

**Research article**

# Merger as Strategic Partnership to Support SDG: A Positive Signal for Investors in Stock Market of APEC Member Countries

**Renaldi Antoni Hamonangan and Dwi Nastiti Danarsari**

Department of Management, Faculty of Economics and Business, Universitas Indonesia Depok,  
West Java, Indonesia

**ORCID**

Dwi Nastiti Danarsari: <https://orcid.org/0000-0003-3493-6862>

**Abstract.**

A merger is one of the strategic partnerships undertaken by a firm to pursue future growth and sustainability. Merger information signals a firm's prospects to investors in the stock market. The present study examines investors' reactions toward merger announcements under the different payment methods. The sample comprised 115 firms from the member countries of the Asia-Pacific Economic Cooperation (APEC) that announced a merger between 2014 and 2018. The study employed the event study to test whether the bidding firm generates abnormal returns during the time surrounding the merger announcement and evaluate the differences in the returns between cash and stock payment of the merger. The results revealed that cash payment earned a significantly higher abnormal return post- than the pre-merger announcement, while there was no significant abnormal return for the period of pre- compared to the post-merger announcement in stock payment. Additionally, cash payments generated significantly higher cumulative average abnormal returns than stock payments. These findings imply that investors' sentiments respond more positively to cash financing. The study confirms the signaling theory in which a firm action announcement conveys information to investors in the stock market.

**Keywords:** merger, event-study, APEC, sustainability

## 1. Introduction

Merger is a firm action conducted to improve firm value based on the possible synergy between companies. As explain by [1] merger is considered as one of strategic business decision undertaken for maximization of firms' growth through external expansion. In a competitive business environment, merger becomes a dynamic strategy as it enables firm to expose both domestic and international strategic alliance [2].

There are two payment methods for mergers, namely cash and stock payment [3]. From the perspective of the bidder, sometimes one of payment method is preferable than another. Cash payment might raise probability that the target would accept the initial bid and lessen the delay of another firm offering competitive bid [4]. Moreover, the

Corresponding Author: Renaldi  
Antoni Hamonangan; email:  
[renaldi.antoni@ui.ac.id](mailto:renaldi.antoni@ui.ac.id)

**Published:** 01 August 2022

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bidding firm would prefer using cash payment because stock payment might weaken the bidding firm's control in the merged entity [5]. Meanwhile, under stock payment deals, the bidding firm raises new equity which leads to the increase of debt capacity as it is supported by larger asset post-merger [6]. In addition, stock payment is preferable by the bidding firm that are reaching for social innovation through CSR activities [7].

Improvements in firm value generated by synergy from the merger activity provide information to investors. Under the assumption that the financial markets are not fully efficient, especially in the existence of asymmetric information between management and investor, it is possible that a firm uses financial decision as a signal to market [8]. In related to merger announcement, choice of payment method sends information concerning bidder value in market [4]. When the bidder announces the merger news and the payment method, the investors in stock market update their belief regarding value of the bidder and causes the bidder stock value increase or decrease [6].

The objective of this study is to examine investor reaction toward merger announcements under the different payment methods, which is reflected in the stock return of the bidding firm on post-announcement. [9] claims that announcement effect of merger in the global market is still inconclusive. Previous studies examined the effect of the merger announcement on stock abnormal return. For instance, studies conducted by [10], [11], and [12] which revealed that merger announcements generated a positive abnormal return, while other study conducted by [13], [14], and [15] found that merger announcements do not generate a positive abnormal return.

Nevertheless, the bidding firm might have different preferences on the method of payment to finance the merger. [4] argue that investor in stock market react differently toward different method on merger payment. Several studies document the effect of payment method in the context of developed countries. For instance, [3] and [16], conducted study in US firms. The researchers conclude that the bidding firm would generate higher stock return in cash payment than stock. To the best of our knowledge, the study that distinguishes between the financing methods of the merger announcement and highlights region that consists of developed and developing countries is still limited. This study attempts to complement and fill the gap of earlier studies by separating investor reactions according to the payment methods of the merger. Specifically, the objective of this study is to examine the effect of the payment method of mergers on the bidding firms' stock return in APEC member countries for the period of 2014 to 2018.

