

Settlement-building: An Empirical Block to Reopen the Peace Process between Israel and Palestine

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Abstract

Settlement-building has been one of the most contentious issues in the peace negotiations between Israel and Palestine. In 2009, Prime Minister Netanyahu declared a 10-month freeze on settlement-building to restart peace talks. One year later, a dispatch from NPR stated that Israeli settlement-building would tear down peace talks. It seems to be a generally accepted perception of politicians and the media that settlement-building can be an effective tool to reopen or break the peace process between Israel and Palestine. In order to test this perception and to better understand the relation between settlement-building and Israeli-Palestinian conflicts, this paper examines if settlement-building will affect the creation of peace agreements between Israel and Palestine. The empirical findings confirmed that peace agreements would be less likely to be reached when more settlements are built. The model also suggests that the level of settlement constructions of Israel between 1995-2019 has approached an amount that leaves no chance for Israel and Palestine to sign a peace agreement in public. As the unilateral settlement-building continued to rise after 2020, Palestinians living in the occupied territories on the West Bank will probably be exposed to greater vulnerability and demands more assistance.

Keywords: Settlement-building, Peace agreement, Israeli-Palestinian conflict

I. Introduction

Move, run and grab as many hilltops as you can, everything we take now will stay ours. Everything we don't grab will go to them.

Ariel Sharon, Foreign Minister of Israel, 1998
after the Wye River negotiations with Bill Clinton and Yasser Arafat¹

Territory has long been an issue at the heart of many international conflicts, but there are few contentions as “vexing” to the international community as that of the territorial disputes between Israel and Palestine.² One well-documented criticism is that the ongoing settlement-building conducted by Israel has sustained the conflict and undermined the two-state solution. Efforts to research the

¹ Leila Stockmarr, [Is it All about Territory? Israel's Settlement Policy in the Occupied Palestinian Territory Since 1967](#), (Copenhagen, Danish Institute for International Studies, 2012), 7.

² Dan Reiter, [Exploring the Bargaining Model of War](#), (2003), 27.

issue can help the international community better understand the dynamics of the Israel-Palestine conflict, and thereby contribute to the development of policy suggestions for territorial dispute management.

To start with, a brief definition of the settlements in the context of Israel-Palestine conflict should be introduced: "Settlements are Jewish communities established inside internationally recognized Palestinian territory, beyond the Green Line demarcating the future border between the future state of Palestine and the state of Israel, over which attempts to negotiate a settlement to the conflict have taken place."³ In 1967 Israel began land confiscation and settlement construction, which violated international law and triggered long-lasting and profound socio-economic and humanitarian crises for the Palestinians. Since 2005, Israeli settlements in Gaza Strip were dismantled and today's settlements almost exist exclusively in the West Bank. In regards to the definition of "peace agreements", the paper refers to official documents signed between Israel and Palestine that are publicly recognized by international entities as peace agreements.

How can settlement-building affect the resolution of Israel-Palestine conflict? Previous literature has identified three levels of effects to exist. At the local level, Newman contends that civil settlers carried out unilateral settlement

building out of deep intangible attachment, which triggered ethnic separation and ethnic alienation between Israeli settlers and Palestinian residents.⁴ When it comes to domestic politics in Israel, Doron and Rosenthal empirically demonstrate that a branch of radical-right parties with a strong passion for the capture of territory has significant leverage on national policy-making to increase the construction of settlements.⁵ According to a statistical model built by Grossman and Mitts, the group holding a radical pro-settlement stand constituted between 30 and 40 percent of the constituency of Likud, the dominant right-wing party led by the current prime minister of Israel. The loss of support from this group would damage Likud's survival if peace agreements concerning the removal of settlement were reached.⁶ At the international level, more settlements on the ground would make the prospect based on the two-state solution less viable. Newman states that Israel's settlements have changed the power relations and demographic balance in the Occupied Territories, creating unequal geographical realities that serve as the basis for future territorial negotiations.⁷ In a similar manner, Stockmarr contends the nature of settlement-building as one approach to enhance Israel's position in political negotiations by narrowing down the bargaining space for Palestine.⁸

³ Stockmarr, *Is it All about Territory*, 12.

⁴ David Newman, [The Resilience of Territorial Conflict in an Era of Globalization](#), (Cambridge, Cambridge University Press, 2006).

⁵ Gideon Doron and Maoz Rosenthal, [Intradomestic Bargaining Over the Lands and the Future: Israel's Policy Toward the 1967 Occupied Territories](#), (New York, Oxford University Press, 2012).

⁶ Devorah Manekin, Guy Grossman, and Tamar Mitts. [Contested Ground: Disentangling Material and Symbolic Attachment to Disputed Territory](#), (2019).

⁷ Newman, *The Resilience of Territorial*.

⁸ Stockmarr, *Is it All about Territory*.

The literature above has presented the negative effects of the settlements in intensifying ethnic alienation between Israeli settlers and Palestinian residents at the local level; it has been further proved statistically that the construction of settlements can narrow down the bargaining space of Israeli leaders via Israel's domestic political mechanisms. However, it has not been empirically examined if the construction of settlements can hinder the reaching of peace agreements between Israel and Palestine at the international level. If hindered, how significant would the influence be? To make up the lacuna, this paper intends to test if the facts of settlement-building would affect the probability of reaching peace agreements between the two political entities⁹. To simplify the multifaceted issue (and in no way diminishing the importance of other factors), this paper ignores how settlement-building affects local population living around the settlements and Israeli domestic politics, this paper concentrates on the empirical effects of settlement-building at the international level and on the conflict resolution between Israel and Palestine.

In the following sections, one hypothesis about the relations between the settlement-building and the reach of peace agreements is laid as the foundation. Relevant data is collected from different datasets, including the Israel Central Bureau of Statistics, the PA-X Peace Agreement Database, and the Knesset of Israel (the national legislature of Israel). In the end, the hypothesis will be tested

as true; that is, settlement-building would generate a significantly negative effect on peace-building between Israel and Palestine.

