Political constraints and trading strategy in times of market stress: Evidence from Chinese national social security fund

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Political constraints and trading strategy in times of market stress: Evidence from the Chinese national social security fund

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Abstract

We analyze the trading behavior of the Chinese National Social Security Fund (CNSSF) – a fund that operates in a highly political environment. With a particular focus on the financial crisis [2007(Q3)-2009(Q1)], we show that the CNSSF adopts a rebalancing strategy that achieves a balance between portfolio liquidity and growth.

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Introduction

In this paper, we analyze a state-sponsored investment fund to gain insights into managerial motivations during times of financial market stress. This particular focus on “hard times” is motivated by the belief that “good times” present few challenges, whereas stressful times provide a richer setting for the detection of any underlying strategic behavior (Ben-David et al., 2012). Moreover, our goal is to examine a government-backed investment fund, with non-trivial political constraints, in contrast to managed funds with a pure profit motive and fund flow constraints. We use the Chinese national social security fund (CNSSF) as a laboratory and examine the trading behavior of this fund during the recent financial crisis.

The CNSSF is a strategic reserve fund designed to support a range of social security needs for an ageing population in China. The CNSSF is managed and operated by the National Council for Social Security Fund (SSF). Notably, in line with other types of state-sponsored investors, political factors have an important influence over CNSSF portfolio formation. As a consequence, the objectives of government-backed investors tend to be different from conventional “wealth-maximization” investors, such as mutual funds. Moreover, it is insightful to study the trading strategies of the CNSSF because it concentrates

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1 CNSSF assets arise from government allocations, sales of state-owned enterprises and other state funds including state lottery fees and investment income (Leckie and Pan, 2006). In contrast to the American Social Security Fund (ASSF) that collects tax and pays beneficiaries, the CNSSF has no liabilities for its beneficiaries. Indeed, the underlying nature of the CNSSF is a little contentious. For example, Knill et al. (2012) assume the CNSSF is a state-sponsored institutional investor and include it on their sovereign wealth fund (SWF) list. In contrast, Bortolotti et al. (2015) classify the CNSSF as a type of pension fund.

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on the domestic market and this inward investment allows us to test a premise of whether the government can protect its assets in a monopoly-type market environment (Knill et al., 2012).

Our work is also directly related and contributes to the rich literature on sovereign wealth funds (SWFs). Boubakri et al. (2016) compare differences in target selections between SWFs and pension funds. They show that SWFs prefer strategic industries, highly sustainable economies and weak legal markets. Johan et al. (2013) examine factors affecting SWFs’ decisions between private and public equity. They document that SWFs tend to invest more in private equity than in public equity when there is low investor protection or weak political connections between the SWF’s home jurisdiction and the target nation.

2. Data description

The CNSSF does not operate in a fully transparent fashion, and like other types of state-sponsored entities its trading records are notoriously opaque (Bortolotti et al., 2015). The annual reports from the CNSSF do not disclose detailed stock holding information. Moreover, the fund managers of the CNSSF are strictly bound by confidentiality and rarely discuss their operations. For a given portfolio of the CNSSF, there is no public information about the fund manager, asset allocations or performance. As such, a certain mystique is attached to the trading behavior of the CNSSF.

Since detailed investment information is not publicly available, empirical evidence is sparse with regard to trading behavior and associated outcomes. Our empirical strategy is to trace the trading behavior of the CNSSF using information from the top 10 shareholders list, manually extracted from the quarterly and annual reports of listed companies. All data are sourced from the China Stock Market and Accounting Research database. The CNSSF has more than 40 different types of portfolios, uniquely identified by a three-digit number. We choose to study equity portfolios (#101–112) that were created before 2005. This sample allows a comparison before and during the financial crisis. Our sample spans 2005 to 2011 encompassing the financial crisis period.

