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Measurement issues in political economy

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Chapter 1

Introduction

1.1 Aim of the study

A large number of the variables that are used in economic models are mental constructs. Providing numerical values for these variables is often difficult, since they cannot be directly observed. Other variables that *can* be observed are then needed in order to use as proxies of the unobservable ones. It is not always obvious which variables should be selected for this purpose, and in the selection and aggregation procedures subjective judgement plays an important role. Consequently, different researchers often create and/or use different proxies, possibly leading to different results and conclusions.

The first aim of this thesis is to provide valid measurement for a number of important variables in the field of political economy. More specifically, this thesis aims to provide measurements that do not depend on subjective judgement. Instead of constructing yet another indicator, the information that is contained in already existing indicators is used, and an objective measure is constructed using aggregation procedures that do not involve subjective judgement.

A second aim of this thesis is to apply these newly constructed measures in empirical models, in order to assess the influence of the variables under scrutiny on economic outcomes. It is particularly interesting to examine whether the relations that have been derived in previous studies, using already existing indicators, remain intact.

1.2 Measurement issues

The main property of the variables that we try to measure in this thesis is that they are not directly observable: they are mental constructs that are difficult

to capture numerically. This type of variables is called *latent variables*, and our aim is to find related variables that *are* measurable. We can then use the latter variables as proxies or indicators of the construct we are interested in, and apply techniques that combine the information contained in the indicators.

In this thesis, the focus is on four important variables in the field of political economy: central bank independence, central bank conservativeness (i.e. inflation aversion), corporatism and economic freedom. We examine how they can be measured using a latent variables approach. For this purpose, factor analysis and principal components analysis procedures are applied. Before we discuss the specific properties of these procedures, the variables at hand are examined more closely.

The variables of interest are macroeconomic variables, i.e. they are measured on a national level. The first question is to which set of countries we limit our research. Since there are large institutional differences between developed and developing countries, we often cannot capture both groups using the same measurement procedures. If we want to consider them both, different latent variables models need to be constructed for developed and developing countries. However, the availability of empirical data is often problematic for the developing countries, especially in earlier time periods. Therefore, we have chosen to concentrate mainly on the developed world. Only in the measurement of economic freedom and the assessment of its relation to economic growth are developing countries also taken into account. In the other studies, we focus on countries that are members of the OECD.

However, restricting the set of countries to those for which data are readily available does not mean that all potential measurement problems are avoided. First, there is the problem of a small sample size. By focusing on industrial countries, we restrict ourselves to a small group. In 1980, the OECD consisted of 23 members. In econometric terminology, this is already considered a small sample. However, due to the fact that for certain countries data for the relevant indicators are not available, most of the studies in this thesis are performed using an even smaller group of countries. The measurement of corporatism, for instance, uses a sample of 16 countries, while the conservativeness of central banks is measured using a sample of only 14 countries. We will have to pay attention to the econometric consequences of estimating models of sizes this small, and correct for them if necessary.

A second, related, problem is the occurrence of missing data. In addition to complete unavailability of data, it often happens that for some countries data are only available for a part of the sample period. This problem can be solved

by excluding countries and/or time periods from the sample, but that implies that a lot of valuable information is thrown away. Instead, we can look for ways to combine the information that *is* available. At several points in this thesis, procedures of this type are applied to ensure that the already small sample of countries is not decreased even further.

As mentioned before, a latent variables approach is used in this thesis to measure the concepts of central bank independence, central bank conservativeness, corporatism and economic freedom. The resulting variables are used in models that assess their impact on economic outcomes, such as inflation, economic growth and unemployment, and on monetary policy outcomes, such as interest rates. Specifically, we examine the impact of central bank independence on inflation and on the occurrence of political business cycles in short-term interest rates, the impact of central bank conservativeness on unemployment, the impact of (aspects of) corporatism on inflation and unemployment and the impact of economic freedom on economic growth. The results of these studies are compared to results that have been reported in the empirical literature.

A problem that arises when latent variables are used as regressors in a regression model is that the corresponding coefficient is underestimated. We acknowledge this problem here and describe a method to get rid of the underestimation.

1.3 Outline

The remainder of this thesis consists of seven chapters. Chapter 2 gives an overview of the methodology that is used throughout the studies in chapters three through seven. Chapter 3 describes how central bank independence can be measured, while chapter 4 answers the question whether central banks can be blamed for the occurrence of political business cycles. In chapter 5, the measurement of corporatism is the subject of research, and chapter 6 discusses the measurement of central bank conservativeness. In these studies, only industrial countries are taken into account. Chapter 7 discusses which economic freedoms contribute to growth, in developing as well as developed countries. Finally, in chapter 8 the conclusions of the research are summarized.

The largest part of chapter 2 deals with an overview of latent variables models. Models with one or multiple latent variables are presented in the form of factor analysis (FA/MFA) and principal components analysis (PCA) specifications. Further topics of discussion are the estimation of these models, model selection and model fit and the interpretation of the results. Also, the CALS estimator is discussed, which takes care of the underestimation of the coeffi-

cient of the latent variable in empirical applications. Apart from latent variables models, models exhibiting dynamic behaviour are used in this thesis. Chapter 2 concludes with a discussion of exact tests that can be used to test for dynamics and unit roots in dynamic panel data models.

Chapter 3 deals with the measurement of central bank independence (CBI). After disentangling the concepts of CBI and inflation aversion (conservativeness), a new indicator of CBI is constructed using the information contained in indicators taken from the literature. This is done using a latent variables approach. Some specific technical complications of the FA model of CBI are discussed, and the resulting indicator is used in several empirical models to assess the relation between CBI and inflation.

In chapter 4, the constructed CBI indicator is used in a model that tests whether central banks actively create political business cycles (PBCs). After a short discussion of PBC theory, cross-country and panel regressions are run in order to answer the question whether central banks should be blamed for the occurrence of PBCs. In the section on panel data, the exact tests of chapter 2 are applied to see whether the model exhibits dynamic behaviour and a unit root.

Chapter 5 describes how to measure the concept of corporatism using a number of indicators from the vast political and economic literature on the subject. After selecting the indicators suitable for use in a latent variables analysis, the resulting constructs are applied in an empirical model that examines the relation between (aspects of) corporatism and inflation and unemployment. The CBI indicator of chapter 3 is also included in this model.

In chapter 6, inflation aversion or conservativeness of central banks is discussed. The concept of conservativeness is quantified using factor analysis models for two different decades. Also, the relation between conservativeness and unemployment is examined.

Chapter 7 describes the measurement of economic freedom for a large sample of developed and developing countries. In this chapter, a self-constructed measure of economic freedom is compared to two alternatives. Extensive robustness checks are used to analyze whether economic freedom contributes to economic growth.

Chapter 8, finally, summarizes the results and offers some additional points of discussion.