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The role of institutional factors when determining investment strategies of sovereign wealth funds in stock market*

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Abstract. Sovereign Wealth Funds (SWF) are investment vehicles of governments which use its assets in hand for the favor of public interest. SWFs invest a vast amount of money that varies in amount from year to year both in national and international platforms. Funds which provide an excellent source mean a lot for developed countries as much as they mean to developing countries. In this study, the factors SWFs consider while investing in the stock market are analyzed. Panel data is chosen for analysis using SWF and Heritage institutional factor index. New Zealand is selected as example to illustrate that from which institutional factor, such as private property right, law enforcement, tax responsibility and freedom of labor, influenced investments New Zealand SWF made in stock markets of 42 different countries.
Keywords. Sovereign Wealth Funds, Stock markets, Investment, Institutional factors.
JEL. C10, C23, G23.

1. Introduction

SWF was first brought to literature by Andrev Rozanov in 2005, and it has still no explicit and clear definition. According to a definition, SWFs are government-owned investment vehicles which also includes foreign funds and governments try to accomplish macroeconomic goals by directing and controlling them (Bertoni & Lugo, 2013). Also, according to another definition, SWFs are specifically designed investment vehicles that are controlled by governments and provides governments with opportunities to use the power of global financial markets (Clark, Dixon & Monk, 2013). Lastly, SWFs are investment agencies that governments use some of their wealth for the favor of the public. SWFs include various investment vehicles, and they are used in many countries for a while. They play an important role in the global financial market recently (Back & Fidora, 2008). The biggest reason of having this role of SFW might be the rapid increase of assets in the funds.

Although SWFs are considered as a new phenomenon, it dates back to a century ago. Texas, for example, set up a perpetual university fund in 1876 and investing the real estate revenue, it provided benefit to the University of Texas and Texas A&M University, both located in Texas. In 1956, British Administration of Gilbert Island launched Kiribati Revenue Equalization Reserve Fund to utilize and manage the revenue of phosphor which is one of the exhaustible resources. Norway, Saudi

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Arabia, Qatar, UAE and Kuwait also set up SWFs to utilize the income of petroleum. Countries like China and Singapore which do not have petroleum revenue but have profited from foreign currency, used some of their foreign exchange excess for SWFs (Dewenter, Han & Malatesta, 2010). In other instances, some budget and retirement excesses might be seen as used for SWFs (Butt, *et al.,* 2007). While SWFs investments reached 2.5 billion dollars around the world in 2006, (Dewenter, Han & Malatesta, 2010), this amount rose to 7.4 billion dollars by increases approximately three times more in 10 years (SWF, 2016).

After 2000, the interest for SWF around the globe increased, especially developing countries put more effort to set up wealth fund. The most significant reason why they put more effort was not only the potential increase in the price of petrol and commodity at that time but also the growth in the economy and the rise in the capital movements (Lam & Ross, 2010). As a matter of fact, according to SWF Institute data, 49 out of 78 SWF were set up after 2000 and majority of those SWFs were set up by developing countries (SWF, 2016).

Since SWFs contributed economies so much, especially after 2008 financial crisis, it has been mentioned many times in literature, and various empiric studies have been conducted on it. In the literature, it is possible to see some studies where the effect of macro variables of SWFs on the relationship between institutional structure and operations, and investment strategies are analyzed (Das, 2009; Ciarlone & Miceli, 2016). In addition to the studies about investments of SWFs in stock markets Dewenter, Han & Malatesta (2010), Heaney, Li & Valencia (2011), Megginson, You & Han (2013), there are some studies about which private or public companies are more preferred to make investments as well as studies about determining SWF asset allocation strategies Bertoni & Lugo (2013), Johan, Knill & Mauck (2013), Bernstein, Lerner & Schoar, (2013). Moreover, there are some studies which analyze market value of companies after SWF investments (Fernandes, 2014).

2. SWF Sources and Purposes

While investing, SWFs use a variety of sources. These sources may be international monetary reserves as well as revenues from commodity sales, profits from real estates or budget excesses such as transfers from government budget to specifically designed investment vehicles (Fernandez, 2011).

In 1997, there was global instability because of Southeast Asia Crisis and developing countries had to have huge budget deficits to meet their expected growth targets. Staggering effects of crisis showed, especially to Southeast Asia countries, how critical international reserves are. This unfortunate incidence created awareness to have reserves in order not to struggle with same problems again. At the same time, high fluctuation in exchange rate harms economic growth of financially incompetent countries. Having reserves to prevent probable crisis and volatility of floating exchange rate in a crisis time brought the question of how this reserves should be utilized. In this regard, SWFs undertake the responsibility to use international reserves in high-yield assets (Clark, Dixon & Monk, 2013). In the meanwhile; it is aimed to increase global reserves and shrink the disparity between central bank liabilities and reserves (Kozack, Laxton & Srinivasan, 2011).