2. Settlement-building and the Creation of Peace Agreements

The Hypothesis: *More settlement-building conducted by Israel would make peace agreements between Israel and Palestine less likely to be reached.*

In a negotiation over one territory between two parties, bargaining over land is a zero-sum game; one side obtaining is equal to the other side losing. Therefore, when the challenger claims land from the landowner, an agreement can only be reached if the challenger offers equal payoff to the landowner in other forms. The bigger the share of exchange is initiated, the bigger the reward would be expected by the landowner. Dissatisfaction with the expectation would lead to either a silent termination of the bargaining or a violent conflict instead of bargaining.

In the case of Israel-Palestine conflict, the dispute over the territory between the Mediterranean Sea and the Jordan River has been ongoing for over one hundred years, given the Balfour Declaration in 1917 as its start. There has not been any comprehensive agreement to resolve the conflict yet, with negotiations between the two parties being initiated again and again. During the process, Israel has come to occupy the entire West Bank including East

⁹ For the research goal to pursue conflict resolution, this paper refers to Israel and Palestine as two political entities to align with the two-state solution.

Jerusalem in the 1967 Arab-Israeli war, after which the territory has been under Israeli military rule. Since then, Israeli army or civil groups have built settlements.

With these settlements constructed on the ground, Israel has been gradually shifting its illegal occupation to de facto attachment to the land that it occupies. Therefore, if Palestine would claim land back, the cost of Israel to give up the land would be higher than that when the land was seized by settlers. As per the fewer resources for Palestinians to serve as bargaining chips, the more difficult for Palestine to recapture the land in a negotiation, as a result, the more difficult to create a peace agreement that can satisfy both Palestine and Israel. Due to this, the paper supposes that more settlement-building would make peace agreements less likely to be reached.

In addition, the negative effect of settlements on the probability of reaching a peace agreement would be further enlarged because the two parties hold different expectations in terms of territorial exchange, which Newman argued:

Within Israel / Palestine, the concept of the "whole" of the West Bank has different meanings for each national group. The Palestinians' claim to the "whole" of the West Bank effectively means relinquishing any historical claims to the rest of Palestine, the Israel that makes up over two thirds of Mandate Palestine. This is a minimalist demand for them and explains their opposition to the continued existence of

even one Israeli settlement established in this region after 1967. For most Israelis, the notion of the "whole" of the West Bank is perceived as a maximal demand. Thus, for Israelis, the symbolic and tangible territorial debates focus on the West Bank and Gaza Strip alone, whereas for Palestinians the tangible debate focuses on the West Bank, while the symbolic debate still focuses on all of pre-1948 Palestine. For Israelis, claiming the "whole" of this territory is seen as maximalist and indicative of further territorial claims in the future, while for the Palestinians it is inconceivable that having "given up" on two-thirds of the territory, they should be asked to make further concessions on the West Bank.¹⁰

3. Data and Research Design

3.1 Independent Variable: Settlement-building (ConstructionCompleted)

The number of constructions completed in the West Bank is used to measure the settlement building. The data is retrieved from the Israel Central Bureau of Statistics¹¹, including 100 quarterly observations from 1995 to 2019. To make the independent variable better fit into a standard binomial variation, the article applies the natural log of the constructions completed.

3.2 Dependent Variable: Peace Agreement (PADum)

From the website of the PA-X Peace Agreement Database, a comprehensive dataset of worldwide peace agreements is provided. In the dataset, forty-three agreements were

because the quality and granularity of data can better serve the research design.

¹⁰ Newman, The Resilience of Territorial, 15.

¹¹ There are data about settlements from both Israeli sources and Palestinian sources. Israeli sources are selected in this paper

recorded to be signed by Palestine and Israel in history. From there, those signed before 1995 and those signed with Hamas in Gaza only were removed, after which twenty-two agreements remained. Those twenty-two observations were then coded as a dummy variable by the signing date corresponding to the settlement-building variable in the same quarter. A '0' indicates that no agreement was reached in that quarter; subsequently, a '1' indicates an agreement was reached.

3.3 Correlation Analysis

To better construct the model and predict the outcome, a logistic regression runs between the independent variable of Settlement-building and the dependent variable of the Peace Agreement. Moreover, two control variables are then coded at the national level: the partisan ideology of the Israeli prime minister (PrimeMinister_IS) and the partisan ideology of the president of Palestine¹² (President_PA). The partisan ideologies of both leaders are important to control for two reasons. First, the two political leaders are the primary diplomats who can decide whether to open negotiations and whether to reach an agreement. Second, both Israel and Palestine have hawkish and dovish attitudes in terms of settlement building and peace talks, the permutations of political stands of the two entities would affect whether a peace agreement can be signed. It has also

been empirically demonstrated that all right-wing blocks in Israel have difficulties making territorial concessions.¹³ Therefore, the ten governments of Israel from 1995 to 2019 are coded into three nominal categories by 0, 1 and 2 under the variable name 'PrimeMinister_IS.' Since Likud has always been the framer of the right-wing block in the time frame under research, 0 means that the government is led by non-Likud coalitions, comprising either the traditional Labor party or the One Israel party with a left-wing background that allows for territory relinquishment. 1 means that the government is led by Likud, which refuses the idea, but with the left-wing blocks in the cabinet, i.e. Shimon Peres and the Labor-Meimad. 2 means that the government is led by Likud and is completely made up by members from the right-wing block. On the other side, the 'President_PA' variable between 1995 and 2009 is coded as 0 when the President of Palestine was captured by politicians from Fatah. It is coded as 1 after Hamas announced in 2009 their own president against the presidency of Mahmoud Abbas, the leader of Fatah.¹⁴ In terms of political ideology, the two parties are characterized by a moderate and a radical stance on the spectrum for territorial concession. Fatah is the party that led the signature of Oslo agreements and publicly endorses the two-state solution, while Hamas, based in Gaza, believes the "establishment of 'Israel' is entirely illegal and rejects any

¹² For statistical consideration, the paper uses the phrase of "president of Palestine" to refer to an average partisan ideology of Palestinians so it could be read as a parallel to the role of Israeli prime minister in forms. Major Palestinian parties that has voices on the settlement-building are taken into consideration. Details about its coding rules are explained at the end of the paragraph. This usage of phrase doesn't have any political implications.

¹³ Manekin, Grossman and Mitts, Contested Ground.

