ikinci ve literatüre en önemli katkı sağlayacak bölümü ise ülke ve işletme düzeyindeki faktörlerin hisse senedi fiyatlamalarında gerçekten etkin rol oynayıp oynamadığını büyük bir veri seti ile tespit eden ampirik kısım oluşturacaktır. Bu kısımda yalnızca ülke düzeyinde değişkenlerin kullanıldığı makro model ve yalnızca işletme düzeyinde değişkenlerin kullanıldığı mikro model olmak üzere iki model oluşturulacaktır. Bu bağlamda 22 gelişmekte olan ülke borsasında 1990 ile 2016 yıllarını arasında listelenmiş olan 3132 hisse senedi ile büyük bir veri seti hazırlanmıştır.

Anahtar Kelime: CAPM, Arbitraj Fiyatlama Teorisi, Risk Faktörleri, Hisse Senedi Belirleyicileri

A REVIEW OF COUNTRY-LEVEL AND FIRM-LEVEL FACTORS IN ARBITRAGE PRICING THEORY AND A QUICK TEST FOR EMERGING COUNTRIES WITH LARGE DATASET

ABSTRACT

This study primarily reviews the studies that use Arbitrage Pricing Theory by separating the risk factors into two main groups as country-level factors and firm-level factors. Following this, in the second and the most novel part, stock return determinants of emerging countries will be examined in two separate models; macro model and micro model to provide an empirical evidence on both country effects and firm-specific effects separately. In this part, the macro model is constructed to examine the relative importance of country effect in explaining cross-sectional stock variations and micro model will be constructed with firm level factors. For this purpose, large data set which consists 3132 stocks from 22 emerging countries for the period of 1990-2016 is constructed.

Keywords: CAPM, Arbitrage Pricing Theory, Risk Factors, Stock Return Determinants

1. INTRODUCTION

According to Dimson and Mussavian (1999) “the Capital Asset Pricing Model (CAPM), which is formulated first by Sharpe (1964), Lintner (1965), and Black (1972), describes the relationship between risk and expected return and is used to price the risky securities” (1999:24). Although the early empirical tests of the CAPM give successful results, scholars find CAPM inadequate to explain the stocks returns in the second half of the twentieth century. While Black et al. (1972), and Fama and Macbeth (1973) find that stock returns can be explained with CAPM for the 1926-1968 period, more recent studies find otherwise. Reinganum (1981) and Lakonishok and Shorpio (1986) are the first scholars that realize the inadequacy of the relation between risk and the average return to price the risky assets as predicted by CAPM.

The alternative theory, Arbitrage Pricing Theory (APT), is developed by Ross in 1976. According to APT, risk of an asset is categorized in two parts: systematic risk, which is a result of more than one common factor, and unsystematic risk. With APT model, scholars start to test the different factors on asset returns. According to that, Banz (1981) proves the significant effect of the size, Basu (1983) proves the significant effect of macroeconomic variables and price to earnings ratios’, Rosenberg *et al.* (1985) prove the significance of book-to-market value and Bhandari (1988) proves the significant effect of leverage ratio. Fama and French (1995) develop the three factor model with two non-market risk factors, size and book-to-market ratios and prove the significance of those variables on stock returns. Table 1 lists the early studies that use various microeconomic variables to explain the stock return.

Table 1: Microeconomic Variables in Previous APT Models

Microeconomic Variables	Previous Studies
Beta	Sharpe (1964), Lintner (1965), Douglas (1969), Black (1972), Black et al. (1972), Fama and MacBeth (1973), Reinganum (1981), Fama and French (1992)
Size Effect	Banz (1981), Reinganum (1981), Roll (1981), Basu (1983), Lakonishok and Shapiro (1986), Chan and Chen (1991), Fama and French (1992), Malkiel and Xu (1997),
Book-to-Market Equity	Rosenberg et al. (1985), Chan et al. (1991), Fama and French (1992), Davis (1994), Lakonishok et al. (1994), Kathori et al. (1995), Barber and Lyon (1997)
Leverage	Hamada (1972), Bhandari (1988), Fama and French (1992), Chen (1999), Nissim and Penman (2003), Korteweg (2004), Jain (2006),
Earnings-to-Price	Basu (1983), Jaffe et al. (1989), Aggarwal et al. (1990)
Cash flow-to-Price	Lakonishok et al. (1994), Jaffe et al. (1989), Davis (1994)
Dividend Yield	Friend and Puckett (1964), Black and Scholes (1974), Blume (1980), Rozeff (1984), Kothari et al. (1995)

