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Essays on optimal experimentation

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Chapter 6

Conclusion

Although conscious policy experimentation would be welcomed by the econometricians in most of us, the fact that there is no escaping from experiments fired at the macroeconomy makes policy makers hesitant to look for more information in an active manner. There are however cases in which policy experimentation is both possible and present and it are these cases that this thesis has focused at.

Chapter 1 considered the learning process of voters who are undergoing an economic reform. Since reforms tend to take place gradually (*e.g.* due to political constraints or due to the fact that a true "big bang" reform would be too costly in terms of adjustment costs), they naturally tend to obtain a sequential dimension. As a result, voters who are uncertain on the effect the policy will have on their own well-being, can exploit this sequential dimension to update their beliefs on this. In Chapter 1, it is shown that good news on the completed parts of the reform can actually be detrimental to the probability of the reform being completed. The reason is that the process of revealing reform outcomes is an example of sampling without replacement: if it is revealed that a certain agent other than you is a winner, there is one winning place less left where you can end up in. If updating on the aggregate dimension of the problem is insufficient to make up for this "lack of replacement effect", the revelation of winners early on in the reform makes the median voter more negative on his own chances of ending up as a winner. Chapter 1 shows that this effect can even lead to a loss of majority support for the reforming government. In practice, there are many examples of reforms that started off successfully (all the reformed firms/sectors turned out to be winners), but nevertheless the reforming governments were kicked out of office before the

reform was completed - a counterintuitive observation that could be explained by the mechanism underlying Chapter 1 of this thesis.

Chapter 2 has shown that uncertainty on the causes of climate change (as present with climate skeptics), gives policy makers an experimentation motive. In particular, it gives them an incentive to experiment by emitting *less* greenhouse gases. The reason is that such a policy eases the learning process on the cause of global warming (which is valuable to know), while this strategy is simultaneously robust to misspecification. Hereby, it is shown that even climate skeptics have an incentive to reduce greenhouse gas emissions relative to current levels, as a result of which the question whether one is a "climate believer" or a climate skeptic becomes of subordinate importance from a policy point of view. After all, the policy implications of the different positions are surprisingly consistent: both "climate believers" as well as climate skeptics should argue in favor of a more cautious climate policy. The former, trivially, because they are convinced that emitting greenhouse gases is damaging (which is/was not taken into account by most current/recent policy makers), while the latter (who apparently find current emission levels not informative enough on the causes of climate change) should do so for learning considerations.

In Chapter 3 I have analyzed the optimal pricing strategy of a seller who faces uncertainty on the time-varying slope of his demand curve. Such a form of uncertainty makes it optimal for this seller to experiment consciously with the relative price he posts. Resulting price patterns show a lot of discreteness (as observed in the data), which has proved to be a major challenge to most price setting models. The model's learning dynamics are able to reconcile individual price flexibility with aggregate price sluggishness, while the experimentation motive may be an explanation for the presence of many idiosyncratic price changes in the data and the observation that prices are more volatile than costs.

The final two chapters of this thesis (Chapters 5 and 6) exploited the existence of a natural setting that is convenient when it comes to analyzing the effects of US monetary policy shocks. The setting consists of the fact that there are certain countries that use the US dollar (and thereby import US monetary policy) just like genuine US states do, without being perfectly integrated with the US economy. Consequently, non-monetary US shocks are not transmitted instantaneously and perfectly to these countries (in sharp contrast to the monetary shocks) as a result

of which this natural setting works a bit like an ideal filter.

This filtering capacity was exploited in Chapter 4. The idea is to turn the focus of the typical structural VAR exercise upside-down. Where the standard study in this literature tries to find the perfect shock identification scheme, this chapter asks: if shock identification is so difficult, can't we find a natural setting that reduces the consequences of the almost inevitable misidentification of monetary shocks? It is then argued that the fact that the dollarized countries considered are not perfectly integrated with the US economy, is such a natural setting. Because of the imperfect economic integration, non-monetary US shocks are not transmitted perfectly and instantaneously to the client countries. Monetary US shocks on the other hand, are transmitted quickly via financial markets as a result of which they are likely to dominate the responses of variables in dollarized countries (at least at short horizons). It is shown that the "price puzzle" disappears via this route without making any changes to the standard monetary VAR specification. Output on the other hand does not show a clear response, so monetary neutrality cannot be rejected.

Chapter 5 tried to identify US monetary policy shocks by placing sign restrictions on variables in dollarized countries. This enables us to use all available information, restrict more variables and leave the responses of US output *and prices* unrestricted (to allow for the working capital view of monetary shocks). We find only little evidence for the latter in the US, as prices fall immediately after most contractionary shocks that we identify. Again, monetary shocks do not seem to have a clear effect on real GDP.