¹⁴ Khaled Abu Toameh, '[Dweik Is Real Palestinian President](#)', (The Jerusalem Post, 2009); Khaled Abu Toameh, Hamas: '[Abbas No Longer Heads PA](#)', (The Jerusalem Post, 2009).

alternative to the full and complete liberation of Palestine”.¹⁵

So far, a logistic model to predict the probability of reaching a peace agreement (PADum) between Israel and Palestine has been established on the independent variable settlement-building (ConstructionCompleted), the ideological partisanship of Israel’s leadership (PrimeMinister_IS) and the ideological partisanship of the Palestinian leadership (President_PA). However, it can be supposed that there would be a time gap between the geopolitical change triggered by the construction of settlements and the signature of agreements in reality, which can effectively affect the results of regression. Since it is hard to predict the exact time lag between the settlement building and potential agreement-making, four lagging variables are added as alternatives to the independent variable of settlement-building proposed above. Variable ConstructionCompleted_Lag1 means one quarter (or three months) lags behind the Variable ConstructionCompleted, two quarters (half a year) for ConstructionCompleted_Lag2, and likewise for the variables ConstructionCompleted_Lag3 and ConstructionCompleted_Lag4. In total, five regression tables are presented in Appendix 1, followed by five scatter plots accordingly in Appendix 2.

4. Results

As reflected in the two appendixes, Alternative 3, the time gap option for three quarters lagging behind the original independent variable is proposed as the best-fit model. The p-value (Appendix 1) in Alternative 3 was tested significant while all other four alternatives were not. In practice, this means that the effect of settlements built on the ground would most likely take three quarters (nine months) to potentially affect the negotiation of peace agreements, or that a newly built settlement would most likely affect the peace negotiations nine months later. Therefore, it is suggested to use Alternative 3 as the best fit for the model constructed, the scatter plots of which can be seen below in Figure 1 and the according log odds table as seen below in Figure 2.

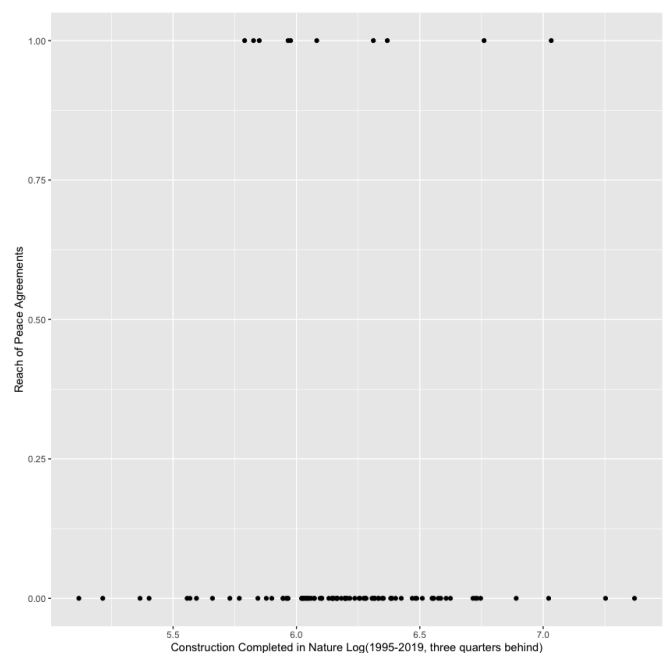


Figure 1 Scatter Plot

¹⁵ Zena Tahhan, [Hamas and Fatah: How Are the Two Groups Different](#), (Al Jazeera, 2017).

		<i>Dependent variable:</i>
		the Probability to Reach a Peace Agreement
Settlement-building (three quarters time lag)	-2.355*	(1.245)
The Prime Minister of Israel	-1.638**	(0.760)
The President of Palestine	-18.224	(2,538.832)
Constant	14.823*	(8.078)
Observations	97	
Log Likelihood	-21.721	
Akaike Inf. Crit.	51.441	
<i>Note:</i>		*p<0.1; **p<0.05; ***p<0.01

Figure 2 Logistic Regression

Figure 2 shows that the settlement constructions built three quarters ago have statistically significant effects on the likelihood of an agreement being reached between Israel and Palestine. The negative coefficient suggests that the more settlements built on the ground, the less likely a peace agreement is to be signed. The coefficient itself suggests that when one unit of settlement increases on the log scale, the log odd to reach a peace agreement would be lowered by 2.36 units.

To better understand the practical implications of the coefficient in practice, the logistic probability diagram is presented in Figure 3 below. Figure 3 shows that when 167 ($e^{5.12} \approx 191$, x-axis) quarterly settlement-buildings are completed and other variables hold at their average level, the probability of reaching a peace agreement would be around 0.0005 ($5e-04$, y-axis). When the number of completed settlements reaches 1097 ($e^7 \approx 1097$, x-axis), the predicted probability would be almost 0. Substantially, the model suggests that the level of settlement constructions of Israel

between 1995-2019 (with a minimum of around 167 per quarter and a maximum of around 1097 per quarter) has rendered the peace agreement between Israel and Palestine almost impossible. A future decline in settlement-building from the 1995-2019 level would negligibly increase the chances of reaching a peaceful resolution. In contrast, any increase in settlement-building would quickly kill any peace talks between Israel and Palestine.

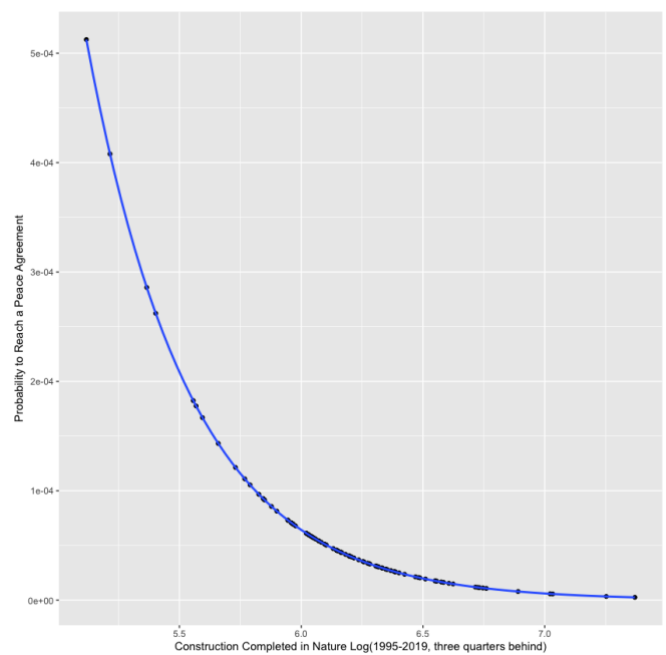


Figure 3 Logistic Probability

Regardless of model selection, all five alternative log odds tables (see Appendix 1) present a statistically significant negative coefficient for the prime minister of Israel as opposed to an insignificant coefficient for the president of Palestine. This complementary finding suggests that ideological partisanship of Israeli leaders can significantly affect the creation of any peace agreement — the more right-wing Israel’s government would lean, the less likely the

