International Equities in Personal Portfolios of U.S. Investors

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1 Introduction

In this project, I intend to investigate how individual investors in the U.S. make decisions regarding international equities in their portfolio. More specifically, I am interested in studying how changes in various macroeconomic variables, such as interest rates, inflation rates, and exchange rates, affect portfolio allocations to foreign equities and equity index funds. I am also interested in studying whether similarities in accounting standards between the individual investor's home country and the country of the asset of interest are affecting personal portfolio allocations in the same way that they affect U.S. institutional ownership of foreign assets.

I intend to conduct an economic scenario-based experiment with a representative sample of U.S.-based individuals who have self-managed brokerage accounts and own at least 1 asset position that can be classified as an international equity investment. The sample will be further divided into a sample representing active investors (those investing mostly in individual foreign stocks) and passive investors (those investing mostly in international ETFs and mutual funds). Following the experiment, I will measure the change in (1) the fraction of the total portfolio dedicated to equities in a given foreign country and in (2) the dollar amount of the equities investment in a given foreign country in response to the hypothetical economic scenario. The economic scenario is defined in my experiment as a combination of 4 hypothetical trends: the USD-foreign country currency exchange rate trend, foreign country and U.S. interest rate trend, foreign inflation and U.S. inflation trend, and change in the accounting standards in a given country. The sample will be constructed by Qualtrics or SurveyMonkey research teams.

1.1 Motivation

Nowadays, individual equity investors have access to a wide universe of assets to invest in. In the U.S., investors can invest in domestic and international equities. Historically, investors have preferred domestic assets over foreign investments. In the 1970s, capital controls, taxes, and transaction costs were the driving force behind overweighting domestic markets in investments [10]. Other reasons for strong preference for domestic stocks are information costs associated with foreign equities [16] and information asymmetries in foreign markets [1]. While previous studies found large gross equity flows across border, investors were shown to expect higher domestic returns compared to foreign equities [10]. If they did invest in foreign stocks, they strongly preferred firms listing on U.S. exchanges [1]. Coval and Moskowitz (1999) show that U.S. investment managers display a strong preference for locally headquartered, small and highly levered firms. Asymmetric information seems to affect preference for "geographically proximate" investments [4].

However, U.S. investors can gain a lot from diversifying their portfolios with international investments. Lewis (2000) shows that adding foreign stocks can increase wealth by 10 to 28.8%. For individuals with higher levels of risk aversion, the welfare gains are even higher [14]. According to Vanguard, at least 20% of the total personal portfolio should be invested in international stocks and bonds. To be able to get full diversification benefits, 40% of the stock allocation should be in international equities and 30% of the fixed income allocation should be in international bonds [18].

"Home bias" has been reducing since the 1990s. In 1991, 94% of U.S. portfolios were comprised of domestic holdings [10]. This fraction decreased to 88% in late 1990s-early 2000s [1]. As of 2017, an average U.S. mutual fund investor has 15.6% of the total equity allocation in foreign stocks [5]. What caused this shift to international equities? Existing literature focuses its explanations on accounting and legal environment features affecting institutional ownership. Shima and Gordon (2011) find that a given country's mandatory use of IFRS (International Financial Reporting Standards) has no effect on U.S. ownership of foreign equity, unless it's combined with a strong regulatory environment [17]. Yu and Wahid (2014) find that similarity of accounting standards in the investor's and investee's countries and familiarity of the investor with the investee's accounting standards results in a larger fraction of the portfolio dedicated to that investee [19]. Post-1990s studies show small economic importance of direct barriers to investing [1]. Lundholm, Rogo, and Zhang (2014) find that higher readability in financial statements and disclosures is associated with higher U.S. institutional ownership [15].

There is limited literature available on home bias among individual investors. Karlsson and Norden (2007) focus on 3 facets explaining home bias among Swedish pension plan investors: hedging against domestic inflation, investor sophistication, and overconfidence. In their experiment among Swedish pension fund holders, they find that those who are older, unmarried, less educated, and employed in "safer" jobs (such as government positions) are the most likely to be concerned about domestic inflation, which increases the degree of home bias. Small investment size and lack of investment experience also increase home bias. Men tend to be more overconfident than women and perceive themselves to have more information about domestic investments than female investors, which leads to higher home bias.

However, none of these explanations pin down the decision-making component by investment managers and individual investors. It is also unclear how such decisions are affected by changes in various macroeconomic variables, such as interest rates, inflation rates, and exchange rates. This brings forward the following question: how are individual U.S.-based investors' allocations in international equities and equity index funds affected by macroeconomic variables and relevant information availability?

