Operating the impossible trinity before and after the global financial crisis 2007–2008: evidence in Vietnam

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Abstract: This paper focuses on analysing the changes in the impossible trinity administration in Vietnam before and after the global financial crisis 2007–2008. Using the indices representing the impossible trinity, including MI, ERS, and FO, as well as the regression models based on the ARDL method, the authors found that during the study period, the Vietnamese government had selected the exchange rate stability on the list of priorities. The combination with another goal in the impossible trinity, however, changed over two phases. In the period before the crisis, the financial integration was more focused while in the period after the financial crisis, the goal of monetary independence received greater attention. We also discovered that the Vietnamese government was likely to regulate the impossible trinity policies under the intermediary regime that showed the indicators of the impossible trinity with the value approaching 0.5.

Keywords: trilemma; monetary policy; FDI capital; exchange rate.


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1 Introduction

It is any country’s goal to achieve three objectives in managing macroeconomic policies: free international capital market to attract foreign capital for economic development, stabilising the exchange rate to create confidence for investors and implementing an independent monetary policy through the interest rate mechanism to regulate the money supply in the economy to curb inflation. However, in practice, this is impossible. Asian countries were originally believed to achieve all three objectives simultaneously, but the final result was the Asian financial crisis of 1997. Since this crisis, many researches have been made regarding the impossible trinity in different time and space frames. The researches, especially in emerging market countries showed a new trend when reaching the intermediate state among the three policy objectives: financial integration accompanied by controlling the capital, monetary independence along with fluctuating exchange rate mechanisms in the amplitude of acceptable goals by strengthening foreign exchange reserves as a tool to manage the exchange rate.

Vietnam, as well as other developing countries, expect to attract foreign capital for economic development. In order to reach that target, stabilising the exchange rate and using the monetary policy through interest rates as a tool become important. However, with the advantage of being an official member of the WTO, Vietnam has massively poured the FDI inflows in within only a very short amount of time. As foreign capital flows are poured into the country, the pressure to change the exchange rate stability increases. With the purpose of increasing foreign exchange reserves, the Central Bank has definitively bought about 10 billion dollars which led to an increase in money supply in the economy at a high record. On the other hand, the intervention of the government through open market operations was ineffective, which causes the Vietnam economy to be in high inflation. To curb inflation, the state bank tightly applied the monetary policy, which led to stagnation in manufacturing. Manufacturing enterprises stopped manufacturing goods because the cost of using capital was too high. At this time, due to the impact of the global financial crisis, FDI inflows began to reverse, the state bank conducted VND devaluation several times in a short amount of time. By 2011, after devaluating at high record (9.3%), the state bank announced that it would stabilise the exchange rate and would not dump more than 2% throughout the year. Along with the efforts to control inflation, we can say that the Vietnamese economy temporarily overcame the period of constant changes and maintained its growth momentum. How was this success related to managing the impossible trinity in Vietnam? And if so, were there any differences between the period before and after the global financial crisis of 2008? This research is conducted to answer the above questions, from which there will also be recommendations for the operating policies of the impossible trinity in Vietnam in the upcoming period. The main objectives of this subject are

- measuring the level achieved in the indicators of the impossible trinity of Vietnam in the period before and after the global financial crisis of 2007–2008
- studying the change in operating the impossible trinity in Vietnam including monetary policy, exchange rate policy, capital controls and foreign exchange reserves in the stages before and after the global financial crisis of 2007–2008
- proposing some recommendation policies regarding the impossible trinity management in Vietnam in the period of 2016–2020.
2 The impossible trinity theory and the overview of the previous research

‘Impossible trinity’ – one of the important theories of international finance that was developed based on the ideas of Robert Mundell and Marcus Fleming in the 1960s (Fleming, 1962; Mundell, 1963). It is one of the researches on the conditions of monetary policy in an open economy, and is also one of the contributions to the Nobel prize that professor Mundell was awarded in 1999. Based on these ideas, Krugman (1979) and Frankel (1999) developed the theory of ‘impossible trinity’. The theory stated that a country cannot simultaneously achieve a fixed rate, perfect mobile international capital and monetary independence.

