How to Write up a Quantitative 2x2 Case Study

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In this section, you describe how you plan to test whether your proposed explanation has any empirical support. There are several steps to writing this section. First, you need to justify why your methodological approach is the appropriate approach for testing your hypothesis and comparing its explanatory strength to that of other explanations. Second, you then need to describe how you intend to implement this approach. Third, you need to present the findings.

Justify your Choice of Methodological Approach There are several basic types of research designs that might be appropriate to test your hypothesis and comparing its explanatory strength to that of other explanations. Examples include Large-n statistical analysis, Qualitative case studies, Game-theoretic models, and experimental studies, among others. In the first step, you should justify *why* a qualitative case study is the most appropriate to test your hypothesis. Briefly discuss the various strengths and weaknesses of alternative methodological approaches, and explain why for your particular topic a qualitative analysis is best suited.

Identify two independent variables In a next step, you should explain how you plan to test your argument. To implement a 2x2 case study design, you first need to select two explanations. One of these variables should be your argument that introduced in your theory section. The second explanation should be the most convincing existing explanation that you reviewed in your literature review. Your case study will examine the explanatory power of these competing explanations. Second, identify the time period under consideration: Are you examining a time period of several years (1970-2000), just a single year, or even smaller periods of time? Justify why your time period is the appropriate phase to examine with respect to your research question. Third, identify two independent variables that correspond to the two hypotheses. Discuss how you will operationalize these variables. Specifically, discuss how the operationalization you chose are valid (measure the true variable as closely as possible) and reliable (yield consistent values across a series of observations) measures of the abstract concept contained in your hypotheses. Subsequently describe the source of the variable: Will you have to compile the data yourself, or does it exist in some format already and is publicly available (if so, what is the source)?

Select four cases First, make a list of all countries (counties, cities, firms, etc.) for which data exists for both independent variables (IVs) that you identified in the previous section. Select four countries meet the following characteristics:

- Case 1: country with a high score on IV1 and a high score on IV2
- Case 2: country with a low score on IV1 and a high score on IV2

- Case 3: country with a high score on IV1 and a low score on IV2
- Case 4: country with a low score on IV1 and a low score on IV2

Justify your selection. Importantly, these four countries should be a similar as possible in all other aspects. Most importantly, these four countries should have identical scores on the independent variable measuring the hypothesis that you decided to drop in the first step above (either H1 or H2). As a result, the countries should ideally have the same institutional environment, same geographic location, same political system, same economic circumstances, etc. These four cases should differ only with respect to their scores on the two independent variables. Obviously, this will not always be perfectly possible — but you need to come as close as possible to this ideal. The resulting 2x2 should look like this:

	IV1: high	IV1: low
IV2: high	Case 1	Case 2
IV2: low	Case 3	Case 4

Outcome Following the identification of your independent variables, discuss the measurement of your dependent variable (i.e., your outcome variable). Again, operationalization involves identification of empirical referents that measure the typically abstract concepts specified in your hypotheses. The precise way in which your dependent variable is measured will differ somewhat depending on the type of question:

- If you are interested in explaining differences in levels on some measure, you will need to identify a specific variable. Discuss how the operational indicators of the abstract concept of your outcome are valid (measure the true variable as closely as possible) and reliable (yield consistent values across a series of observations). Subsequently describe the source of the variable: Will you have to compile the data yourself, or does it exist in some format already and is publicly available (if so, what is the source)?
- If you are interested in a particular policy process, you do not need to identify a specific variable. However, you will need to discuss sources of empirical evidence that you can use to describe the differences in outcomes across the four cases. The same applies if you are interested in examining norms or similarly intangible outcomes. Again, you will need to point to sources of empirical value (e.g., a change in discourse should be traceable in written publications or statements by officials, etc.)

Describe the type and source of your data. The list of potential data is long: interviews, newspapers, monographs, government documents, surveys, electoral returns, fiscal data, etc. Similarly, the list of potential sources is long: Off-the-shelve quantitative data, historical archives, interviews with real persons, etc. Whichever type of empirical evidence you use, justify your selection. Note that the test of good evidence is in its appropriateness —- but you also must conduct a "reality test" when it comes to evaluating the availability and cost of obtaining the evidence. In this section you should also address potential problems of reliability and bias of sources.

Results 1: Patterns in the data across the four cases You should now summarize your expectations. For example, you should describe which of the four countries (or whatever your unit of analysis is) should have high values on the dependent variable

if your first hypothesis is correct, and which countries should have low values on the dependent variable. Then repeat this exercise for your second hypothesis.

After establishing the expected outcomes for both hypotheses, you should describe the actual outcomes of the four countries in your 2x2. Use both statistical data to show which countries have what value on the dependent variable as well as references to existing studies of these countries describing the outcome.

Once you have shown the patterns in the data across the four cases, you need to interpret these findings. Based on the data you collected, which of the two hypothesis is more accurate than the other? In this process, pay attention to your language: Do you use causal language to describe a correlational finding? Do you specify the assumptions necessary to interpret their findings as causal? In general, you are encouraged to present your graphically or using tables, rather than merely describing them in the text. Avoid vagueness such as "this figure shows my main result." Say something concrete, like, "I found that democratic countries are actually more likely to borrow from China than autocratic ones, as this graphs shows that ..."

Results 2: Process tracing within two cases Once you established and interpreted the overall patterns in the data for the four cases, you will need to complement this macro-analysis with a micro-perspective. Specifically, you will need to show that the mechanism you hypothesize operates in these countries actually occurs.

To do so, pick two of the four countries in your 2x2 table in the following way. Suppose you find that the patterns across the four cases support Hypothesis 1 (measured by Independent Variable 1) than Hypothesis 2. In this case, you need to either compare Case 1 to Case2 or compare Case 3 to Case 4. Conversely, you might find that Hypothesis 2 received more support than Hypothesis 1. In this case, you need to either compare Case 1 to Case 3 or Case 2 to Case 4.

	IV1: high	IV1: low
IV2: high	Case 1	Case 2
IV2: low	Case 3	Case 4

Once you have picked the two countries, you will need to provide qualitative evidence showing that the causal mechanism hypothesized is actually operating. In other words, in each of these two countries you need to trace the process by which your independent variable shaped the outcome observed in this country. Use interviews, archival documents, newspaper articles, politicians' statements, or any other source to show how this process worked in these two countries.