1.2 Contribution to existing literature

My project contributes to existing studies in several ways. While previous studies mostly focused on U.S. institutional ownership of international equities, I attempt to understand the decision making by individual investors and with regards to personal investment portfolios. Moreover, I intend to test the existing explanations of U.S. institutional ownership of foreign equities on the set of personal portfolios. Finally, I expand the hypotheses that could explain allocations to international equities by individual investors in the United States.

My paper is most similar to the work by Karlsson and Norden (2007), who investigated the relationships between investor demographics, behavioral traits and motives and home bias in pension plan portfolio allocations. Compared to their paper, my sample is intended to include a larger representation of country demographics. Those investors who have self-managed investment accounts might not be eligible for typical U.S. employment-based retirement plans (i.e. college and graduate students, freelancers), which would've excluded from a sample similar to that used by Karlsson and Norden. Increased access to investment technology and various tradable assets in the recent years is also not accounted for in their study. Finally, I explore a robust setting that involves 3 major macroeconomic variables, as well as the change in accounting standards, emphasizing the information acquisition and perception components of asset allocation. The survey design is similar to the hypothetical vignette approach by Andre, Pizzinelli, Roth, and Wohlfart (2021), which attempts to elicit subjective models of macroeconomy by individual households and experts and measures beliefs about the effect of certain macroeconomic shocks on unemployment and inflation [2].

2 Experiment

2.1 Sample

I intend to obtain a representative sample of approximately 1,000 U.S.-based adult individuals who have at least 1 active, self-managed brokerage account and own at least 1 equity investment that can be classified as an international investment. Such samples can be constructed by Qualtrics and SurveyMonkey research teams based on a set of parameters specified by the researcher and have fairly consistent target response rates of over 90%. Only those respondents who completed the survey in full will be counted in the final sample.

To qualify for the survey, potential respondents need to be 18 or over years of age, need to have at least 1 active, self-managed brokerage account with a non-zero balance and need to have at least 1 international equity investment. Due to data collection and sharing restrictions by the polling platforms, the qualifications are self-reported and cannot be verified with brokerage account statements or other personal financial information identifiers. Participants will need to complete a financial literacy survey prior to being included in the final sample. Potential survey respondents will be asked 10 questions that test their knowledge of basic macroeconomics, compound interest and time value of money, and basic financial terminology. If the participants score at least 8/10, they will be included in the sample.

I focus my survey on the participants with self-managed brokerage accounts, as opposed to advisor-managed or directed brokerage accounts, for several reasons. Firstly, self-managed accounts typically have lower funding requirements to start investing, which results in a larger demographic having access to investments as a wealth-building tool. Secondly, the initial allocations in the self-managed accounts are almost 100% likely to be selected by the person who owns it; there is no such agency with advisor-managed or directed brokerage accounts. Finally, those with self-managed accounts are likely to be more familiar with various digital technologies, as they need to use desktop and mobile apps to make changes in their investments. The familiarity with online platforms is going to be helpful for the online survey response rates.

2.2 What is an international investment?

For the purposes of this project, I will focus on international equity and pooled equity investments. These include:

- Equities of foreign, non-U.S.-headquartered corporations listed on overseas and U.S. exchanges, as well as cross-listed equities of foreign, non-U.S.-headquartered entities;
- Exchange-traded funds (ETFs) that track foreign stock indices' performance;
- ETFs that track performance of a combination of equity indices by geographic region (excluding the U.S,);
- ETFs that track industry/sector performance in foreign countries;
- Currency ETFs that track performance of foreign currencies;
- ETFs that track performance of foreign fixed income instruments (government and corporate-issued);
- Foreign mutual funds.

I chose equities as the asset class to study in my paper due to the focus of current literature on international investments on equities. The following definition of international investments will be provided to potential survey participants when asked about whether they have any of these investments in their self-managed brokerage portfolios. The sample will be divided into 2 subsamples – active and passive investors – based on the overall portfolio composition. Each of the tickers in the search tool used for portfolio reporting will be marked as an ETF/mutual fund or an individual stock. If more than 50% of the total money is invested in individual stocks, the investor is classified as an active investor. If more than 50% of the total money is invested in ETFs and mutual funds, the investor is classified as a passive investor.