Through the analysis of policy choices in various countries and regions around the world over different periods, researchers mostly concluded that the theory of ‘impossible trinity’ became an important guide in conducting policies. In particular, the currency crisis in Mexico, Asia, Brazil and Russia, along with the increase in international capital flows have increasingly enhanced the importance of the ‘impossible trinity’ theory as leading grounds when selecting policies. Fischer (2001) suggested that when capital flows freely moved and grew in scale, the intermediate exchange rate regime could hardly survive in the open financial economies. Therefore, according to Fischer, these countries should choose a combination of financial liberalisation with the fully floating rate or fixed peg (hard peg). In addition, the reform process and the quick increase of the financial depth reduced the effectiveness of capital controls. Research by Obstfeld et al. (2004, 2005) on the sample of over 100 countries during the period from 1870 to 2000 showed that some countries pursued the three goals but they could not simultaneously achieve them all. Some economies in emerging markets tended to favour the choice of capital account liberalisation and exchange rate management. In particular, the countries abolishing capital control measures with an exchange rate peg would have to suffer an independent monetary policy, while the countries that did not apply the measure of exchange rate peg still did not achieve the level of relative monetary independence. Other researchers also offered insights into the policy selection process of a set of countries. For instance, Fabien (2009) who measured and evaluated the policy choices of some countries over 35 years, Herwartz and Roestel (2010) who researched the choice of the impossible trinity in 20 small open economies. There were also researchers who found out the policy choices of each particular country. Ghosh and Ghosh (2012) examined three tenets of the ‘policy trilemma’ for India over its post-liberalisation period and the findings of this study were in line with the predictions of the trilemma. The research of Aizenman and Ito (2012) focused on the choice of policies in developing countries in recent decades, from the perspective of the theory of ‘impossible trinity’. The results showed that emerging market countries were facing intermediate targets: controlled floating exchange rate along with the assistance of foreign exchange reserves, relatively independent monetary policy and financial integration. In addition, emerging market countries with a high degree of convergence policy and large foreign exchange reserves obtain less volatile yields than in the past two decades; while emerging countries with foreign exchange reserve/GDP with a lower volatility may have higher outputs if the policy choices have a large degree of divergence. Hsing (2013) found evidence supporting the trilemma for Norway, suggesting that the three trilemma policies had a tradeoff: Norway chose a middle ground approach as represented by a managed float with adequate foreign reserves to back up, moderate monetary autonomy, and a medium level of financial integration. Ghosh (2014) examined the extent of monetary autonomy for
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more than 130 nations over the period of 1999–2011 and found more loss of monetary sovereignty for fixed regimes than non-fixed ones, in support of the trilemma’s predictions. Paniagua and Sapena (2013) present a conceptual and empirical framework to analyse international knowledge brokerage from an ethical perspective through political and corporate incentives on foreign employment. They found empirical evidence to support an ethical trilemma where knowledge, democracy and corporate openness seem to be mutually incompatible in less developed countries.

Although opening up trade will make the economy just from adverse external shocks, according to Bodart et al. (2015), the opening tendency is indispensable. Nearly a dozen studies have been done to assess the impact of monetary policy on exchange rate policy in an open economy. Kaur and Vikram (2013) examined whether a country’s degree of openness matters in choosing how flexible an exchange rate system should be if the objective is to improve per capita GDP or its growth. Dumrongrittikul and Anderson (2016) observed that for developing countries, monetary policy has no long-run effect on real exchange rates. Charday and Virgilio (2017) used the Monetary Approach to Exchange Rate (MAER) approach to clarify the impact of macroeconomic factors on exchange rates between the Philippines and countries including the USA, Japan, and the European Union. The results show that the output affected the volatility of all three exchange rates, while the difference in interest rates between countries influences the Philippine-US and Philippine-European Union exchange rates. Dahaian and Mohammed (2017) employed asymmetric causality to reinvestigate international capital mobility. The result revealed that positive shocks in exchange rate cause positive shocks in interest rate in Malaysia. This led to increasing capital inflow into Malaysia.