Commodity-based SWFs are usually made up by the sales of petroleum and natural gas. Sometimes, some of the profit gained by sales of metal and minerals are also used for SWFs. Commodity-based SWFs can be formed by the profit of government-owned corporations as well as by the tax revenue of commodity sales (Fernandez, 2011). There is a close relationship between price movements in commodity export, and private and public investments (Gelb, 2014). Mainly, the volatility in the price of commodities like petrol and natural gas puts countries which export these products, in a difficult situation while determining their financial policies. Natural resource wealth makes the currency of the country more valuable and causes Agricultural and Industrial sector weaken. Therefore, SWFs aim to eliminate profit uncertainty and maintain financial stability thanks to low

price commodities in time of crisis and also prevent the possible negative consequences of using nonrenewable natural resources for next generation (Clark, Dixon & Monk, 2013).

SWFs which base on budget excesses such as government institutions' operating revenue, privatization revenue, and other revenues, are similar to funds which base on the return of commodity sales and international reserve excesses. These funds are set up to maintain financial stability, manage the assets which are under control or ownership of government, provide a better future, or at least keep the current situation, for next generations.

3. Investment Strategies of SWFs

SWFs determine investment strategies to achieve some goals. These goals are contributing to economic stability by preventing excess volatility in revenue, helping monetary authorities to mop up the unwanted liquidity, creating savings for next generations and managing those savings, setting up public pension funds, and increasing the foreign exchange reserve returns by sustaining social development (Kozack, Laxton & Srinivasan, 2011).

While determining investment strategies, SWFs use three vehicles; financial, institutional and investment vehicle. Investments vehicles may help with reducing tax liabilities as well as accomplishing political goals, gaining technological advancement, entering foreign markets and increasing strategical motivation. Furthermore, financial vehicles used by SWFs may yield tax revenue, profit from investment and allocate portfolio. Lastly, SWFs benefit from institutional vehicles. The experience institutional vehicles have about industry and country, purchasing a firm for instance, lighten the burden of SWFs. Institutional vehicles may have financial and strategic goals (Murtinu & Scalera, 2016).

Countries which have high level of economic development, liquid and deep financial markets, protected property rights and macroeconomic stability play an important role in determination of investment strategies of National Asset Funds (Ciarlone & Miceli, 2016). Moreover, SWFs invest in international companies which operate in developed countries, have financial distress and low performance (Kotter & Lel, 2011).

SWFs usually prefer taking large positions in firms they invest. Due to the large positions, the desire to be large shareholder plays a vital role in the value of company since company's transactions are monitored more closely. Besides, large shareholder enhances the value of the company by increasing value added through making profitable purchases and necessary improvements (Dewenter, Han & Malatesta, 2010).

Target-wise, SWFs adopt long-term, risk sensitive, continuously high profitable investment strategies (Dyck & Morse, 2011). These funds which have much larger capital comparing to private sector investments can be a shield against possible liquidity shocks in the short run through long-term investments (Boubakri, Cosset & Grira, 2016). SWFs aim to bring knowledge and experience they gained through joint venture and buying stakes in foreign companies in order to maintain economic prosperity and create economic variety, especially in countries whose economies depend on several sectors (Dyck & Morse, 2011). Political goals are also considered when determining investment strategies of SWFs. SWFs are more likely to invest in countries where they have weak political relations rather than just making a foreign investment (Knill, Lee & Mauck, 2012). The underlying reason for this preference is to improve the political relations.

When political reasons outweigh, commercial strategies are partially ignored. This limits the investment decisions and the expected enhancement in the stock value of the firms in which investments are made (Murtinu & Scalera, 2016). SWFs are interested in financial institutions and strategic industries like technology-intensive sectors. Investments made in these industries increase SWFs' government political influence. However, this is considered as a threat to national security by home countries (Boubakri, Cosset & Grira, 2016). Lastly, religious and

cultural values influence SWFs investments. When investing in various industries, countries which share the same religion and culture are preferred. The tendency to invest in such countries also brings the expectancy to make the most of knowledge sharing (Chhaochharia & Laeven, 2008). Of course, there are some principals for SWFs to maintain the growth acceleration as continuous and stable. First of all, economic expectations should have the precedence over political expectations. In other word, SWFs should make their investments decisions based on economic goals rather than political reasons. Secondly, SWFs should compete with private sector fairly and avoid unfair competition. Thirdly, SWFs should be responsible for maintaining international financial stability since they are public institutions that want to benefit from global markets. They should do their best to work with the public when risk and pressure increase on financial markets. Fourthly, SWFs should comply with them and supervisory rules of home country. Lastly, SWFs should be transparent about their investments and be able to account for their decisions. They should also have robust risk management system, an efficient governance system, and internal control mechanism (Kimmit, 2008).