APEC is an organization that works toward economic cooperation within the Asia-Pacific region and has 21 member countries. It was established in 1989 which has a main goal to promote economic growth and improve the well-being of those in the Asia-Pacific

region. APEC countries have shown a significant GDP growth since the establishment until recent year. The real GDP of APEC countries region increases significantly from approximately USD 19 trillion in 1989 to USD 46.9 trillion in 2018 [17] Furthermore, in 2019, the APEC region's GDP was accounted for 61% of the global GDP and 47% of global trade [18]. The trade intensity among the APEC members and merger activities conducted by firms in APEC countries are expected to create a synergy that enhances firms' performance.

This study employs the event study method to test whether there are average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) of bidders' stock within a certain event window of the merger announcement. Furthermore, this study examines whether there are significant differences in the return of the bidding firm on pre- and post-merger announcement and whether different financing methods, with cash or stock, also have differences in the return. The results in this study demonstrate that cash financing earns significantly higher AAR and CAAR in post than pre-merger announcement. Meanwhile, in stock financing, there is no significant different on both AAR and CAAR for the period of pre compared to post-merger announcement. Moreover, our finding reveals that cash payment generates significantly higher CAAR than stock payment. This study is expected to provide insight regarding how investors react on a corporate action, specifically on merger announcement which one of strategic decision to enhance firm value.

The remainder of this paper is organized as follows. Moreover, the data, samples, and methods employed in this study are explained in the Methods section. The next section presents the results of this study. Finally, the last sections cover the conclusion of this study.

## 2. Method

This study employs the merger announcement data of the bidding firm in APEC member countries in 2014-2018 from the Thomson Reuters Data Stream. [19] explain that event study involves stages of determining the event, determining date of the event, determining estimation period in calculation expected return, determining the event window, and analyzing reaction within the event window. In this study, the event is merger announcement. Additionally, this study aims to distinguish investors' reaction under different type of merger payment, namely cash and stock payment. Therefore, in selecting samples, this study identifies firms in APEC region that conducted merger and supported by information such as clear and complete data. There are 21 countries

listed as APEC members, and data is selected using the following four criteria: (1) bidder and target are both listed firms; (2) during data collection, neither firm is privatized or delisted; (3) there is a clear date of the merger announcement; and (4) there is a complete record of all firms' historical stock prices within the estimation period.

The event study method is used to examine whether the bidding firm's stock generates abnormal returns caused by a particular event. This method calculates abnormal returns based on a stock's historical return relative to the market's return. As explained by [19] the event study requires estimation [period] for calculation of expected return as well as the event window. This study refers to [6] in determining the estimation period and the event window. This study uses the observation period of 221 days, with an estimation period of 180 days [-180, -1] and an event period of 41 days [-20, +20]. Data on the daily stock price and the market price is collected to be transformed into the daily actual stock return and market return.

The expected return is estimated based on the historical return. Therefore, daily stock return and market return are calculated using formula presented in equation (1) and (2), respectively. Here,  $R_{it}$  is the stock return, and  $R_{mt}$  is the market return.  $P_{it}$  is the stock price on closing on day  $t$ , and  $P_{it-1}$  is the stock price on closing one day before day  $t$ .