In Vietnam, not a lot of researches have been done on the Trilemma theory and most researchers apply theories in implementing the policy, and very few studies have fully calculated the indicators of monetary independence, the exchange rate stability and the financial integration. Also, there have not been many insight studies on the coordination of elements in the impossible trinity in Vietnam to show how and when the policy is implemented and changed. Researches involving the impossible trinity that has been done by Vietnamese authors include Trinh (2010) with the argument that Vietnam pursued a fixed exchange rate regime and gradually proceeded to the free flow of capital. The author conducted an inspection on the existence of the ‘impossible trinity’ in monetary policy operating in Vietnam for the period 2002–2008 by analysing the impact of US dollar’s interest rates on Vietnam dong’s interest rates. Similar papers were written by Lai (2013) but only analysed the theoretical expression of the impossible trinity in Vietnam from the perspective of the situation analysis. He did not go into the use of quantitative methods to give convincing evidence, so the solutions that the author offered were not specific.

3 Data and research methods

To accomplish the first objective, the authors conducted the measurement indicators of the impossible trinity. The measurement of the degree of monetary independence and exchange rate stability through the index MI, ERS was proposed by Aizenman et al. (2012) and FO was proposed by Ito and Kawai (2012), in which,
The second objective is to study changes in operating the impossible trinity in Vietnam. The authors performed this task by conducting regression models with the following models respectively: the model proposed by Shambaugh (2004) and Obstfeld et al. (2005) to consider an independent monetary policy:

\[ \Delta id_t = \alpha + \beta_1 \Delta f_t + \beta_2 \Delta f_t + \beta_3 \Delta f_t + \mu_t, \]

in which, \( id_t \) and \( f_t \) are Vietnam’s interest rates for a 3-month period and US interest rate for a 3-month period, respectively. Due to the characteristics of the proposed pattern to study the correlation between short-term and long-term interest rates in Vietnam and the US, the authors used the method of quantitative analysis of autoregressive distributed lag (ARDL) proposed by Pesaran et al. (1996) to determine the correlation between the interest rate of Vietnam and that of the US. The authors first performed unit root test to determine the stopping of time-series data, then performed a co-integration test to test the relationship between two time-series data in the short term and long term.

The authors applied the model proposed by Frankel and Okongwu (1995) to evaluate the change in the financial integration of Vietnam before and after the crisis:

\[ \text{cap}_t = \alpha + \beta_1 \text{id}_t + \beta_2 \text{f}_t + \beta_3 \text{dep}_t + \mu_t. \]

According to Mundell-Fleming’s research, capital flows will increase if domestic interest rates were greater than foreign interest rates and the country’s domestic currency discounted. Thus, with this statement, the authors expect the regression results to produce \( \beta_1 \) positive, \( \beta_2 \) negative, \( \beta_3 \) negative, in which \( \text{cap}_t \) is net FDI inflows and \( \text{dep}_t \) denotes exchange rate depreciation.

4 Results

4.1 Measurable results indicators of the impossible trinity

The degree of monetary independence: Overall, throughout the 2001–2006 period, the level of monetary independence (MI) of Vietnam was quite low. However, in the period of 2009–2015 the level of monetary independence improved significantly. It can be seen that there was a change in managing monetary policy in the later stage of the crisis. The change in the operating monetary policy had a positive impact on the economy, helped to control inflation and stimulated economic growth.
The degree of exchange rate stability: During the period of 2001–2015, the level of exchange rate stability (ERS) in Vietnam maintained relatively high. In 2008, the global financial crisis stemming from the US led to the increasing instability within the Vietnamese economy. International capital flows in this period were mostly pulled out of high-risk markets such as Vietnam, which caused the current account deficiency and decreased capital account surplus. As a result, the degree of exchange rate stability of Vietnam decreased continuously thereafter, the index reached the lowest ERS of about 0.77 in 2011. Overall, the stability of exchange rates ERS Vietnam in recent years has reduced but still remained high.