On the other hand, some other scholars realize the importance of the country effect on stock returns and investigate macro level variables. For this purpose various macro level variables are tested to identify whether they are significant determinants of stock returns. While Chen et al. (1986) use inflation as a source of country effect and prove significant effect on stock returns, Fama (1981) empirically proves that money supply is a significant determinant of stock return. Oil prices, export prices, unemployment and other macroeconomic variables are widely used as source of

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country effect and tested whether they are significant to explain the stock returns. Below table shows some early studies that use macroeconomic variables to explain the stock returns.

Table 2: Macroeconomic Variables in Previous APT Models

Macroeconomic Variables	Previous Studies
Industrial Production	Chan et al. (1985), Chen et al. (1986), Burmeister and Wall (1986), Beenstock and Chan (1988), Kryzanowski and Zhang (1992), Chen and Jordan (1993), Özcam (1997), Rahman et al. (1998)
Inflation	Chan et al. (1985), Chen et al. (1986), Burnmeister and Wall (1986), Burmeister and McElroy (1988), Chang and Pinegar (1990), Kryzanowski and Zhang (1992), Chen and Jordan (1993), Rahman et al. (1998)
Total Reserve	Chan et al. (1985), Chen et al. (1986), Burnmeister and Wall (1986), Burmeister and McElroy (1988), Chang and Pinegar (1990), Kryzanowski and Zhang (1992), Chen and Jordan (1993), Rahman et al. (1998)
Oil Price	Chan et al. (1985), Chen and Jordan (1993), Clare and Thomas (1994)
Money Supply	Bodie (1976), Fama (1981), Geske and Roll (1983), Pearce and Roley (1983), Pearce (1985), Beenstock and Chan (1988), Özcam (1997)
Total Revenue	Burmeister and McElroy (1988)
Exchange Rate	Mo and Kao (1990), Bahmani and Sohrabian (1992), Kryzanowski and Zhang (1992), Ajayi and Mougoue (1996), Özcam (1997)
Unemployment	Clare and Thomas (1994)
Short-term interest rate	MacElroy and Burmeister (1988), Özcam (1997)

To be able to forecast the future stock price movements, analyzing the determinants of stock prices has a great importance. Therefore, the contribution of this paper to the academia is twofold. First of all, by reviewing the fundamental literature for such an important and wide subject under two main group as microeconomic variables and macroeconomic variables, this paper significantly contributes to the academic world. Secondly and more importantly, by expanding the empirical evidence on the nature of the asset returns by using the cross sectional regression for 22 emerging countries with large dataset we significantly contribute to the literature. Our data consists of returns on 3132 individual stocks from 22 countries, thus enable us to gain maximum benefit from sample size and cross-sectional variation in returns.

This paper structured as follows. The next section reviews the literature by grouping the risk factors that are used in those studies. Section 3 describes the data and methodology, and formulates multifactor models and concerns about description of the variables. The results are reviewed in section 4. Finally we provide some concluding remarks in section 5.

2. REVIEW OF THE FACTORS

Unlike Sharpe's (1964) single-index model, in APT model, there are multiple factors to represent various kind of risks. Therefore, APT model uses more than one measure of systematic risk and each of these measures captures the sensitivity of an asset to the risk factor. To discover the determinants of stock returns, wide scale of variables under two groups, macro variables and micro variables, have been used in APT models.

2.1. APT Models with Macro-Variables

Scholars who use macroeconomic variables in their studies try to find out which economic factors have significant effects on the pricing mechanism (Chen et al, 1986). For that reasons, these scholars use wide scale of macroeconomic variables in their empirical tests to see the country-level effects on stock returns.