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \tag{1}$$

$$R_{mt} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \tag{2}$$

Furthermore, following [6], this study utilizes the OLS Market Model to calculate abnormal returns since this model uses  $\alpha$  as the parameter of firm performance compared to the market and  $\beta$  as the parameter of stock price compared to market risk. The expected return is the result of regression against the actual return and market return to gain the values of  $\alpha$  and  $\beta$ . After the expected return is obtained, the next step is to calculate the abnormal return (AR), using the OLS Market Model with the equation (3):

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t}) \tag{3}$$

$$AAR = AR_{n,t} = \frac{1}{n} \sum_{i=1}^{i=n} AR_{i,t} \tag{4}$$

$R_{it}$  is the actual return, and  $\alpha + \beta R_{m,t}$  is the expected return. The expected return value is obtained from  $\alpha$  and  $\beta$ , which is obtained by regression for the 180 days of the estimation period. The abnormal return value is then calculated for the 41 days of the event window. The average abnormal return (AAR) calculation, as shown in equation (4) is the sum of abnormal returns divided by the number of sample firms. The cumulative average abnormal return (CAAR), as shown in equation (5), is the sum of the average abnormal return

$$CAAR = \sum_{t=w_1}^{t=w_2} AAR_{n,t} \quad (5)$$

Then, the t-stat value is calculated to obtain its significance using the following equation:

$$Tstat = \sum_{i=1}^{N_i} AAR' \times (N_i)^{1/2} \quad (6)$$

Calculation of the t-stat value is conducted to test the statistical significance of daily AAR and CAAR during the 41 days of the event window. The more significant it is, the larger the abnormal return received on different days.

After considering AAR and CAAR and the accompanying t-stat, three hypotheses are tested:

**Hypothesis 1:** Under the cash and stock payment method, merger announcement generates AAR that is larger than pre-announcement.

**Hypothesis 2:** Under the cash and stock payment method, merger announcement generates CAAR that is larger than pre-announcement.

**Hypothesis 3:** The cash payment method generates AAR and CAAR that are larger than stock financing.

### 3. Results and Discussion

The study is conducted on firms announcing mergers in APEC member countries from 2014 to 2018. The Thomson Reuters data stream includes 468 firms announcing mergers. That sample is further selected according to the above-mentioned four criteria, resulting in a final sample consisting of 115 firms from 7 APEC member countries, namely Australia, Canada, Japan, Indonesia, South Korea, Taiwan, and Vietnam. The total sample is divided into two groups, with 26 firms using cash financing and 89 firms using stock financing.

The descriptive statistics of the sample are shown in table 1. The data covers five years from 2014 to 2018. Descriptive statistics show AAR value on pre- and post-announcement for each financing method for the 41-day event window for the 26 cash-financed and 89 stock-financed firms. Seeing that the mean AAR post-announcement is larger compared to pre-announcement, this indicates that a merger announcement generates AAR. With stock financing, the mean AAR pre-announcement is larger than the mean AAR post-announcement, indicating that the merger announcement does not generate AAR.

The results of Hypothesis 1 testing for AAR generated by the merger announcement are presented in table 2. During the 41-day event window, with 20 days pre and 21 days

TABLE 1: Descriptive Statistics.

<b>Cash payment (2014-2018)</b>		<b>N</b>	<b>Min.</b>	<b>Max.</b>	<b>Mean</b>	<b>Std. Deviation</b>
AR announcement	pre-	26	-0.0076	0.0057	-0.0004	0.0034
AR announcement	post-	26	-0.0084	0.0177	0.0014	0.0057
<b>Stock payment (2014-2018)</b>		<b>N</b>	<b>Min.</b>	<b>Max.</b>	<b>Mean</b>	<b>Std. Deviation</b>
AR announcement	pre-	89	-0.0158	0.0346	0.0005	0.0086
AR announcement	post-	89	-0.0185	0.0246	-0.0010	0.0074

post-announcement, cash financing generates a pre-announcement AAR of -0.0004 and a post-announcement AAR of 0.0014. The t-stat value is calculated to be -1.5690, where the t-critical value is at 1.6849. The t-stat value is still less than the t-critical value, so H0 is not rejected, and merger announcements generate AAR. For stock financing, the mean AAR pre-announcement is 0.0005, and post-announcement is -0.0010. The t-stat value is calculated to be 1.7085 with the t-critical at 1.6871. As t-stat is larger than t-critical, H0 is rejected, and thus merger announcement does not generate AAR.