conflict can be resolved via negotiations (similar to Grossman and Mitts findings, 2018). This is not mirrored by Palestinian leaders, as they would not have such an influence, no matter partisanship. The power relations between Israel and Palestine in reopening the Peace Progress are proved to be unevenly distributed.

5. Conclusions

Beginning with the hypothesis that more settlement-building in the case of Israel-Palestine conflict would make the creation of peace agreements less likely to occur, the paper applied logistic regression to examine their empirical relation. The model suggests that the settlement constructions completed by Israel from 1995 to 2019 can statistically affect the reaching of peace agreements and the less likely an agreement would be reached if Israel built more settlements. Substantially, the statistics reveal that Israel's settlement building between 1995 and 2019 has approached an amount that leaves no chance for Israel and Palestine to sign a peace agreement in public. Therefore, the hypothesis has tested true and demonstrated the perception of settlement-building as undermining the prospect of negotiating a two-state solution. In addition, the results have confirmed that Israel has significant power to choose between peace or conflict while Palestine does not.

In terms of the research purpose, this paper attempts to build an innovative linkage between settlement building and the creation of peace agreements. A statistical correlation is discovered between the number of newly-built Israeli settlements and the signature of peace

agreements between Israel and Palestine. The research design is effective in its singular purpose of examining whether settlement-building is a factor affecting the signature of peace agreements between Israel and Palestine.

Apart from contributions, the paper has several limitations. First, it sheds no light on other explanatory factors, such as military capabilities, public opinions, number of refugees, terrorist activities, international intervention and domestic changes (for example, fragmentation of political parties either in Israel or in Palestine). Therefore, it's difficult to conclude whether there are factors with stronger effects than that of settlement-building. Second, the indicator of peace agreements only considers the number of peace agreements; the content of peace agreements has not been examined. From this viewpoint, it is inaccurate to code the creation of peace agreements as a dummy variable (0 or 1 to indicate whether there are an internationally recognized peace agreement signed between Israel and Palestine) if not all peace agreements would be equally affected by the settlement building. Third, settlement-building is also coded as a numerical variable, in which sense, the geographical information of the settlements is out of analysis and how different locations of the settlement-building would affect the creation of peace agreements is therefore ignored.

Given that the paper was drafted in 2020 and presented at the IE IPR event in May 2023, changes after 2020 should also be noted. It's a pity that indicators in the paper were not updated due to the inaccessibility of data points. Still,

three trends can be inferred after 2020, and settlement-building's adverse effects remain alarming. First, the number of Israeli settlements in the West Bank continues to increase after 2020.¹⁶ Second, the motivation for building settlements in Israel is evolving; that is, more Israelis are open to living in the West Bank for relief from high inflation in Israeli cities.¹⁷ Such evolving nature could further speed up settlement building and narrow the negotiation space already at stake. Third, the Israeli-Palestinian conflict is drawing less attention in the domestic politics of Israel,¹⁸ indicating less willingness of Israeli leaders to initiate policy changes in the future to manage the conflicts with Palestine. Taking a rising trend in settlement building and a decreasing possibility of changes in Israel's foreign policy, the chance of reaching an internationally-recognized peace agreement between Israel and Palestine can be predicted to be lower. Palestinians living in the occupied territory will probably be exposed to greater vulnerability.

Relevant policy implications should also be highlighted in view of the adverse effects of Israel's unilateral settlement-building and less willingness to change its practices. To restart the peace process between Israel and Palestine and increase the prospect of the two-state solution, the international society should insist on diplomatic means to contain the construction of Israeli settlements. In terms of the dominant power that Israeli prime ministers hold in the

negotiation for peace, on the one hand, the model suggests international mediators invest more effort in encouraging Israel to make concessions. On the other hand, the model implies that the international society should offer more assistance to the capacity-building of Palestine and increase its bargaining chips to check and balance with Israel over the territorial struggle.

For the benefit of future research, contributions to examining the effects of international intervention and state capacity building would be remarkable supplements to this research. Future analysis on whether peace agreements had Israel refrained from settlement-building may lead to further innovation.

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¹⁶ [‘Number of Settlers by Year’](#), (Peace Now, 2021).

¹⁷ Elliott Mokski, [Pragmatic Settlements in the West Bank and Implications for Israel and Palestine](#), (Harvard International Review, 2022).

¹⁸ Tamar Hermann, [Israelis Say They Base Their Vote on Party's Economic Platform](#), (The Israel Democracy Institute, 2022).

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Data List

1. Settlement-building from Israel Central Bureau of Statistics <https://old.cbs.gov.il/ts/ID59658d51be0e4f/>
2. Peace Agreements Portal from PA-X Peace Agreement Database <https://www.peaceagreements.org/search>
3. Israeli Governments' Composition from the Knesset of Israel https://knesset.gov.il/govt/eng/GovtByNumber_eng.asp?govt=25
4. The List of the President of Palestinian Authority from https://www.worldstatesmen.org/Palestinian_National_Authority.htm

Appendix 1: Five Alternatives of Log Odd Table

<i>Dependent variable:</i>	
the Probability to Reach a Peace Agreement	
Settlement–building	0.075 (0.862)
The Prime Minister of Israel	-1.032* (0.566)
The President of Palestine	-16.981 (1,616.124)
Constant	-1.008 (5.544)
Observations	100
Log Likelihood	-25.834
Akaike Inf. Crit.	59.668
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