Various theoretical reasons can be used to link macroeconomic variables with stock prices. For instance, Friedman (1988) uses ‘wealth effect and substitution effect’ to explain the effect of money demand on the stock prices. According to him due to the wealth effect and its domination, demand for money and stock prices will ultimately become positively related. The life cycle theory which is developed by Ando and Modigliani (1963) is another theory that is widely used by academicians to explain the relationship between stock prices and macroeconomic factors. According to this, individuals base their consumption decisions on their expected life time wealth. Thus, part of their wealth may be held in the form of stocks linking stock price changes to changes in consumption expenditure. Furthermore, the relationship between stocks prices and investment spending is based on the ‘q’ theory of Tobin (1969) which can be used to prove link between macroeconomic variables and stock prices (Chen et al., 1986).

Based on these theoretical reasons, Chen et al. (1986) test seven macroeconomic variables, term structure, industrial production, risk premium, inflation, market return, and consumption and oil prices for the period of January 1953 - November 1984 for the U.S. stock return. As a result, the scholars find four of these variables as significant determinants of stocks. According to this, industrial production, changes in risk premium, twists in the yield curve and inflation when these variables are highly volatile, are significant to explain the expected returns. Also, they find that consumption, oil prices and market index are not significantly priced by the financial market.

Following Chen et al. (1986), Poon and Taylor (1991) examine the same variables to see the results are applicable to UK stocks too. The scholars use monthly and annual growth rate of industrial production, the unanticipated inflation, risk premium, term structure of return on value weighted market index for the period of January 1968- December 1984. Poon and Taylor (1991) find that the factors that are found to be significant in the U.S market do not significantly affect the stock market pricing in the UK.

Fama (1981) and Jensen et al. (1996) believe that money supply may have significant impact on stock prices. Jensen et al. (1996) claim that increase in money supply leads to a portfolio rebalancing towards other real assets. Thus, this situation causes upward pressure on stock prices as increase in money supply causes a decrease in real interest rates. Therefore, firms have lower discount rate and increasing income because of lower discount rates leads companies to generate greater sales and profits resulting in higher stock prices. Mukherjee and Naka (1995), Bernanke and Kuttner (2005) believe that positive effects of money growth outweigh the negative effects so stock returns will rise. Cheung and Ng (1998) support this view with their empirical tests. However, for Turkey, they cannot find any significant impact of money supply on the stock returns, neither positive nor negative. On the other hand, Fama (1981) believe that inflation uncertainty that will arise due to increase in money supply may have a decreasing effect in stock prices. Bodie (1976), Geske and Roll (1983), Pearce and Roley (1983) and Pearce (1985) support that money growth has a negative impact on stock returns.

As for money supply, for the effect of inflation on stock returns there is a contradiction between scholars. According to this, Pearce and Roley (1983), Chen et al. (1986), Mukherjee and Naka (1995), Wongbangpo and Sharma (2002), Flannery and Protopapadakis (2002) support that inflation affects stock returns negatively. On the other hand, Clare and Thomas (1994), Ibrahim and Aziz (2003) report that inflation rate positively affects the stock return because of hedging role of stocks against inflation. In their empirical study, Chen et al. (1986) using data from U.S stock market for the period of January 1968 - December 1984 show that increase in the inflation causes a decrease on the stock market returns.

Ma and Kao (1990) are the first scholars to test the effect of the exchange rate on stock returns. According to them, currency appreciation has a negative effect on the stock returns for export-dominant counties and has a positive effect for import-dominant countries. Following to them, Bahmani and Sohrabian (1992) find that effective exchange rate of the dollar has positive effect on the Standard & Poor's 500 stocks in the short run. For emerging countries, Abdala and Murinde (1997) investigate the effects of the exchange rate. For this purpose, they examine India, Korea, Pakistan, and Philippines with monthly data and except for Philippines they have the same result with Bahmani and Sohrabian (1992). Ajayi and Mougoue (1996) use daily data for eight countries and they empirically prove the positive relationship between exchange rate and stock returns. However, the empirical evidence regarding the exchange rate is inconclusive like other factors, since other scholars like Ibrahim and Aziz (2003) prove negative relationship between exchange rate and stock returns.