3. Empirical design and hypothesis development

To examine the trading motives of the CNSSF, we model change in CNSSF holdings as a function of stock characteristics (Ben-David et al., 2012). The model is presented in Eq. (1). The dependent variable is the quarterly aggregate change in capitalization for each stock i held by the CNSSF (scaled by outstanding market capitalization), across portfolios 101–112. We identify if the stock was sold by the CNSSF and this measure is referred to as the selloff quarter indicator (SQi). This variable is interacted with the stock characteristic variables:

\[\Delta \text{CNSSF Holdings}_{t} = \alpha + \beta SQ_i + \beta_1 SIZ_{t-1} + \beta_2 \text{ILL}_{t-1} + \beta_3 \text{VOL}_{t-1} + \beta_4 \text{PR}_{t-1} + \beta_5 \text{BM}_{t-1} + \gamma \Delta \text{CNSSF Holdings}_{t-1} + \epsilon_t\]

where SQi is the selloff quarter indicator, SQi = 1, if there is a decrease in CNSSF net stock holdings; otherwise, 0; ILL_{t-1} = 1, if stock i is above median illiquidity in quarter t – 1; otherwise 0; VOL_{t-1} = 1, if stock i is above median volatility in quarter t – 1; otherwise 0; PR_{t-1} = 1 if stock i is above median average return in quarter t; otherwise 0. SIZ_{t-1} = 1, if stock i is above median size in quarter t – 1; otherwise 0; BM_{t-1} = 1 if stock i is above median book-to-market ratio in quarter t; otherwise 0.6

Eq. (1) is re-estimated by dividing selloff quarters (SQ) into two sub-period types: active sale quarters (AQ) before the financial crisis, versus fire sale quarters (FQ) during the financial crisis. Our goal is to compare different trading motives under different market states. The selloff quarter division is listed in Table 1.

The interaction terms involving SQi and the stock characteristic variables are our main focus. We formulate three hypotheses. First, Brown et al. (2010) propose the liquidity preference hypothesis and argue that investors will try to preserve liquidity to meet such needs in the future. As a long-term investor and social liquidity provider (Leckie and Pan, 2006), the CNSSF likely has an incentive to implement a liquidity preference strategy. Therefore, we expect a negative relation between the CNSSF holdings and illiquidity preference in the selloff quarters. In the context of Eq. (1):

\[H1. \text{ (Liquidity preference hypothesis): } \beta_1^* < 0.\]

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2 For a helpful recent literature review, see Megginson and Fotak (2015).

3 CNSSF was founded in November 2000. In June 2003, CNSSF started to entrust six fund management companies to invest in the domestic market. However, until the end of 2004, there was in total only 22 companies that disclosed CNSSF in its top ten outstanding shareholder list. Since 2005, the number of entrusted fund management companies increased to ten and the trades have become active in the Chinese market.

4 By the end of 2011, the estimated holding value across portfolios 101 to 112 was 96.27 billion Yuan, accounting for 26.40% of total entrusted funds covering all risky asset investments.

5 Stock illiquidity is defined by the average ratio of the absolute value of daily returns to dollar volume in the quarter. Volatility is measured by the previous 24 monthly return standard deviation up to the end of quarter t – 1. Size is the market capitalization at the end of the quarter t – 1. Average return is assessed for the previous six months before the end of quarter t – 1.

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Second, is the risk management preference hypothesis. Speculators are forced to reduce exposure to risky assets in bad times (Brunnermeier and Pedersen, 2009). However, informed investors increase their risky asset holdings when the market is in decline (Kacpercyk and Seru, 2007). We use $\text{VOL}_{i,t}$ as the stock risk measure to assess the risk management preference of the CNSSF with an information advantage. A negative coefficient is expected on this variable. More formally, in the context of Eq. (1):

$$H2. \text{ (Risk management preference hypothesis): } \beta^S_{i,t} < 0.$$  

Third, is the safety first preference hypothesis. Knill et al. (2012) propose that sovereign entities tend to make use of political information in the domestic market to protect their assets. We use $\text{PR}_{i,t}$ as the stock performance measure to assess whether the CNSSF, as a government-backed pension fund, can lock in profits prior to the crisis shock. A negative coefficient is expected on this variable. More formally, in the context of Eq. (1):

$$H3. \text{ (Safety first preference hypothesis): } \beta^F_{i,t} < 0.$$  

4. Empirical results and discussion

The results from Eq. (1) are presented in Table 2. Panels A, B and C present results corresponding to all sell-off quarters, active sale quarters, and fire sale quarters, respectively.