Alternative 0 Logistic Regression with no Time Lag

<i>Dependent variable:</i>	
the Probability to Reach a Peace Agreement	
Settlement–building (one quarter time lag)	0.573 (0.857)
The Prime Minister of Israel	-1.055* (0.578)
The President of Palestine	-16.856 (1,610.962)
Constant	-4.107 (5.571)
Observations	99
Log Likelihood	-25.129
Akaike Inf. Crit.	58.258
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

Alternative 1 Logistic Regression with One Quarter Behind

<i>Dependent variable:</i>	
the Probability to Reach a Peace Agreement	
Settlement–building (two quarters time lag)	–1.468 (1.059)
The Prime Minister of Israel	–1.575** (0.698)
The President of Palestine	–18.072 (2,580.652)
Constant	9.269 (6.912)
Observations	98
Log Likelihood	–23.735
Akaike Inf. Crit.	55.470
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

Alternative 2 Logistic Regression with Two Quarters Behind

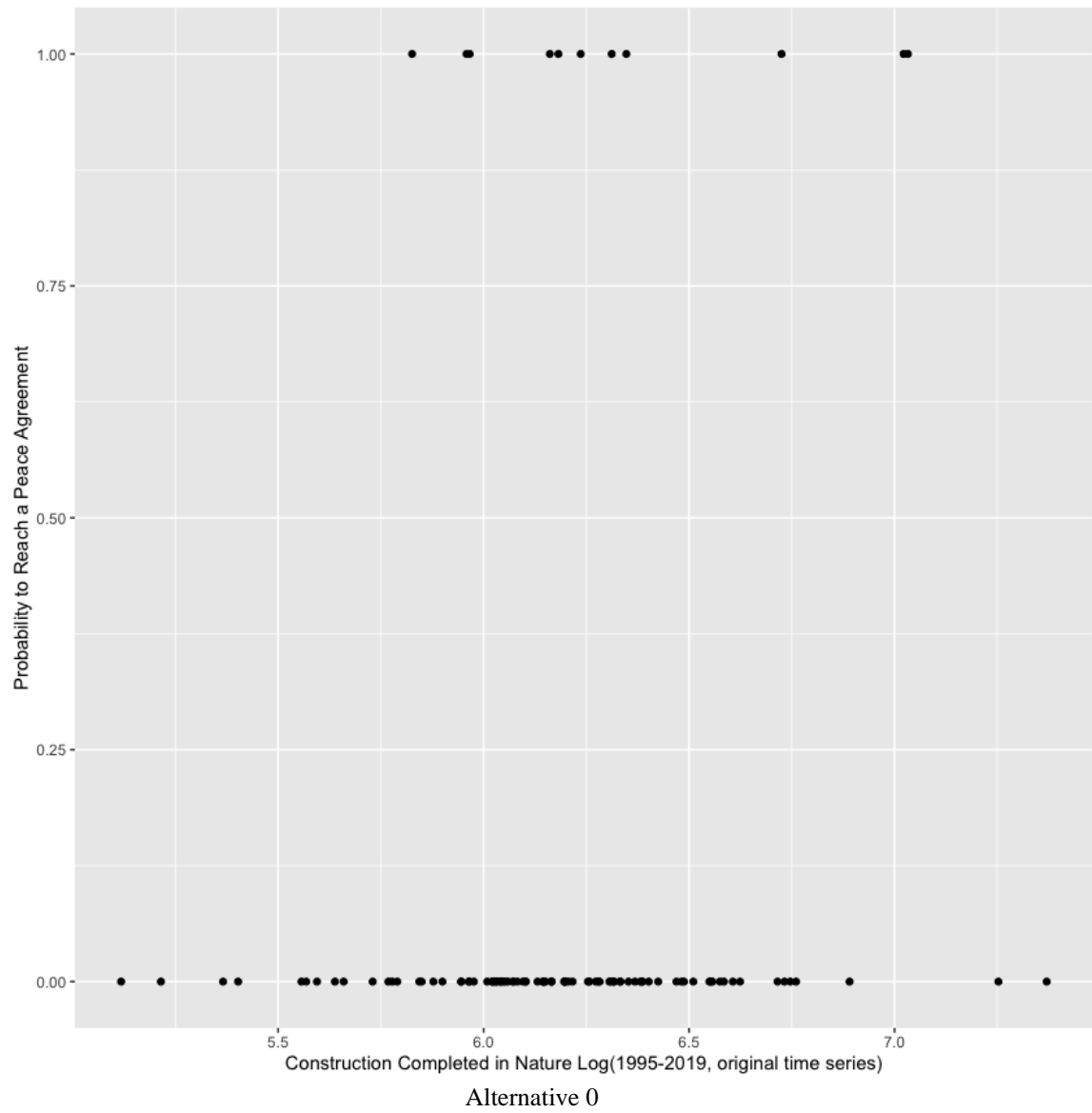
<i>Dependent variable:</i>	
the Probability to Reach a Peace Agreement	
Settlement–building (three quarters time lag)	–2.355* (1.245)
The Prime Minister of Israel	–1.638** (0.760)
The President of Palestine	–18.224 (2,538.832)
Constant	14.823* (8.078)
Observations	97
Log Likelihood	–21.721
Akaike Inf. Crit.	51.441
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