In their study Bailey and Chung (1996) show that change in gross national production, exchange rate changes and oil prices cannot explain stock returns in Philippines. Mookerjee and Yu (1997) show that both money supply (M2) and exchange rate are positively related with stock returns in Singapore. Kwon and Shin (1999) investigate the Korean stock market and find four macroeconomic variables significant. According to them, all trade balance, foreign exchange rate, industrial production and money supply have positive relationship with stock returns. Yörük (2000) use ten macroeconomic variables, percentage change in consumer price index, percentage change in industrial production, manufacturing production index, current account balances, consolidated budget non-cumulative cash balance, money supply (M1), gold (average selling price in Turkey and U.K), average exchange rate in seven countries, three month treasury bill (monthly interest rate), ISE 100 index percentage change, to test their relationships with the stocks that are listed Istanbul Stock Exchange for the period of February 1986 - January 1998 with monthly data. Among tested variables, only money supply and monthly interest rate are turned out to be significant to explain the stock returns. Ibrahim and Aziz (2003) shows that in Malaysia stock returns have positive long-run relations with industrial production and CPI, while they have negative relationship with money supply and exchange rate.

2.2. APT Models with Micro-Variables

Black et al. (1972) test the significance of beta for New York Stock Exchange for the period of January 1926-March 1966 with monthly data and they confirm the positive relationship between beta and stock returns. For the similar period and with the same methodology Fama and MacBeth (1973) also find a significant relation between beta and stock returns. On the other hand, in 1981, Reinganum tests beta with both daily and monthly data for New York Stock Exchange and find that there is no difference on average rates of return for portfolios with different betas. Other

scholars like Roll (1981), Fama and French (1992) also fail to find a significant relation between beta and stock returns.

Basu (1977) claims that only beta is not able to explain the return differences between stocks. Using monthly data for the period of April 1957- March 1971, Basu (1977) shows that price to earnings ratio (P/E) is statistically significant to explain the stock return. He reports that stocks with low price to earnings ratios have higher returns than stocks with high price to earnings ratios. Following Basu (1977) other scholars try to understand the reasons behind the stock return differences by investigating micro level variables. For this purpose they use different firm specific variables.

Banz (1981) shows that the stocks of firms with low market capitalizations have higher average returns than large cap stocks. Following Banz (1981), other scholars investigate the size effect and they prove that small firms tend to have higher returns than big firms. According to this, Reinganum (1981), Basu (1983), Lakonishok and Shapiro (1986), and Fama and French (1992) show that cross-section of average returns on small stocks are too high whereas average returns on large stocks are too low. While Roll (1981) explains the significance of size effect with the trade frequency as small firms are not traded frequently and their risk-return relationship is improperly measured, Stoll and Whaley (1983) clarify it with the difference of transaction costs between small and large companies. According to this, larger transaction costs for small companies lead them to have excess returns.

Rosenberg et al. (1985) provide another piece of evidence against the CAPM by showing that stocks with high book-to-market equity have significantly higher returns than stocks with low book-to-market equity with annual data between 1973 and 1984. Chan et al. (1991) examine Japanese market and find similar result with Rosenberg et al. (1985). Following these studies, using different time periods and countries, Fama and French (1992), Davis (1994), Lakonishok et al. (1994) find similar results.

Bhandari (1988) tests the significance of the relation between leverage and stock returns. For the period of 1948 – 1979, in the US stock market, the scholar finds that firms with high leverage (debt/equity) have higher average returns than firms with low leverage. He explains this result as; high leverage increases the risk of a firm's equity and high risk leads to high return. Following him, Fama and French (1992) test the significance of leverage by following different methodology. They use the ratio of book assets to market ratio (A/ME) and the ratio of book assets to book equity (A/BE) as proxies of leverage and test their significance. According to this, they find the sign of these two variables are different, which is positive for A/ME and negative for A/BE. By capturing this difference, they show that there is a leverage effect on stock returns. On the other hand, Chen (1999) proves that there is no relationship between excess return and leverage for Taiwan stock market for the period of May 198-April 1998.

3. DATA & THE MODELS

3.1. Data

For this study a large data set which contains 3132 companies from 22 emerging countries¹ (according to MSCI Emerging Markets Index) for the period of January 1990 - December 2016 is constructed. The data is collected through MSCI database and DataStream. In emerging countries

¹ Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Phillipines, Poland, Qatar, Russia, South Africa, Taiwan, Turkey, United Arab Emirates.

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financial systems are rather more dependent to macro-economic conditions compared to developed countries. As we want to see the direct effect of macro-economic conditions and firm level characteristics separately on stock returns, we believe that examining the emerging countries would give us better picture compared to developed countries.

