Chapter 1

Introduction

1.1 Aim of the thesis

A large number of theoretical and empirical studies have analyzed the relation between the political institutions of a country and its economic performance. The starting point of most studies is the hypothesis that countries with adequate political institutions (i.e., countries with democratic institutions, that are politically stable, and have low levels of corruption, and bureaucracy) outperform countries with poor political institutions. However, the empirical evidence on the relationship between political institutions, like democracy and political instability, and economic performance is mixed.

Some early studies, such as those by Kormendi and Meguire (1985) and Scully (1988), found a statistically significant relationship between political freedom and growth. However, more recent studies provided more ambiguous results (see Przeworski and Limongi, 1993, and the survey by Brunetti, 1997). For instance, Barro (1996) reports a non-linear relation between democracy and economic growth, while Rodrik (1997, p. 3) concludes that, after controlling for other variables, “there does not seem to be a strong, determinate relationship between democracy and growth.” Studies that use objective measures of democracy tend to find inconclusive results in growth regressions because democracy may have both positive and negative implications for growth (Alesina and Rodrik, 1994; Helliwell, 1994; Alesina et al., 1996). On the positive side, transparency and accountability may enhance economic performance. On the negative side, the consensus required by democratic institutions may delay responses to shocks and implementation of legislation. Dou-
couliagos and Ulubasoglu (2008) conclude on the basis of a meta-analysis that there is no clear evidence of democracy being detrimental to economic growth. The accumulated evidence points to a zero direct effect on economic growth.

Instead of a direct effect, democracy could have an indirect impact on economic growth. However, De Haan and Siermann (1996) could not establish an impact of democracy on economic growth through its influence on investments or human capital. In contrast, Tavares and Wacziarg (2001) suggest that democracy fosters economic growth by improving the accumulation of human capital.

Also the empirical evidence on the direct impact of political instability on cross-country differences in economic performance is inconclusive. For instance, Alesina et al. (1996), who model the effects of executive instability by first measuring the probability of a change in government for three definitions of change (every change in government, major changes in government, and coups d’état) and then estimate the relationship between growth per capita income and political instability, find that a high executive turnover has a negative impact on growth. In contrast, Barro (1996) reports that the negative effect of the number of revolutions and coups on growth disappears when property rights are controlled for. However, riots, demonstrations, and assassinations may reduce investment and saving and thereby affect growth (Alesina and Perotti, 1996). This view is supported by the survey of Carmignani (2003) who concludes that political instability may have an indirect effect on economic growth.

To conclude, the direct effect of the political institutional environment on economic growth has been examined extensively, albeit with mixed results. However, some studies point out that political institutions may have an indirect effect on growth through their impact on factors that drive economic growth. This thesis therefore focuses on the effect of political variables on a number of factors that may indirectly affect cross-country differences in economic performance.

One of the difficulties involved in incorporating political variables into an econometric analysis is how to measure various types of political events, systems, or concepts. While some political events are of a discrete nature (e.g., a coup d’état) other concepts (e.g., democracy) are latent and therefore more difficult to quantify. Studies that examine the effect of political institutions usually choose political indicators in a rather arbitrary way.

According to De Haan (2007), most indicators of political institutions contain some measurement error leading to a low quality of data and biased estimation. Also the question remains whether the indicators used in previous studies represent all dimensions of the latent construct they examine. To come up with better meas-
ures that include more information and to determine whether indicators of political institutions have a multidimensional character, we employ factor analysis. Factor analysis is a statistical data reduction technique used to explain variability among observed random variables in terms of fewer unobserved random variables called factors. The observed variables are modelled as linear combinations of the factors plus an error term. The eigenvalue for a given factor measures the variance of all the variables that is accounted for by that particular factor. If a factor has a low eigenvalue, it may be ignored because other factors are more important in explaining variance.

The aim of this thesis is to analyze the effect of some dimensions of countries’ political systems on cross-country differences in determinants of economic performance. Economic performance is not only measured by economic growth but also by economic volatility. On the basis of previous empirical studies, we distinguish between five dimensions of a political system. This first dimension is the type of regime, which measures the level of democracy in a country. The second dimension is the instability of the regime. It includes instability due to civil protest, government instability or political aggression. The third dimension is the ideology of the regime measured on a leftwing/rightwing scale and if a government is nationalistic. The fourth dimension is the governance of the regime, which measures corruption and bureaucracy. The final dimension is policy stability, which measures the uncertainty in trade policy, fiscal policy, and monetary policy.