SWFs differ regarding their investment decisions. While some SWFs want to invest in their country, others entirely invest abroad. Also, SWFs channelize the investments in riskier areas through participations, joint-ventures, and buyouts along with investing in government bonds (Jorry, Perry & Hemphill, 2010). SWFs invest their assets in financial markets with the guidance of governments, and especially they invest in firm bonds that lost value because of price instability in the stock markets (Sun & Hesse, 2009). SWFs investments may have an impact on stock prices and performance of target firm (Kotter & Lel, 2011). Some studies suggest that announcing SWFs investments in stock markets impact target firm stock values positively in the short run and add acceleration in stock markets. However, this positive impact is not certain in the medium and long-term (Miceli, 2013).

4. Methodology

In econometric analysis section, the role of institutional factors in determining investment decision of SWFs is analyzed. Linear panel analysis is used for analysis. Causality can be acquired between economic variables through time series analysis, cross-sectional analysis, and panel analysis. Panel analysis includes time series and cross-sectional dimensions already. The most significant advantage of using panel analysis is to let unobserved effects be correlated with variables (Wooldridge, 2013). For instance, when explaining the relation between crime rate and unemployment in cities, unobserved effects are expected (α_i) to correlated with the unemployment rate.

If the panel data function is;

$$Y=\beta_0+\beta_{1it}\,X_{1it}+\cdots\beta_{kit}X_{kit}+e_{it} \qquad i=1,\ldots N \qquad t=1,2,\ldots T$$

where i refers to section, and t refers time series

$$e_{it}=\alpha_i+u_{it}$$

it can be understood that unobserved effects are in error.

Two static panel analysis methods are used in the study; fixed effects and random effects models. After that, a selection is made between fixed and random effect models using Hausman (1978) specification test.

Fixed effects model: In this model, independent variable has no relation with the error term. Changes in the units make change in the constant coefficients. The constant term takes a different value for each cross-section units.

Random effects model: In this model, units are chosen randomly. That is why the difference between units happen randomly. The variation by units or time is a component of the error term.

Hausman Test: In this test, error term components and independent variables are unrelated. The null hypothesis of this test is that random effects model is significant. When the null hypothesis is rejected, fixed effects model is accepted.

5. Data, Model and Empiric Results

2010-2015 years' data is used in the analysis. Panel analysis is used for stock investment of New Zealand SWFs in 42 different countries. There are both developing and developed countries in these 42 countries.

SWFs are classed according to their transparency using Linaburg & Maduel transparency index developed by Carl Linaburg and Micheal Maduell (SWF, 2016). Transparency index is a 10-point scale based on transparency criteria, where one is the least, and ten is the most transparent. Transparency criteria consist of many variables such as having contact information, determining strategies, sharing annual reports, creating the code of ethics, publicize investment strategies, and so on. New Zealand SWF is chosen in this study because New Zealand SWFs is one of the most transparent SWFs around the globe according to transparency indexes. Also, Heritage Foundation indexes, often seen in literature, are used to decide the role of institutional factors in investments.

Lack of appropriate financing vehicles, weakness of debt instruments, insufficient quality data, regulatory barriers, and risk caused by home country are some institutional factors SWFs consider while investing (Croce & Yermo 2013). Also, lack of political sentiment, lack of infrastructure, negative perception toward infrastructure, lack of transparency in infrastructure sector are some other factors prevent SWFs make investments (Inderst & Stewart, 2014). Considering all these factors, the model is below;

$$Lnvfyatirim_i = \beta_0 + \beta_1 lngdp + \beta_2 property + \beta_3 investment + \beta_4 labor + \beta_5 monetary + \varepsilon_i$$

Variables and symbols are shown in Table 1.

Table 1. *Variables Used İn The Model*

Definition of Variable	Obtained Resource	Expected Sign
Sovereign Wealth Fund Investment (vfyatirim)	New Zealand SWF Balance Sheets	Dependent variable
GDP (gdp)	World Bank	+
Property Rights (property)	Heritage Foundation	+
Investment Freedom (investment)	Heritage Foundation	+
Labor Freedom (labor)	Heritage Foundation	+
Monetary Freedom (monetary)	Heritage Foundation	+

Variables used in model are (heritage.org): Dependent variable SWF investment refers to investments of New Zealand SWF in stock markets. GDP: Gross Domestic Product per capita in purchasing power. Private property right variable is a measurement which is created to measure how good the right of private property is protected and respected.

Investment freedom variable refers to various regulatory barriers. National treatment of foreign investors, land ownership limitations, sectoral investment limitations, foreign exchange and capital control are some of these barriers. Freedom of labor considers the legal and regulatory aspects of the labor market, and it is a qualitative measurement that shows regulator restrictions in labor market such as minimum wage, laws against firing, seniority indemnity, recruitment, and works hours.