This study contains two groups of APT models as macro model and micro model. In the macro model, independent variables are chosen as money supply, exchange rate, inflation rate, and total reserve while in the micro model independent variables are beta, book-to-market equity, earnings-to-price ratio, size, and the leverage.² For both models, the dependent variable is the excess return which is difference between monthly return of the stock and monthly risk free rate for the specific country.

For the macro model, Bessler and Opfer's (2003) model is followed and the growth rate of each factor except inflation rate, is used as independent variables.

Table 3: Explanations of the Macro-Variables

Variable	Explanation	Calculation
ΔMS	Money supply growth	$\Delta MS_t = \frac{MS_t - MS_{t-1}}{MS_{t-1}}$
ΔEX	Exchange rate growth	$\Delta EX_t = \frac{EX_t - EX_{t-1}}{EX_{t-1}}$
INF	Inflation rate	$INF = CPI_t - CPI_{t-1}$
ΔTR	Total reserve growth	$\Delta TR_t = \frac{TR_t - TR_{t-1}}{TR_{t-1}}$

Table 4 explains the micro variables and the calculation methods.

Table 4: Explanations of Micro-Variables

Variable	Explanation	Calculation
B	Beta	$\frac{COV(R_i, R_m)}{VAR(R_m)}$
BM	Book to market ratio	$\frac{BookValueOfFirm}{MarketValueOfFirm}$
EP	Earnings to price ratio	$\frac{EarningsPerShare}{MarketValuePerShare}$
SZ	Company size	$\frac{Number\ of\ outstanding\ shares}{price\ of\ shares} *$
LV	Leverage	$\frac{TotalDebt}{TotalEquity}$

Before we start analyzing the risk factors, we first need to convert all price series to logarithmic index returns. For this purpose, for 3132 stocks we take the first difference of natural log of daily closing prices to find the daily returns:

² The selection of variables in this paper is based on the results of the existing literature.

$$R_{i,t} = \ln(I_{i,t}) - \ln(I_{i,t-1}) \tag{1}$$

In the second step, country level factors and firm level variables are employed as independent variables to explain the changes on stock returns. The dependent variable side of the panel dataset is constructed by pooling of observations on a cross-section of daily stock returns of all 3132 companies over the time period from 1990 to 2016, while money supply growth, exchange rate growth, inflation rate, total reserve growth constitute the explanatory variables side of the first panel model and beta, book to market ratio, earnings to price ratio, company size and leverage constitute the explanatory variables side of the second panel model

Berry and Feldman (1985:77) clearly state that “...with heteroscedasticity (or autocorrelation), the Generalised Least Squares (GLS) estimation technique produces the estimators that are BLUE”. For that reason, we do not need to test the heteroscedasticity and autocorrelation as we can naturally assume that our data is free from these problems, since we estimate our panel data model with the GLS technique. However, for our panel data model stationarity may still create a problem. For that reason, using both ADF and PP tests, we investigate the presence of a unit root for the dependent variable (stock returns) and the independent variables (4 macro-economic and 5 micro-economic variable). The null of non-stationarity is rejected for all variables.

3.2. The Models

While identifying the determinants of stock returns with large data, panel data regression is much more advantageous compared to the OLS. First of all, “panel data are suitable for studying data which vary over time and cross-sectionally” (Bai and Green, 2009:22). Second, panel data set includes more data information, more degrees of freedom. Furthermore, by reducing co-linearity among variables, panel data provide more efficient estimation than pure cross-sectional or time-series estimations. Third, thanks to panel data one can have much greater flexibility in controlling for the effects of individual-specific variables and time-specific variables.

According to that, using panel data methodology we investigate the country specific effects and firm specific effects on stock returns with two separate models:

Macro Model:

$$R_{i,t} - RF_t = \alpha_0 + \alpha_1 \Delta MS_{c,t} + \alpha_2 \Delta EX_{c,t} + \alpha_3 INF_{c,t} + \alpha_4 \Delta TR_{c,t} + u_t \tag{2}$$

Micro Model:

$$R_{i,t} - RF_t = \alpha_0 + \alpha_1 \beta_{i,t} + \alpha_2 BM_{i,t} + \alpha_3 EP_{i,t} + \alpha_4 SZ_{i,t} + \alpha_5 LV_{i,t} + u_t \tag{3}$$

In panel data model methodology, there are two possible approach that we can use while estimating our models; fixed effects approach and random effect approach. In our case fixed effects approach is naturally ruled out as we have many more companies than time periods and thus too many parameters would be required to be estimated if we chose to follow this approach. Furthermore, to statistically justify and confirm our decision we use The Hausman test. The Hausman test has revealed that the random effects model is the most appropriate approach for our panel dataset. For that reason, we estimate our panel data models using random effects models with a generalised least squares (GLS) procedure.