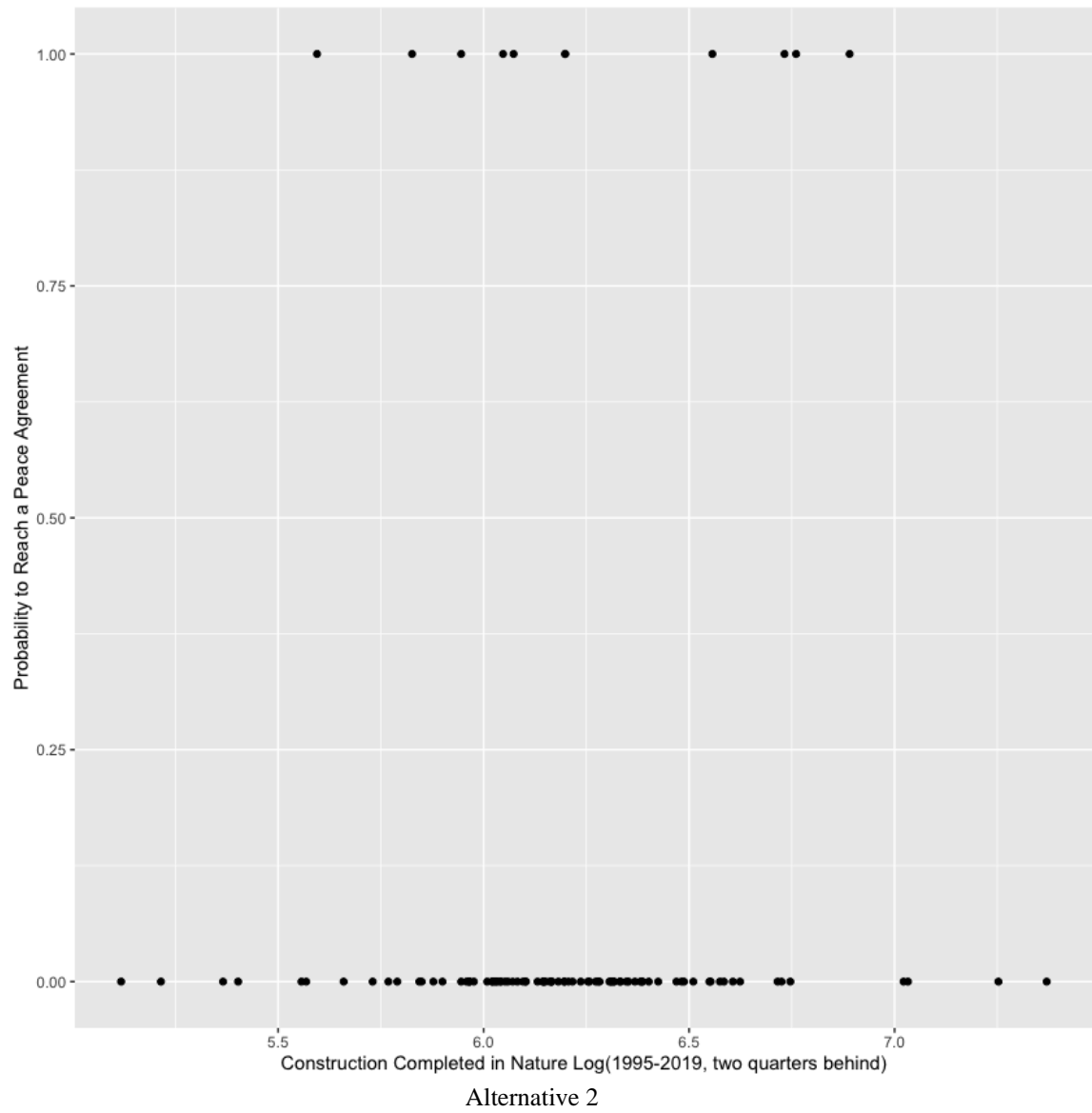
Alternative 3 Logistic Regression with Three Quarters Behind

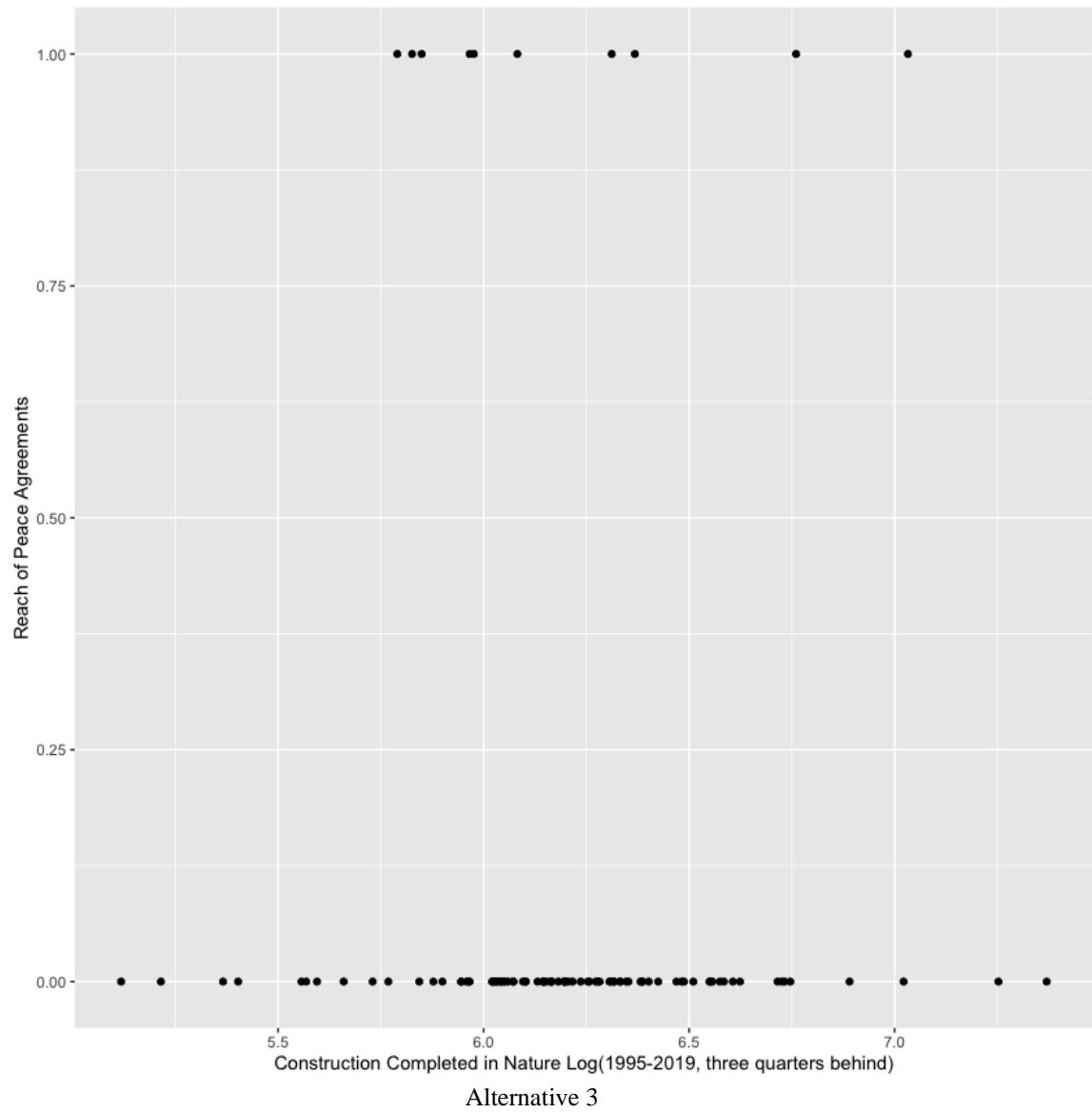
<i>Dependent variable:</i>	
the Probability to Reach a Peace Agreement	
Settlement–building (one year time lag)	–0.741 (1.114)
The Prime Minister of Israel	–1.367** (0.694)
The President of Palestine	–17.946 (2,648.355)
Constant	4.515 (7.319)
Observations	96
Log Likelihood	–23.176
Akaike Inf. Crit.	54.353
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