Generally, consistent with $H1$ the results show that liquidity is managed. A negative coefficient estimate on the interaction variable with the illiquidity indicator ($\beta_{i,t}^S$) shows that the CNSSF sells illiquid stocks in the sell-off quarters (Panel A) and in the fire sale quarters (Panel C). Referring to the coefficient point estimates, in the All Quarters (Fire Sale) analysis, on
average, there is a 0.228% (0.308%) reduction in the value of CNSSF holdings of illiquid stocks in selloff quarters, relative to their outstanding market capitalization. This result is in contrast with the previous literature showing that mutual funds and hedge funds preferentially sell liquid securities first, when the market experiences a pronounced decline, to minimize price impact (Brown et al., 2010). However, the CNSSF postpones selling liquid stocks, perhaps showing a liquidity precaution motive consistent with the liquidity preference hypothesis of Brown et al. (2000) and/or the goal to capture future trading opportunities (Anand et al., 2013). Thus, hypothesis H1 is supported.

With regard to H2, the coefficient, $\beta_D$, shows the CNSSF has opposite trading patterns before and during the crisis with respect to controlling portfolio risk. Before the financial crisis, a negative estimated coefficient on the interaction term with the volatility indicator ($\beta_D$) shows that the CNSSF actively sells high volatility stocks to decrease portfolio risk. That is, on average, there is a 0.509% reduction by the CNSSF in the value of high volatility stock holdings before the crisis, relative to their outstanding market capitalization (Panel B). This result is consistent with the CNSSF having ability to anticipate the forthcoming market downturn. Thus, H2—the risk management preference hypothesis is supported. In contrast, during the crisis, a positive estimated coefficient on the interaction term with volatility suggests that the CNSSF reverts back to holding high volatility stocks. That is, on average, there is a 0.368% increase in the value of high volatility stock holdings by the CNSSF during the crisis, relative to their outstanding market capitalization (Panel C).

According to the limits-to-arbitrage theory, speculators are forced to reduce exposure to risky assets in bad times or follow a flight to quality/safety (Brunnermeier and Pedersen, 2009). Our findings support the view that good public information lowers holdings in risky assets by informed investors. Conversely, bad public information boosts these holdings (Kacpercyak and Seru, 2007). Andonov et al. (2013) find similar results in US public pension funds. They attribute this to a direct incentive to transfer risk to future generations and the distinct regulatory environment pertaining to public pension funds.

Regarding H3, the estimated negative coefficient on the interaction term, involving the average return indicator $\beta_{PR}$, shows that in the selloff quarters, and especially active sale quarters (Panel A and B), the CNSSF sells the better performing stocks. That is, on average, there is a 0.448% (0.517%) reduction in the value of better-performing stock holdings by the CNSSF in the all quarters (before the crisis) analysis, relative to their outstanding market capitalization. This result is consistent with our hypothesis that the CNSSF sells the safe assets first in order to lock in profits prior to the crisis. The CNSSF follows safety-first strategies during selloff quarters.