4. EMPIRICAL RESULTS

Table 5 gives the summary results of the regressions which are run separately for both macro and micro models. According to this, for macro model, money supply, exchange rate and inflation are significantly different from zero at 5% confidence level. The t-value for total reserve is -0.1654 which implies that this factor is not significant to explain stock returns at 5% confidence level.

Three significant macro variables out of four tested macro variables prove the importance of country level factors on stock returns for emerging countries. According to this, the negative coefficient of exchange rate shows that increasing exchange rate in emerging countries cause a decrease on stock returns. Although Bahmani and Sohrabian (1992) and Ajayi and Mougoue (1996) claim that increasing exchange rate leads to increasing stock returns, our results do not confirm this result. Our results reveal that in emerging countries, increasing exchange rate ultimately leads to decrease on stock returns. Therefore, our results confirm Ma and Kao (1990) and Ibrahim and Aziz (2003) that there is a negative relationship between exchange rate and stock returns.

Our results reveal that high inflation causes a low stock returns. Although interpreting this results seem quite straightforward, as we explain in the literature part there is a contradiction between scholars. According to this, while Pearce and Roley (1983), Chen et al. (1986), Mukherjee and Naka (1995), Wongbangpo and Sharma (2002), Flannery and Protopapadakis (2002) support that inflation affects stock returns negatively, Clare and Thomas (1994), Ibrahim and Aziz (2003) report that inflation rate positively affects the stock return because of hedging role of stocks against inflation. Our results confirm that for emerging countries increasing inflation causes a decrease on stock returns. Therefore, we can say that in emerging countries when the inflation increase investor do not see the stocks as a hedging instrument and thus this situation does not increase the stock returns as Clare and Thomas (1994) and Ibrahim and Aziz (2003) claim.

Among four macro variables, money supply is the only factor that has significantly positively related with stock returns. According to this, increase in money supply in emerging countries increases the stock return. Fama (1981) believes that increasing money supply creates uncertainty for the inflation and this situation may have a decreasing effect in stock prices. On the other hand, Jensen et al. (1996) support that increase in money supply leads to a portfolio rebalancing which ultimately causes an upward pressure on stock prices. Our results reveal that in emerging countries money supply growth does not create inflation uncertainty that leads ultimately to a lower stock prices as Fama (1981) claims. According to that the positive relation between money supply and stock returns confirms that money supply growth creates upward pressure on stock prices. Having said that as we do not investigate the fundamental reason of the changes in stock prices, we cannot confirm the reason of the increase in stock prices is a decrease in real interest rates and portfolio rebalancing towards real assets as Jensen et al. (1996) claim.

Our results show that although three of the four macro variables; inflation, exchange rate and money supply are significant to explain the stock returns in emerging countries, total reserve does not have any significant impact on stock returns.

“The R-squared of the regression is the fraction of the variation in your dependent variable that is accounted for your independent variables” (Sevgi, 2006:39). Therefore, since our model’s

R-square is 0.1816, it shows that 18.16% of the variation in stock returns can be explained by our macro-model which is constructed with country-level factors.

Table 5: Summary Results of Regression

	Macro Model		Micro Model	
	Coefficient	t-value	Coefficient	t-value
Exchange Rate	-0.6440	-2.1890		
Inflation	-0.3502	-2.7890		
Money Supply	0.3909	1.9902		
Total Reserve	-0.0120	-0.1570		
Beta			0.3226	1.6949
BE/ME			0.0011	0.5264
E/P			0.0209	1.9891
Leverage			0.0145	1.5964
Size			-0.0016	-4.8313
R-square	0.1816		0.1209	

In the second step of our empirical analysis, we examine the micro-economic variables to see whether firm specific factors are significant to explain the stock returns in emerging countries. Our results reveal that out of five microeconomic factors, only earnings-to-price ratio and size effect are statistically significant.