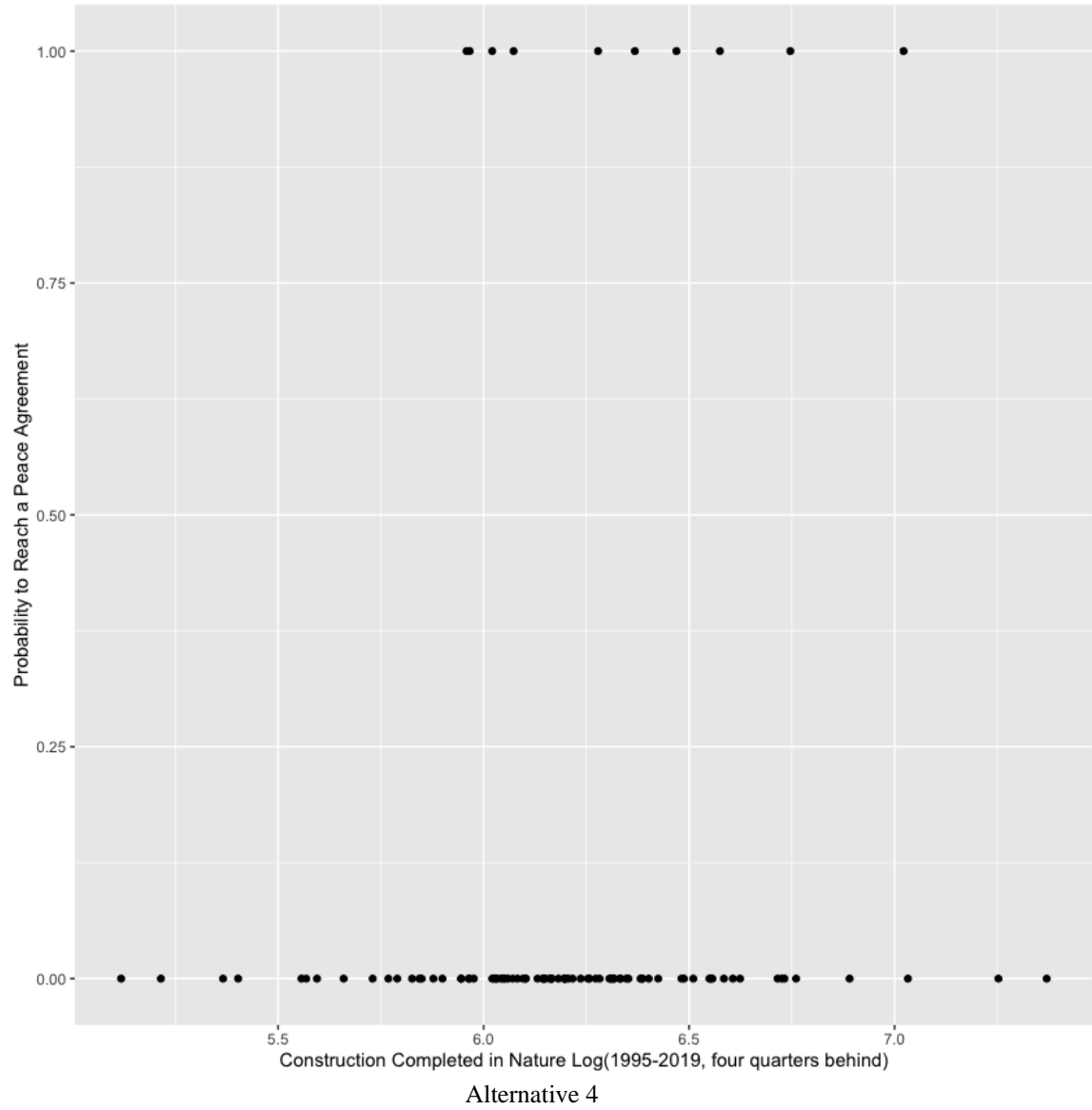
Alternative 4 Logistic Regression with One Year Behind

Appendix 2: Five Alternatives for the Scatter Plots









R Script

```

setwd("~/Desktop/Settlements_Agm")
install.packages("aod")
install.packages("ggplot2")
install.packages("stargazer")
library(aod)
library(ggplot2)
library(stargazer)

library(readxl)
Mydata <- read_excel("Settlevariablelist.xlsx")
View(Mydata)
head(Mydata)

## use the nature log of Construction completed
hist(Mydata$ConstructionCompleted)
Mydata$ConstructionCompleted<-log(Mydata$ConstructionCompleted)
hist(Mydata$ConstructionCompleted)
Mydata$ConstructionCompleted_Lag1<-log(Mydata$ConstructionCompleted_Lag1)
Mydata$ConstructionCompleted_Lag2<-log(Mydata$ConstructionCompleted_Lag2)
Mydata$ConstructionCompleted_Lag3<-log(Mydata$ConstructionCompleted_Lag3)
Mydata$ConstructionCompleted_Lag4<-log(Mydata$ConstructionCompleted_Lag4)

## logistic regression on the full period (1995-2019)
logodd<-glm(PADum~ConstructionCompleted+PrimeMinister_IS+President_PA,
            data=Mydata,family="binomial")
summary(logodd)
stargazer(logodd, type="html",
          dep.var.labels=c("the Log Odd to Reach a Peace Agreement"),
          covariate.labels=c("Settlement-building",
                              "The Prime Minister of Israel",
                              "The President of Palestine",
                              "Constant"),out="models0.htm")

## logistic regression probability on the full period (1995-2019), not necessary since
it's not significant
Control_average<-with(Mydata,
data.frame(ConstructionCompleted=(ConstructionCompleted),
            PrimeMinister_IS=mean(PrimeMinister_IS,na.rm=TRUE),
            President_PA=mean(President_PA,na.rm=TRUE)))

Control_average$pro <- predict(logodd, newdata = Control_average, type =
"response")

plot_full<-
ggplot(Control_average,aes(x=ConstructionCompleted,y=Control_average$pro))+
  geom_point() + stat_smooth(method="glm", method.args=list(family="binomial"),
se=FALSE)
plot_full