2.3 Experiment design

The first step in the experiment is obtaining a sample. The survey platform managers send out an email to qualifying respondents, based on their initial respondent profile and their response to the question about having a self-managed investment account and having foreign equity investments.[1] Then the respondents need to complete the financial literacy survey to be included in the final sample. After the sample is constructed, all participants receive a link to an online survey. The survey can be completed on a desktop computer or on a mobile device. All participants receive standard compensation as defined by the survey platform for completing the survey.[2]

The first module of the survey includes a set of basic demographic questions (age, occupation, education level, marital status, number of people in the household, zip code). I will also include questions on citizenship and visa status in the U.S. and other countries. Being a citizen of another country or having a certain immigration status associated with it may affect investment decisions.

The second module of the survey asks the participants to report their personal income and assets and liabilities. The income report includes several categories of income, such as full-time and part-time employment, graduate school stipends, freelance income, business and rental income, dividends, and other income. The assets report includes personal savings and CD accounts, all types of personal investment accounts, real estate, valuables and other major physical assets, and other assets not defined in main categories. The liabilities report includes credit and charge cards, mortgage loans, auto loans, other personal and small business loans, and revolving credit accounts.[3]

The third module of the survey asks the participants to describe their self-managed investment accounts. For each account reported, the participants need to report the brokerage/investment platform, total balance, and individual investments' dollar positions. Participants will also need to report how often they trade and adjust the portfolio positions. The participants can find a corresponding ticker from a search tool/dropdown list of investable assets' tickers[4] and will need to indicate the most recent value of the position. The weights of investments in the portfolio are calculated automatically and visible to the survey participants. After the values are reported, the participants will see a confirmation page with a pie chart and a table showing the position tickers, dollar values of positions, and % values of the total portfolio. All investments will be marked as international or domestic (U.S.-based) for participants' convenience, with

[1] I have no control over how the question is sent out to potential survey participants and/or whether it's altered in any capacity by the survey platform team. The question is provided by me to the survey platform team during the sample construction request.

[2] Even though I would like to provide additional incentives to survey participants, the data collection rules do not allow me to send additional payments to Qualtrics or SurveyMonkey survey participants.

[3] An example of a revolving credit account is a "buy now, pay later" account issued by companies like Klarna and Zip.

[4] I'm exploring the possibility of creating such a ticker list from tickers on Yahoo Finance, as well as sorting this list by type of investment: domestic (U.S.-based) or international. An alternative would be using an API such as Polygon.io.

specific countries reported for international investments. If the participant does not want to make any corrections, they proceed to the next module. If they need to make changes. they can add assets or change dollar amounts for existing positions before they proceed to the next module. The participant is brought into one of 2 groups – active or passive investors – upon completion of this module.

One issue that researchers typically encounter with self-reported information from survey participants is the inability to verify their statements. One way to verify the statements would be to ask the details of either financial statements or the investment accounts once more at the end of the survey (for instance, the total for cash savings or the value of one of the positions in the brokerage account). If the values match to the ones originally reported, the responses will be included in the final dataset; if not, the responses will be marked invalid.

The fourth module of the survey starts with introducing the study ("We will ask you a few questions related to international investments in your personal portfolio"). For each country of investment, the participants will be able to see links to Yahoo Finance charts of exchange rates, interest and inflation rates for that country and the U.S., and will be notified about the accounting standards in that country. For those participants who have regional ETFs, the primers will be for the country that takes up the largest proportion in the tracked index. The participants will also be asked about information sources ("How do you typically read/get news?"), self-reported political affiliation, and self-reported experience with foreign countries (travel, interaction with citizens of other countries, and knowledge of foreign countries). After the participants take a look at the information[5], for **each one** of the international asset positions, the participants in the treatment group will see a hypothetical scenario created from 6 randomized trend statements that are presented all at once:[6]

1. Foreign country currency units per $1: up, down, or same level;
2. Foreign inflation rate: up, down, or flat;
3. U.S. inflation rate: up, down, or flat;
4. Foreign key rate: up, down, or flat;
5. U.S. key rate: up, down, or flat;
6. Accounting standards: changed to U.S. equivalent or unchanged.

They will also see a set of hypothetical news that are not directly related to economics. The news will describe hypothetical cultural events that might occur in a specific country and should not have any effect on the economics (such as the famous actor winning an Oscar, a pop star musician winning a Grammy, etc).

Once the participants finish looking at the hypothetical trends, they proceed to the next module where they will be answering questions about asset allocations. At the top of the module, a text summary of the hypothetical scenario is provided to the participants. If the participants have multiple international investments in their portfolio, summaries for all of the "invested in" countries will be provided.