Although Black et al. (1972), and Fama and MacBeth (1973) support that only beta is enough to explain stock returns, other scholars like Reinganum (1981), Roll (1981), and Fama and French (1992) claim that beta is significant but not enough. However, our results put a different picture for emerging countries as we cannot confirm the significance of the relation between beta and stock returns. For the book-to-market ratio the result is also insignificant. According to this, we fail to confirm the significant relation between BE/ME ratio and stock returns. Unlike beta factor for book-to-market ratio the scholars are divided into two groups. While Rosenberg et al. (1985), Chan et al. (1991), Fama and French (1992) claim that BE/ME ratio and stock returns has positive significant relationship, Davis (1994) and Lam (2002) cannot confirm the significance of this relationship. Our results confirm Davis (1994) and Lam (2002) as we cannot detect significant relationship between BE/ME and stock returns in emerging countries. Our final insignificant variable, leverage, is also widely debated by the scholars and there are different results regarding its significance on stock returns. According to that while Bhandari (1988), and Fama and French (1992) claim that there is a positive and significant effect of the leverage on stock returns, Chen (1999) cannot confirm this significance. Our results confirm Chen (1999) that there is no significant relation between leverage of firms and stock returns in emerging countries.

According to our micro-model, only earnings-to-price ratio and size are statistically significant to explain stock returns in emerging countries. In the literature, although E/P ratio has widely studied as other factors, unlike those factors, scholars mostly have an agreement on this factor that it has a significant and positive impact on stock returns. According to that, Basu (1977), Westerfield (1989), Aggarwal, Rao and Hiraki (1990) empirically prove that price-to-earnings ratio is a significant determinant of stock return. Therefore, our results also confirm the positive and significant relation between price-to-earnings ratio and stock returns. Our second significant micro-economic variable, size, is also widely studied by scholars and mostly found to be significant and negatively related with stock returns. According to this, scholars such as Banz (1981), Basu (1983), Lakonishok

and Shapiro (1986), and Fama and French (1992) claim that small stocks have higher returns compared to big stocks. Although, scholars use different justifications for this result, almost all of them agree that size and stock return is negatively related. Our results also confirm this widely known relation that in emerging countries there is a negative and significant relationship between size and return.

Finally, our micro-model's R-square is 0.1209 which shows that 12.09% of the variation in stock returns can be explained by micro level variables. As the micro model we create here performs worse than macro model with 12.09% R-squared, we can conclude that in emerging countries macro-economic conditions/country-level factors are more important compared to firm-level factors for stock pricing.

5. CONCLUSION

This paper attempts to establish the determinants of stock market returns and most suitable model for describing stock returns. Although, there are considerable number of studies have been done on this topic, there is no agreement on the effects of the variables and suitability of the models. Therefore, by reviewing the wide scale of fundamental literature, this study primarily serves as a practical handbook for the academicians who need to browse the literature on stock price determinants. Secondly, examining the stocks individually instead of forming portfolios with a large data set –more than 3100 individual companies-, this study differs from the literature and contributes to it. For the empirical part of this study, we create two different models as micro model and macro model. According to this, while macro model includes four macro variables which are only country specific factors, micro model has only the micro variables which are firm specific factors.

The results of the study reveal the significance of money supply, exchange rate, inflation rate, earnings-to-price ratio and size on explaining the excess returns, while total reserves of the countries, beta, leverage, and book-to-market ratio of companies do not have any significant effects on the excess return. R-square of the models and significance of tested factors show macro factors, which are related with country's economic situation, are more important and related than firm specific factors to determine the stock returns.

The results of this study significantly contributes to the literature due to two reasons. First of all, although in the literature it is widely known fact that CAPM is not adequate to explain the stock returns with only one risk factor, APT is also problematic due to endless possibilities. In this study, as we do not intend to find the model with highest possible R^2 , we leave the other factors out of the scope of this paper. Here, we successfully, show that group of macroeconomic variables and firm level variables do have different impacts on stock returns and should be considered together. Secondly, emerging countries are always known with their instable economic situations. This study reveals that although firm-specific factors are important for stock returns, in emerging countries macro-economic conditions are more dominant.

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