The degree of financial integration: On average, in the post-crisis stage, the value of FO was higher than the average value before the crisis period. We can conclude that Vietnam is an attractive investment location because of the great policies that the government has implemented in the recent years (Figure 1).

![Figure 1](image)

Source: Author calculations

4.2 Regression results

In model (1), the coefficients in turns have the following meanings: the coefficient $\beta$ indicates the short-run relationship and $\gamma$ signifies the long-run or level relationship.

Looking at the results in Table 1, we can see that the coefficients $\beta$ and $\gamma$ in the periods before and after the crisis have no statistical significance. This shows that Vietnam was pursuing an independent monetary policy in both periods.

<table>
<thead>
<tr>
<th></th>
<th>$\alpha$</th>
<th>$\beta$</th>
<th>$\theta$</th>
<th>$\gamma$</th>
</tr>
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<tbody>
<tr>
<td>01/2001–12/2006</td>
<td>–0.001</td>
<td>0.043</td>
<td>–1.302***</td>
<td>0.204</td>
</tr>
<tr>
<td>01/2009–12/2015</td>
<td>–0.009</td>
<td>–0.437</td>
<td>–0.257</td>
<td>3.440</td>
</tr>
</tbody>
</table>

Source: Author calculations

According to Mundell-Fleming, the increase in domestic interest rates would attract capital inflows (particularly with the FDI data), leading to increased net flows ($\beta_1 > 0$). Conversely, rising foreign interest rates would attract domestic investment flows, leading to more capital outflows that cause the net flows to decrease. Therefore, when the foreign interest rates increased, the net flows were likely to reduce ($\beta_2 < 0$). Finally, when the country’s domestic currency declined, it was likely to make more capital outflows,
resulting in reduced net flows ($\beta_3 < 0$). However, the results found in both phases showed the paradox of the investment. Specifically, in the pre-crisis period, the coefficient of $i_t = 43.331$ and statistical significance at 1% meant that there was the same direction correlation between interest rates and net FDI flows. In other words, when foreign interest rates rise, net FDI in Vietnam will increase. The positive coefficient may stem from many causes (Table 2):

- the data rate used for the above regression model is the nominal interest rate, however, investment decisions are influenced by the real interest rate, the biggest impact coming from inflation
- Vietnam is a developing country with a large amount of natural resources and abundant, cheap labour which attracts foreign investors.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Results of regression model (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FDI</strong></td>
<td><strong>Coeff.</strong></td>
</tr>
<tr>
<td><strong>Pre-crisis period</strong></td>
<td></td>
</tr>
<tr>
<td>id$_t$</td>
<td>3.186386</td>
</tr>
<tr>
<td>if$_t$</td>
<td>43.33067</td>
</tr>
<tr>
<td>dep$_t$</td>
<td>–6452.524</td>
</tr>
<tr>
<td>Cons</td>
<td>38.63801</td>
</tr>
<tr>
<td><strong>Post-crisis period</strong></td>
<td></td>
</tr>
<tr>
<td>id$_t$</td>
<td>–2.784756</td>
</tr>
<tr>
<td>if$_t$</td>
<td>16.77029</td>
</tr>
<tr>
<td>dep$_t$</td>
<td>574.2938</td>
</tr>
<tr>
<td>Cons</td>
<td>629.2268</td>
</tr>
</tbody>
</table>

*Source:* Author calculations

Therefore, foreign interest rates may increase, but the benefits achieved from the natural resource advantages and cheap labour outweighed the loss from rising interest rates.