The participants in the control group will only see a set of hypothetical news that are not directly related to economics.

The final step in the survey is eliciting the reallocation decision by survey participants based on their perceptions of the hypothetical scenarios. I intend to measure the changes in the dollar amounts invested and the fraction of the portfolio allocated to a specific country with respect to each of the four independent variables, as well as their pairs, triples, and the entire set in the macroeconomic scenario. The participants will be asked to redistribute the positions in their portfolio by entering new dollar amounts to be invested in each of the assets. The new portfolio dollar value is the sum of the new dollar values for each of the positions. The fractions dedicated to each of the positions will be calculated automatically. Since each of the tickers is attributed to a specific country, dollar value totals and fraction totals for the countries will be calculated and presented to the participants. Participants in the treatment group will be asked the following questions on 4 separate pages:

[5]They will also have an option to skip the primer page.

[6]The statements will be presented as graphs, except for the accounting standards. The statement summary in form of a text will be available to participants when answering questions about changing asset allocations.

Page 1:

1. Based on the prediction for the foreign exchange rate for country (countries) A (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

2. Based on the prediction for the inflation rate for country (countries) A (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

3. Based on the prediction for the U.S. inflation rate and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

4. Based on the prediction for the key rate for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

5. Based on the prediction for the U.S. key rate and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

6. Based on the prediction for the accounting standards in country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

Page 2:

1. Based on the prediction for the foreign exchange rate and the accounting standards for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

2. Based on the prediction for the foreign exchange rate and the inflation rate for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

3. Based on the prediction for the foreign exchange rate and the key rate for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

4. Based on the prediction for the foreign exchange rate and the U.S. inflation rate and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

5. Based on the prediction for the foreign exchange rate and the U.S. key rate and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

6. Based on the prediction for the accounting standards and the inflation rate for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

7. Based on the prediction for the accounting standards and the key rate for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

8. Based on the prediction for the accounting standards or country (countries) A, (B, C, ...) and other news, and the U.S. inflation rate, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

9. Based on the prediction for the the accounting standards or country (countries) A, (B, C, ...) and other news, and the U.S. key rate, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

Page 3:

1. Based on the prediction for the foreign exchange rate for country (countries) A, (B, C, ...) and other news, and the U.S. and foreign inflation rates, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

2. Based on the prediction for the foreign exchange rate for country (countries) A, (B, C, ...) and other news and the U.S. and foreign key rates, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

3. Based on the prediction for the foreign exchange rate, the inflation rate, and the key rate for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

4. Based on the prediction for the foreign exchange rate and other news, and the U.S. inflation and key rates, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

5. Based on the prediction for the accounting standards in country (countries) A, (B, C, ...) and other news, and the U.S. and foreign inflation rates, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

6. Based on the prediction for the accounting standards in country (countries) A, (B, C, ...) and other news, and the U.S. and foreign key rates, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

7. Based on the prediction for the accounting standards in country (countries) A, (B, C, ...) the inflation rate, and the key rate for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

8. Based on the prediction for the accounting standards in country (countries) A, (B, C, ...) and other news, and the U.S. inflation and key rates, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

Page 4:

1. Based on the entire economic scenario for country (countries) A, (B, C, ...) and other news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio.

After the participants answer each of the questions, the survey is concluded.

Participants in the control group will be asked only one question: "Based on what you just learned from the news, please indicate the new dollar amounts to be invested in each of the assets in your current portfolio." After they answer this question, the survey is concluded.

3 Empirical estimation

I intend to calculate the borrower-level changes in the dollar values allocated to a specific country between the initial amount reported and after the hypothetical scenario is presented to the borrower. I also intend to calculate the borrower-level changes in the % allocated to a specific country between the initial portfolio report and after the hypothetical scenario is presented to the borrower. Due to the need to explore interaction variables in my regression specification, I am planning to utilize OLS with interaction terms. The independent variables are dummies for four macroeconomic scenario variables (where different values of the dummy variable indicate different scenarios for that specific variable). I will also include interaction variables to indicate the effects of joint perception of macroeconomic variables (i.e. foreign exchange rate x accounting standards change). The treatment effect is the difference between the allocation % and the dollar allocations for equivalent portfolios (active or passive) of the treated group and the control group for a given country. [7]

4 Predictions

Below is the set of potential predictions from the experiment:

1. The hypothetical **switch of accounting standards in country A to U.S. equivalent** is likely to result in **more money** and a **larger fraction** of the total portfolio allocated to investments associated with country A.