The results for Hypothesis 2 testing for the CAAR generated from the merger announcement can also be found in table 2. During the 41-day event window, with 20 days pre-announcement and 21 days post-announcement, cash financing generates a mean CAAR of -0.0017 pre-announcement and 0.0196 post-announcement. T-stat value is calculated to be -10.7730 and t-critical to be 1.6909, and as t-stat is no larger than t-critical, H0 is not rejected, so merger announcements generate CAAR. For stock financing, the mean CAAR pre-announcement is -0.0011, and post-announcement is -0.0059. After calculation, t-stat is 2.9950 and t-critical is 1.6924, as t-stat is larger than t-critical, so H0 is rejected, and the merger announcement does not generate CAAR.

Testing of Hypotheses 1 and Hypothesis 2 is conducted to determine the effects of merger announcements on AAR and CAAR. Under cash financing, merger announcements generate AAR and CAAR, while under stock financing, merger announcements do not generate AAR and CAAR.

The results for Hypothesis 3 testing to compare the results of the AAR and CAAR from cash and stock financing can be seen in table 3. During the 41-day event window, the mean AAR for cash financing is 0.0005, while for stock financing, it is -0.0003. The t-stat obtained is 1.1180 and the t-critical is 1.6654, which means that H0 is not rejected. Thus, stock financing generates a higher AAR than cash financing. CAAR in

TABLE 2: AAR and CAAR Pre and Post-announcement.

Cash				
2014-2018	N	Mean	t Stat	t Critical
AAR pre-announcement	20	-0.0004	-1.5690	1.6849
AAR post-announcement	21	0.0014		
CAAR pre-announcement	20	-0.0017	-10.7730	1.6909
CAAR post-announcement	21	0.0196		
Stock				
2014-2018	N	Mean	t Stat	t Critical
AAR pre-announcement	20	0.0005	1.7085	1.6871
AAR post-announcement	21	-0.0010		
CAAR pre-announcement	20	-0.0011	2.9950	1.6924
CAAR post-announcement	21	-0.0059		

cash financing generates a mean CAAR of 0.0092, while the same mean for stock financing is -0.0035. The t-stat value obtained is 5.9404 with the t-critical of 1.6725; consequently, H0 is rejected, and stock financing generates a smaller CAAR than cash financing. In general, the results obtained for AAR and CAAR in cash and stock financing is that stock financing generates a higher AAR, but cash financing results in higher CAAR.

TABLE 3: Cash vs Stock Payment.

	2014-2018	N	Mean	t-Stat	t-Critical
AAR	Cash	41	0.0005	1.1180	1.6654
	Stock	41	-0.0003		
CAAR	Cash	41	0.0092	5.9404	1.6725
	Stock	41	-0.0035		

The results of the three hypotheses are displayed in table 4 and Figure 1 for cash financing, and table 5 and Figure 2 for stock financing. Table 4 for cash financing shows no significant AAR pre-announcement, and there is significant AAR post-announcement. In Figure 1 for cash financing, CAAR movement can be seen, where post-announcement, CAAR visibly increases.

In table 5 for stock financing, there is significant AAR several days pre-announcement, nothing significant during the announcement, and significant AAR occurs several days post-announcement. For clarity, Figure 2 shows that CAAR movement pre-announcement has increased in value, and post-announcement, there is a reduction in CAAR value. After several days have passed, an adjustment occurs, and the value is no longer rises.

TABLE 4: AAR and CAAR Significance on Cash Payment.

