Chapter 3
Inflation and the Stock Market:
Money Illusion in Borsa Istanbul

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ABSTRACT

The stock market suffers from money illusion, discounting real cash flows at nominal discount rates. Subsequent research has also shown that the cross-section of stock returns is impacted differently by inflation. This cross-sectional variance across risky and safe stocks makes one of the most puzzling anomalies, risk (beta) anomaly, stronger in inflationary periods. This chapter tests the hypothesis that higher inflation leads to stronger mispricing of risk in stock market due to money illusion effect in Turkey, one of the emerging countries afflicted with perennial high inflation. The results show that although money illusion and mispricing were not visibly present in hyper-inflationary period in 1990s, the anomalous pricing of risky securities was remarkably high in inflationary periods over the last two decades, with a distinct mispricing due to the inflationary pressure that commenced with the COVID-19 pandemic. These varying results across the vastly different inflation regimes can be explained by rational inattention and impact of past experience of inflation on investment behavior.

INTRODUCTION

Inflation is on the increase around the world following the COVID-19 pandemic, with food and energy prices reaching record highs. This has led to a lively discussion in the financial press on the impact of high inflation on asset prices,[1] whether the current spike is transitory or longer lasting,[2] and how investors can protect their wealth against rising prices, in particular, by shifting their investments into stocks.[3] The economic literature provides conflicting hypotheses on how stock prices would react to inflation. On the one hand, according to *the hedging hypothesis*, stock prices would rise in response to higher

inflation since stocks are real assets and therefore offer a hedge against the impact of inflation in eroding real returns (e.g., see Fama and Schwert 1977, Fama 1981, Boudoukh and Richardson 1993, Bekaert and Wang 2010). On the other hand, according to *the money illusion hypothesis*, stock prices would fall when expected inflation increases as investors discount real cash flows with nominal discount rates and thus undervalue stocks in times of high inflation (e.g., see Modigliani and Cohn 1979, Ritter and Warr 2002, Cohen et al. 2005). Given these competing hypotheses, the connection between inflation and stocks is an empirical question.

Several studies on the U.S. stock market have reported empirical evidence consistent with the money illusion hypothesis (e.g., Ritter and Warr 2002, Campbell and Vuolteenaho 2004, Cohen et al. 2005). In particular, Cohen et al. (2005) theoretically show that, in a stock market suffering from money illusion, the security market line is flatter (steeper) than the one predicted by CAPM (with no money illusion) when the expected inflation is high (low). In accordance with this theoretical observation, the authors find that the empirical security market line of U.S. stocks is flatter relative to the CAPM prediction in times of high inflation and steeper in times of low inflation. It follows that during inflationary periods money illusion can provide a theoretical justification for the well-established beta anomaly, the empirical finding that high beta stocks have lower risk-adjusted returns than low beta stocks.

It is somewhat incredulous that stock market investors, with trillions of dollars at stake, would suffer from money illusion and mistake nominal discount rates for the real ones. However, if inflation is not usually a salient concern for investors, then they may not react to inflation because of rational inattention, that is, they may choose not to process information about inflation as absorbing all available information is either infeasible or prohibitively costly (e.g., see Mankiw and Reis 2002, Sims 2003, Katz et al. 2017). Also, recent empirical evidence shows that the inflation experienced personally affects individuals' inflation expectations as well as their willingness to invest in the stock market (Malmendier and Nagel 2016, D'Acunto et al. 2021). Since inflation in the U.S. was tamed in the early 1980s and has been low since then until the outbreak of the COVID-19 pandemic, U.S. investors may have become relatively insensitive to inflation in their portfolio allocation decisions. What if inflation varied significantly over time, and at times proved to be costly to ignore? Would the stock market still suffer from money illusion then?

To answer this question, Turkish stock market Borsa Istanbul is used as a testing ground in this chapter. Turkey is an emerging country afflicted with perennial high inflation and with a large and internationally connected stock market (among the largest 20 stock markets in terms of market capitalization for the last couple of decades). The country experienced a hyperinflationary period from 1980s to 2000s, inflation was brought to single digits by 2004 and stayed relatively low until recently. The inflation once again reached double digits in recent years: it was 16.2% in March 2021. Average inflation in the OECD area, which Turkey is part of, was 2.4% in the same month.

With a dataset spanning the period from January 1989 to March 2021, it is documented that Turkish stock prices exhibit behavior consistent with the money illusion hypothesis. In particular, the slope of the Turkish security market line (SML) is significantly and negatively related to inflation. When periods with different inflationary regimes are investigated separately, this chapter documents a more nuanced picture: the impact of inflation on the SML is insignificant during the hyperinflationary period from January 1992 to December 2002 whereas the SML is flatter than the one predicted by CAPM for the period between January 2003 and March 2021 during which inflation was relatively tame. However, the observation for the latter period is mostly due to inflation's impact on the intercept of the SML rather than its slope – the impact on the slope is statistically insignificant. When the COVID period (January 2020 to March 2021) with a new high inflationary regime is looked into separately, stronger support for

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