2. **Higher inflation in country A** is likely to result in **less money** and a **smaller fraction** of the total portfolio allocated to investments associated with country A.

3. **Higher inflation in the U.S.** is likely to result in **less money** and a **smaller fraction** of the total portfolio allocated to international investments in general.

4. **A depreciation in the currency of country A** (more country A currency units needed to buy $1) is likely to result in **less money** and a **smaller fraction** of the portfolio allocated to investments associated with country A.

5. **Higher key rate in country A** is likely to result in **less money** and a **smaller fraction** of the total portfolio allocated to investments associated with country A.

[7] I will appreciate any additional suggestions on the regression design; this is a very preliminary sketch of what it's likely to be.

6. **Higher key rate in the U.S.** is likely to result in **more money** and a **larger fraction** of the total portfolio allocated to international investments in general.

7. Participants in the control group (the one that does not receive the economic scenario) will not make any changes to the portfolio allocations in response to the news not related to economics.

These are, of course, the most general predictions and do not involve any of the interactions between the variables. Moreover, this paper will only focus on the direction of changes (up, down, unchanged for most of the variables or changed/unchanged in case of the accounting standards) without investigating the relative magnitude of changes across the countries.

5 Mechanisms

5.1 Accounting information accessibility and international equity investments

Several papers have documented the relationship between accounting standards in a given country and equity ownership by foreign investors. As mentioned in the motivation section, similarity in accounting standards between the investor's country and the country invested in leads to a larger fraction of the total portfolio dedicated to investments associated with that country [19]. If the experiment participants expect to see the accounting standards in a certain country change to ones similar to the U.S. accounting standards, they should feel more inclined to invest in stocks from that country.

5.2 Foreign and domestic inflation and international equity investments

Stocks are often considered as a hedge against domestic inflation by households. Karlsson and Norden (2007) show that those most concerned about domestic inflation tend to exhibit a higher degree of home bias and allocate a larger proportion of their portfolio to domestic assets [13]. The perception is that the stock returns are going to outpace the inflation growth, leading to fewer welfare losses from inflation. For those investors who don't have substantial experience investing and/or are not familiar with historical observations of the stock market and inflation, such perceptions can hold a lot of weight in the investment decision-making.

But such perceptions may not necessarily be supported by empirical evidence. Fama and Schwert (1977) show that stock returns are negatively related to the inflation rate [8]. Erb, Harvey, and Viskanta (1995) show that in 29 out of 41 surveyed countries, country total return, value-weighted portfolios deliver higher returns in low-inflation periods than in high-inflation periods, when calculated in U.S. dollar terms [7]. As high inflation may also reveal information about high risk exposure from a specific country or a set of countries [7], investors concerned about global inflation might try to reallocate their investments to domestic assets. Hassan et al. (2021) show that elevated perceptions of a country's riskiness, as shown by the content of earnings conference calls, are associated with decreasing local asset prices and capital outflows. [12]

5.3 Foreign and domestic interest rates and international equity investments

There is mixed evidence on the relationship between interest rates and stock returns. Domian, Glister, and Louton (1996) show that decreased interest rates lead to higher stock market returns, and increased interest rates have little effect on the stock market [6]. Gu, Zhu, and Wang (2022) show that the interest rate effects on the stock market are time-varying. While on average higher interest rates lead to lower stock market returns, during periods of heightened economic development, higher interest rates don't cause a decline in stock prices [11]. The interaction between various positive indicators in my experiment (i.e. low level of country A's inflation, appreciating currency, accounting regime changing to one similar in the U.S.) and increased country A's interest rates is something that could test that result.

5.4 Currency markets and international equity investments

Currency depreciations tend to negatively impact stock returns and affect stock market volatility, as documented by several papers. Fang (2002) shows that the Asian currency crisis of 1997-1999 negatively impacted stock markets in Thailand, Hong Kong, Singapore, South Korea, and Taiwan [9]. Similarly to inflation rate increases, local currency depreciations serve as a signal of increased risk to foreign investors. Such developments could prompt U.S.-based investors to pull away from foreign equity markets, especially in light of limited information available beyond such public information. Cho et al. (2016) show that emerging country currency appreciations are positively correlated with the local stock market returns – so when the global stock market performs poorly, investors tend to move their capital to developed countries. This leads to portfolio reallocations between different country-associated positions [3].

6 Research progress

Right now, I'm in the idea development stage. I welcome extensive comments on this research idea. My next steps would be obtaining an IRB approval and securing funding for sample purchase (budget between $1,000 and 3,000).

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