Cash payment (year 2014-2018)						
Date	Abnormal Return			Cumulative Abnormal Return		
	Average	t-stat	Sig	Average	t-stat	Sig
-6	-0.0002	-0.3596		-0.0031	-3.4968	
-5	-0.0005	-0.7269		-0.0036	-4.1817	
-4	-0.0014	-2.0429		-0.0050	-5.9623	
-3	-0.0043	-6.3757		-0.0093	-11.4400	
-2	-0.0028	-4.1174		-0.0121	-15.2733	
-1	0.0041	6.0689	***	-0.0080	-10.3473	
0	0.0077	11.3060	***	-0.0003	-0.4419	
1	0.0037	5.4184	***	0.0033	4.5319	***
2	0.0072	10.6219	***	0.0106	14.6241	***
3	0.0001	0.1362		0.0107	15.0695	***
4	0.0067	9.9250	***	0.0174	25.1125	***
5	0.0027	3.9347	***	0.0201	29.5445	***

**Note:** The significant for  $\alpha = 10\%$ , with  $t\alpha = 1.286$  is marked by \* The significant for  $\alpha = 5\%$ , with  $t\alpha = 1.653$  is marked by \*\* The significant for  $\alpha = 1\%$ , with  $t\alpha = 2.347$  is marked by \*\*\*

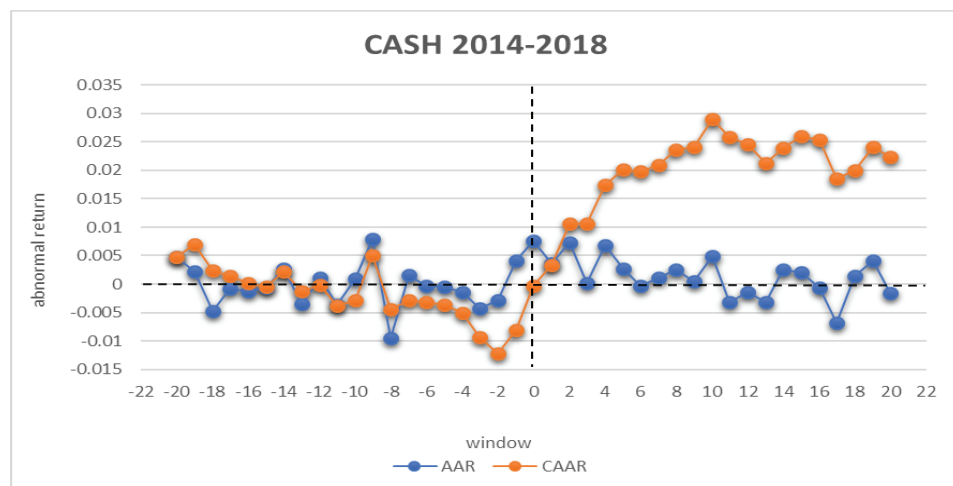


Figure 1: AAR and CAAR Cash Movement 2014-2018.

The result of this study is in line with the findings of previous ones, such as study conducted by [20] in Argentina, Brazil, and Chile; [11] in Europe firms; and [12] in Latin America, who reveal that merger announcement generates positive abnormal returns. The finding of this study is also in line with the study conducted by [3] and [16] in US firms who discover that on the merger announcement, the bidding firm earns higher stock return in cash payment than stock payment. The results of this study imply that merger announcement using cash payment provide a positive signal to investor in stock market in APEC member countries. Meanwhile, the result of this study is different from



TABLE 5: AAR and CAAR Significance on Stock Payment.

Stock payment (year 2014-2018)						
Date	Abnormal Return			Cumulative Abnormal Return		
	Average	t-stat	Sig	Average	t-stat	Sig
-3	0.0042	10.8701	***	0.0046	5.3772	***
-2	0.0004	1.1232		0.0050	6.0436	***
-1	0.0046	11.8620	***	0.0096	11.8237	***
0	-0.0023	-6.0004		0.0073	9.2010	***
1	0.0001	0.3038		0.0074	9.5686	***
2	-0.0040	-10.4259		0.0034	4.4836	***
3	-0.0044	-11.4515		-0.0010	-1.3667	
4	-0.0024	-6.1674		-0.0034	-4.6636	
5	-0.0008	-1.9584		-0.0041	-5.8145	
6	-0.0001	-0.1397		-0.0042	-6.0022	
7	-0.0035	-9.2052		-0.0077	-11.2755	
8	0.0013	3.3305	***	-0.0065	-9.5739	
9	-0.0028	-7.2093		-0.0092	-13.9232	
10	0.0000	-0.0776		-0.0093	-14.1991	
11	0.0010	2.6089	***	-0.0083	-12.8619	
12	-0.0057	-14.7776		-0.0140	-22.0598	
13	0.0011	2.9291	***	-0.0128	-20.5811	
14	-0.0015	-3.9460		-0.0143	-23.3561	
15	0.0015	3.9135	***	-0.0128	-21.1984	
16	0.0100	25.8637	***	-0.0029	4.8146	