In the post-crisis period, the authors found a negative correlation between domestic interest rates and net FDI (coefficient $id_t = –2.785$ and statistically significant at 10%). This difference may result from a combination of many factors: after the financial crisis, investors’ awareness of the risks of Vietnam’s market may have changed; it may be due to other external factors affecting the direction of capital flows; or because the government has issued bonds to the international market in this period.

From the overall picture of how the Vietnamese government operated the impossible trinity policy in the period between 2001 and 2015 along with the calculation of the indices of the impossible trinity, the study results showed that during this period, the Vietnamese government preferred the exchange rate stability. The combination with another goal in the impossible trinity has changed over two periods.
5 Conclusion

The results from the combined indices of the impossible trinity show that exchange rate stability and monetary independence were very high in 2001 and 2002 but then steadily decreased, mainly in the level of monetary independence, while the goal of financial integration increases. Combining the index pairs (Table 3) of the impossible trinity also shows that the pair index between the exchange rate stability and average financial integration in this time period was very high (1.35), which meant that the government made the exchange rate stability and financial integration its priority. The study results are consistent with actual developments in the market for this period. Vietnam was aggressively negotiating to join the WTO; therefore, the opening of the market and the stability of the exchange rate as a nominal peg were necessary. With the choice of combining two essential objectives, the target of monetary independence was relatively low and resulted in quite a high inflation at this stage. In other words, the goal of monetary policy to curb inflation failed. The study results show a clear change in operating the impossible trinity in Vietnam, especially in monetary independent goals. Evaluating the combined policy choices of the impossible trinity in this time period shows that the index pair between rate stability and monetary independence is worth the highest value. The study results are quite consistent with actual developments in Vietnam as the exchange rate in this time period was fairly stable, inflation was well-controlled and more importantly, FDI inflows began to return. The researchers also discovered that the Vietnamese government was likely to manage the impossible trinity policy under the intermediate framework, which showed indicators of the impossible trinity with the value approaching 0.5. In order to be able to implement the intermediate impossible trinity policy, there were demands for foreign exchange reserves, which should reach a certain percentage in order to cope with external shocks. Although Vietnam’s current foreign exchange reserves increased, it was still less than required.

Table 3 Combined index pairs

<table>
<thead>
<tr>
<th></th>
<th>MI</th>
<th>ERS</th>
<th>FO</th>
<th>MI + ERS</th>
<th>MI + FO</th>
<th>ERS + FO</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001–2006</td>
<td>0.28122</td>
<td>0.93738</td>
<td>0.41605</td>
<td>1.2186</td>
<td>0.69727</td>
<td>1.35343</td>
</tr>
<tr>
<td>2009–2015</td>
<td>0.51448</td>
<td>0.8963</td>
<td>0.4845</td>
<td>1.41079</td>
<td>0.99897</td>
<td>1.38079</td>
</tr>
</tbody>
</table>

Source: Author calculations

In conclusion, we can say that the Vietnamese government opts to pursue the intermediate policy of the impossible trinity including financial integration with controlled capital, moderate monetary independence and exchange rate fluctuation mechanism in the acceptable target amplitude by strengthening foreign exchange reserves as a tool to manage the exchange rate.

From the results of the research that aims to maintain economic growth and control inflation for the following years, the authors propose that the government will continue to operate the impossible trinity in the coming period with the primary selections as follows: maintaining growth and controlling inflation. In order to achieve those goals, it is essential to implement a higher monetary independence policy through higher interest rate adjustments to help control inflation, and to increase the level of financial integration to attract capital for economic development. Therefore, the exchange rate mechanism
must be more flexible to avoid external shocks and foreign exchange reserves need to be increased considerably in order to have a stand the fluctuations in the balance of payment and the exchange rates.

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