Finally, monetary freedom combines measurement of price stability and assessment of price control. Inflation and price controls harm market transactions. Price stability without any government intervention is ideal for the market.

The results of fixed and random effects model are shown in Table 2.

Table 2. *Fixed And Random Effects Model Results*

Variables	Fixed Effects	Random Effects
Constant	-24.604	-2.745
Lngdp	3.68*	1.52*
Property	-0.022*	-0.031*
Investment	0.034*	0.031*
Labor	0.015**	0.019*
Monetary	0.035*	0.044*
No of Obs.	252	252
R-square	0.43	0.39
No of Groups	42	42
F/Chi-square test p-value	0.000	0.000

Note: * significant at %1, ** significant at %5.

As shown in Table 2 GDP, private property right, freedom of investment, freedom of labor, monetary freedom are significant. However, private property right is negative unlike expected.

The results which are going to be used will be decided by Hausman Test. The null hyposthesis of Huasman Test is that random effects model is significant. In case null hypoteis is rejected, fixed effects model will be used. The results of Huasman Test is given in Table 3.

Table 3. *Hausman Test Statistics Results*

Test Statistics	45.60
Significance Value	0.000

Since P-value is less than 0.05 in the result, the null hypothesis is rejected, and fixed effects model is accepted.

Heteroscedasticity and autocorrelation test will be performed to control if there is hypothetical bias. Wald test will be used for heteroscedasticity. Moreover, autocorrelation will be tested by Durbin Watson test developed by Bhargava *et al.,* (1982) and Locally best invariant (LBI) test developed by Baltagi & Wu (1999). If both statistic results are close to 2, we can assume there is no autocorrelation in the model. Results are given in Table 4.

Table 4. *Heteroscedasticity and Autocorrelation results*

Wald Chi-square	666.41
Significance Value	0.000
Durbin Watson	1.15
Baltagi-Wu LBI	1.67

Looking at Wild chi-square test statistics, null hypothesis is rejected and heteroscedasticity problem has been identified in the model. There is a high degree of autocorrelation in the model since Durbin Watson and LBI test statistic values are less than 2, shown in the bottom part of Table 4. Due to the hypothesis errors, fixed effects model cannot be used as it is (Tatoglu, 2012). To get better results, the model is reevaluated with Driscoll-Kraay (1998) Standart Error Fixed Effects Regression Model and results are presented in Table 5.

Table 5. *Driscoll-Kraay (1998) Standart Error Fixed Effects Reggression Model*

Variables	Driscoll-Kraay
Constant	-24.604*
Lngdp	3.68*
Property	-0.022*
Investment	0.034*
Labor	0.015*
Monetary	0.035***
No of Obs.	252
R-square	0.43
No of Groups	42
F test p-value	0.000

Note: * significant at %1, *** significant at %10.

According to the result of Table – 5, monetary freedom is at 10% significance level while GDP, private property right, freedom of investment, and freedom of labor are at 1% significance level. Private property right variable is not as expected again. The reason why this variable is negative can be because we study the stock market where the volatility is high, there are countries where private property rights are less developed in data set and these countries want to invest in more profitable assets (Jory, Pery & Hemphill, 2010).

Accoring to the model, a unit change in GDP, for example, will result 3.7% increase in SWF investments where all other variables are kept constant. A unit increase in freedom of investment will result 3.5% increase in SWF investments.

6. Conclusion

This study examines stock markets in order to explain the investment strategies of SWFs. Investments of New Zealand SWFs in 42 different country stock markets during 2010-2015 are analyzed. Panel analysis is used as the econometric model. Two estimation model are acquired in the study and Hausman test is used to decide which one to consider. Results show that Fixed Effects Model is more appropriate. Then, autocorrelation and heteroscedasticity tests are performed to see if there is hypothetical bias and results show that the model has both of the problems. Thus, Driscoll-Kraay Standart Error Fixed Effects Model is used to get more significant results.

According to analysis results, GDP growth, has positive and strong relation with SWF investments. Private property right does not attract SWF more, in fact, it influences adversely. On the other hand, freedom of investment is an essential factor for SWFs investments. While other variables remain constant, 1% increase in freedom of investment variable will result 3.4% increase in SWFs investments. Freedom of labor also has a positive relationship with SWFs. As this variable which refers to the legal and regulatory aspect of the labor market has positive and significant, it shows us the importance of labor market. Furthermore, monetary freedom has strong and positive relation with SWFs with 10% significance level. That proves how vital price stability is. Developed countries have a huge advantage in this regard.

From this results, if a country wants to attract more attention for SWFs in the stock market, it firstly, should have a high growth rate. Then, adjust the limitations and barriers for foreign investors to make it more suitable for rivalry and global world. Also, regulation in labor market will signal foreign investors either positively or negatively. Inflation is another super important factor here. High inflation frightens investors.

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