**Note:** The significant for  $\alpha = 10\%$ , with  $t_{\alpha} = 1.286$  is marked by \* The significant for  $\alpha = 5\%$ , with  $t_{\alpha} = 1.653$  is marked by \*\* The significant for  $\alpha = 1\%$ , with  $t_{\alpha} = 2.347$  is marked by \*\*\*

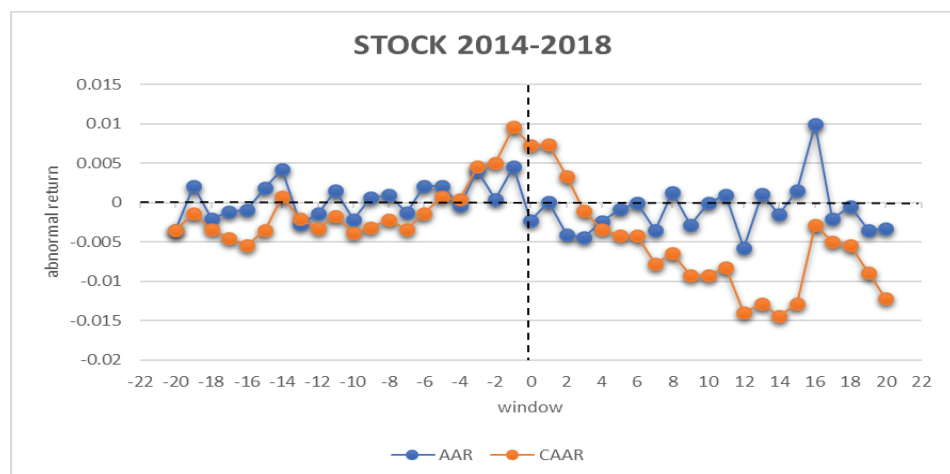


Figure 2: AAR and CAAR Stock Movement 2014-2018.

the study conducted by [15] in Pakistan who find that no positive abnormal return on the merger announcement.

## 4. Conclusion

This study aims to examine investor reaction toward merger announcements under the different payment methods. This study employs event study which sample comprises 115 firms, with 26 firms using cash financing and 89 firms using stock financing, from 7 APEC member countries that announce merger in 2014 to 2018. The event window used is 41 days, in which 20 days are designated as pre-announcement, 20 days as post-announcement, and one day for the event itself.

The results of this study reveal that cash payment generate significantly higher of both AAR and CAAR for the period of pre compared to post-merger announcement. Meanwhile, for the stock payment the finding indicates no significant different on both AAR and CAAR for the period of pre compared to post-merger announcement. Furthermore, this study demonstrates that cash payment generates significantly higher CAAR than stock payment.

The findings confirm the signaling theory in which different payment method of merger convey information to investors in stock market. Merger announcements and their financing methods represent important information for investors to gain abnormal returns. Each financing method has its own set of advantages and disadvantages. The result of this study suggest that cash payment is viewed more positively in general, as using cash as a payment method demonstrates the financial capacity of the bidding firm and avoids the transfer of control and ownership between the merging companies. Thus, investor sentiment responds more positively to cash financing. This study uses stock return to capture firm's prospects. For further study, this study suggests the usage of other performance indicator.

## Acknowledgement

The authors would like to thank Universitas Indonesia for funding this study through PUTI Grant 2020, with contract number NKB-5006/UN2.RST/HKP.05.00/2020. Any errors found in the paper are the responsibility of the authors alone.

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