```

```
## test the Construction lag 1
logodd_lag1<-
glm(PADum~ConstructionCompleted_Lag1+PrimeMinister_IS+President_PA,
     data=Mydata,family="binomial")
summary(logodd_lag1)

stargazer(logodd_lag1, type="html",
          dep.var.labels=c("the Log Odd to Reach a Peace Agreement"),
          covariate.labels=c("Settlement-building (one quarter time lag)",
                              "The Prime Minister of
Israel",
                              "The President of Palestine",
"Constant"),out="models1.htm")

## test the Construction lag 2
logodd_lag2<-
glm(PADum~ConstructionCompleted_Lag2+PrimeMinister_IS+President_PA,
     data=Mydata,family="binomial")
summary(logodd_lag2)

stargazer(logodd_lag2, type="html",
          dep.var.labels=c("the Log Odd to Reach a Peace Agreement"),
          covariate.labels=c("Settlement-building (two quarters time lag)",
                              "The Prime Minister of
Israel",
                              "The President of Palestine",
"Constant"),out="models2.htm")

## test the Construction lag 3
logodd_lag3<-
glm(PADum~ConstructionCompleted_Lag3+PrimeMinister_IS+President_PA,
     data=Mydata,family="binomial")
summary(logodd_lag3)

stargazer(logodd_lag3, type="html",
          dep.var.labels=c("the Log Odd to Reach a Peace Agreement"),
          covariate.labels=c("Settlement-building (three quarters time lag)",
                              "The Prime Minister of
Israel",
                              "The President of Palestine",
"Constant"),out="models3.htm")

## test the Construction lag 4
logodd_lag4<-
glm(PADum~ConstructionCompleted_Lag4+PrimeMinister_IS+President_PA,
     data=Mydata,family="binomial")
summary(logodd_lag4)
```

```

stargazer(logodd_lag4, type="html",
  dep.var.labels=c("the Log Odd to Reach a Peace Agreement"),
  covariate.labels=c("Settlement-building (one year time lag)",
    "The Prime Minister of
Israel",
    "The President of Palestine",
    "Constant"),out="models4.htm")
## Suppose it's a matter of time to see settlements' effect on agreement
## Scatterplot for the five alternatives in terms of time lag and peace agreement
reached
## Alternative 0
ggplot(data=Mydata,aes(y=PADum,x=ConstructionCompleted))+
  geom_point() +
  scale_x_continuous("Construction Completed in Nature Log(1995-2019, original
time series)")+
  scale_y_continuous("Probability to Reach a Peace Agreement")

## Alternative 1
ggplot(data=Mydata,aes(y=PADum,x=ConstructionCompleted_Lag1))+
  geom_point() +
  scale_x_continuous("Construction Completed in Nature Log(1995-2019, one quarter
behind)")+
  scale_y_continuous("Probability to Reach a Peace Agreement")

## Alternative 2
ggplot(data=Mydata,aes(y=PADum,x=ConstructionCompleted_Lag2))+
  geom_point() +
  scale_x_continuous("Construction Completed in Nature Log(1995-2019, two
quarters behind)")+
  scale_y_continuous("Probability to Reach a Peace Agreement")

## Alternative 3
ggplot(data=Mydata,aes(y=PADum,x=ConstructionCompleted_Lag3))+
  geom_point() +
  scale_x_continuous("Construction Completed in Nature Log(1995-2019, three
quarters behind)")+
  scale_y_continuous("Reach of Peace Agreements")

## Alternative 4
ggplot(data=Mydata,aes(y=PADum,x=ConstructionCompleted_Lag4))+
  geom_point() +
  scale_x_continuous("Construction Completed in Nature Log(1995-2019, four
quarters behind)")+
  scale_y_continuous("Probability to Reach a Peace Agreement")

## logistic regression probability on the lag 3 at the full period (1995-2019)

```

```
Control_average3<-with(Mydata,  
data.frame(ConstructionCompleted_Lag3=(ConstructionCompleted_Lag3),  
PrimeMinister_IS=mean(PrimeMinister_IS,na.rm=TRUE),  
President_PA=mean(President_PA,na.rm=TRUE)))
```

```
Control_average3$pro <- predict(logodd_lag3, newdata = Control_average3, type =  
"response")
```

```
plot_pro3<-  
ggplot(Control_average3,aes(y=Control_average3$pro,x=ConstructionCompleted_La  
g3))+  
geom_point() + scale_x_continuous("Construction Completed in Nature Log(1995-  
2019, three quarters behind)")+  
scale_y_continuous("Probability to Reach a Peace Agreement") +  
stat_smooth(method="glm", method.args=list(family="binomial"), se=FALSE)  
plot_pro3
```

```
## Median and Minimum settlement construction completed from 1995 to 2019  
Mydata <- read_excel("Settlevariablelist.xlsx")  
mean(Mydata$ConstructionCompleted)  
median(Mydata$ConstructionCompleted)  
min(Mydata$ConstructionCompleted)
```

```
## 0/50/100 threshold of probability  
threshold_pro3<-data.frame(ConstructionCompleted_Lag3=(c(0,1.9,2,3,4)))  
Control_average3_threshold<-with(Mydata,  
data.frame(ConstructionCompleted_Lag3=(threshold_pro3),  
PrimeMinister_IS=mean(PrimeMinister_IS,na.rm=TRUE),  
President_PA=mean(President_PA,na.rm=TRUE)))  
predict(logodd_lag3, newdata = Control_average3_threshold, type = "response")
```