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Table 2
CNSSF trading and stock characteristics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Panel A: all quarters sample Selloff = SQ</th>
<th>Panel B: pre-crisis active sample Selloff = AQ</th>
<th>Panel C: crisis fire sale sample Selloff = PQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selloff</td>
<td>$\beta$ = −0.041 (−0.209)</td>
<td>−0.083 (−0.295)</td>
<td>−0.035 (−0.174)</td>
</tr>
<tr>
<td>Selloff × illiquidity indicator $\beta^I$</td>
<td>$\beta^I$ = −0.228* (−0.690)</td>
<td>0.104 (0.503)</td>
<td>−0.308** (−2.049)</td>
</tr>
<tr>
<td>Selloff × high volatility indicator $\beta^V$</td>
<td>$\beta^V$ = 0.087 (0.668)</td>
<td>−0.509*** (−2.633)</td>
<td>0.326*** (2.679)</td>
</tr>
<tr>
<td>Selloff × high past 6M return indicator $\beta^{PR}$</td>
<td>$\beta^{PR}$ = −0.448*** (−3.499)</td>
<td>−0.517*** (−2.895)</td>
<td>−0.186 (−1.380)</td>
</tr>
<tr>
<td>Selloff × high size indicator $\beta_S$</td>
<td>$\beta_S$ = −0.307** (−2.076)</td>
<td>−0.066 (−0.318)</td>
<td>−0.296* (−1.917)</td>
</tr>
<tr>
<td>Selloff × high book-to-market indicator $\beta^{BM}$</td>
<td>$\beta^{BM}$ = 0.078 (0.592)</td>
<td>0.001 (0.007)</td>
<td>0.078 (0.563)</td>
</tr>
<tr>
<td>Illiquidity indicator $\beta_I$</td>
<td>$\beta_I$ = 0.357*** (2.919)</td>
<td>0.247** (2.359)</td>
<td>0.312*** (2.798)</td>
</tr>
<tr>
<td>High volatility indicator $\beta_V$</td>
<td>$\beta_V$ = −0.293*** (−2.645)</td>
<td>−0.134 (−1.411)</td>
<td>−0.394*** (−3.886)</td>
</tr>
<tr>
<td>High past 6M return indicator $\beta^{PR}$</td>
<td>$\beta^{PR}$ = −0.009 (−0.905)</td>
<td>−0.150** (−2.118)</td>
<td>−0.166* (−2.081)</td>
</tr>
<tr>
<td>High size indicator $\beta_S$</td>
<td>$\beta_S$ = −0.174 (−3.132)</td>
<td>−0.348*** (−3.085)</td>
<td>−0.208* (−1.727)</td>
</tr>
<tr>
<td>High book-to-market indicator $\beta^{BM}$</td>
<td>$\beta^{BM}$ = 0.175 (1.474)</td>
<td>0.203** (1.963)</td>
<td>0.172 (1.577)</td>
</tr>
<tr>
<td>Lagged ΔCNSSF holdings (%) $\gamma$</td>
<td>$\gamma$ = 0.090*** (6.778)</td>
<td>0.091*** (6.879)</td>
<td>0.098*** (7.356)</td>
</tr>
<tr>
<td>Constant $\alpha$</td>
<td>$\alpha$ = 0.290* (1.880)</td>
<td>0.277*** (2.214)</td>
<td>0.308** (2.226)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.029</td>
<td>0.025</td>
<td>0.021</td>
</tr>
<tr>
<td>Firm FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>F</td>
<td>15.22</td>
<td>13.40</td>
<td>11.09</td>
</tr>
</tbody>
</table>

This table reports the outcome of estimating the regression (1) for CNSSF holding change on a set of indicator variables. T values are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10%, respectively. The sample period is 2005–2011, encompassing a pooled sample of 7392 quarterly observations.
In addition to three hypotheses discussed above, the insignificant $\beta_S^5$ coefficient does not support a size effect in the active sale quarters (Panel B). However, CNSSF sells large stocks in all the selloff quarters (Panel A) and in the fire sale quarters (Panel C), consistent with the CNSSF holding more state-owned companies. That is, on average, there is a 0.307% (0.296%) reduction in the value of holdings of large stocks by the CNSSF in the all quarters (fire sale quarters) analysis, relative to their outstanding market capitalization. Notably, there is no book-to-market effect ($\beta_{BM}^5$) in the selloff quarters (Panel A, B and C). This results means there is no evidence that the CNSSF sells undervalued stocks in the selloff quarters.

5. Conclusion

We explore the trading behavior of the Chinese social security fund before and during the financial crisis. Generally, we provide evidence supporting the view that the CNSSF adopts valuation-oriented, principally rebalanced and safety-first strategies. The CNSSF sold high risk stocks to decrease portfolio risk before the financial crisis and held high volatility stocks during the crisis to rebalance the portfolio with growth stocks. Moreover, the CNSSF delays selling liquid stocks to maintain portfolio liquidity. There is no evidence supporting the view that the CNSSF hastily dumps undervalued stocks, however, the CNSSF locks in profits during active sale quarters.

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