Figure 1.1 shows how the various studies in this thesis are related. The first important determinant of economic performance that we distinguish is human development, measured by health and human capital. Human development is intimately related to several aspects of the growth process. Two of the most salient aspects of the process of economic growth are the decline in mortality and the growth of investment in human capital. Improved health contributes to economic growth in three ways: it reduces production losses caused by worker illness; it increases the enrolment of children and makes them better able to learn, and it frees alternative uses of financial resources that would otherwise have to be spent on treating illness (Bloom et al., 2004). Barro and Sala-i-Martin (1995) find that life expectancy is an important factor for growth. They report that a 13-year increase in life expectancy raises the long-term growth rate by 1.4 percentage points.

Human capital, in current economic parlance, refers to the skills and knowledge workers bring to bear on production. A number of contributions to economic growth theory emphasize the accumulation of human capital (Lucas, 1988; Romer,
Empirical evidence suggests that differences in the stock of human capital can explain some of the disparities in economic growth we observe among countries (Denison, 1985; Barro, 1991). Human capital influences the economic performance in a number of ways. First, an increase in human capital accumulation leads to an increase in the return to schooling (Foster and Rosenzweig, 1996; Mincer, 1996). Secondly, an increase in human capital increases the growth rate of technology (Lucas, 1988). Finally, an increase in human capital increases the level of output growth (Mankiw et al., 1992; Barro, 1991; Denison, 1985).
Figure 1.1 Studies in this thesis

- **Economic performance**
  - **Economic growth**
    - **Health** (Chapter 3)
      - Political factors
    - **Human capital** (Chapter 4)
      - Political factors
  - **Loan repayment** (Chapter 5)
    - Political factors
  - **Economic volatility** (Chapter 6)
    - Political factors

- **Chapter 2**
  - Measurement political factors
The second important determinant of economic performance that we distinguish is the official debt position of a country. A high level of external debt may reflect that a country has large investment opportunities or that a country is consuming on credit. In the second half of the 1990s, the external indebtedness of developing countries has received increased attention from policymakers and public opinion around the world, as one of the main factors hampering the development of poor countries. Most of these countries received very large amounts of loans in previous decades, often at highly concessional interest rates. It has become clear, however, that repayment of the remaining net present value of the obligations would not only be virtually impossible but would also severely constrain economic performance of the debtor countries.

In various theoretical models, reasonable levels of current debt inflows are expected to have a positive effect on growth. In traditional neoclassical models, allowing for capital mobility, i.e., the ability of a country to borrow and lend, increases transitional growth. There is an incentive for capital-scarce countries to borrow and invest since the marginal product of capital is above the world interest rate. However, there are also various reasons why large debt stocks may lead to lower growth. First, we can point to models where political economy considerations lead to over-borrowing and low growth, often accompanied by capital flight, if the costs of high taxes to service the debt are not internalized (Alesina and Tabellini, 1990; Tornell and Velasco, 1992). Second, according to the debt overhang theory, there is some likelihood that in the future debt will be larger than the country’s repayment ability (Krugman, 1988; Roubini and Sachs, 1989). Third, there is much uncertainty about what portion of the debt will actually be repaid. It may not be clear at what terms debt will be rescheduled, whether there would be additional lending, and which changes in government policies the rescheduling will entail.

Turning to empirics, Cohen (1997) finds that a variable representing the predicted risk of a debt crisis significantly lowers growth. Elbadawi et al. (1997), Patillo et al. (2002) and Patillo et al. (2004) consider the nonlinear effects of debt on growth. They conclude that there is an inverted U-shaped relationship between total external debt and growth in developing countries. At low levels, total external debt affects growth positively, but this relationship becomes negative at high debt levels.

Most studies on economic performance focus on the growth rate of the economy. However, economic growth and economic volatility are both determined by the same data-generating process. Business-cycle theory and growth theory have traditionally been treated as unrelated areas of macroeconomics. The first attempts to link the two approaches came from Kydland and Prescott (1982) and Long and
Plosser (1983) who offered new models for analyzing economic fluctuations. According to these models, output fluctuations are induced by stochastic variations in technology. King et al. (1988) incorporate endogenous growth in a real business cycle model, with the result that temporary disturbances to production possibilities can have permanent effects on the path of output.

According to Acemoglu et al. (2003), the standard macroeconomic view links economic growth volatility to bad macroeconomic policies. This relationship has been shown to depend on a number of factors, most notably the mechanism responsible for generating technological change and the parameters governing attitudes towards risk and uncertainty (see, e.g., Aghion and Saint-Paul, 1998; Blackburn and Galindev, 2003; de Hek, 1999; Martin and Rogers, 2000).

There are, however, also various reasons to believe that growth and volatility may be linked, either positively or negatively. For example, theoretical analysis suggests that due to irreversibility in investment, increased volatility can lead to lower investment. Ramey and Ramey (1995) argue that if firms must commit to their technology in advance, volatility can lead to lower mean output, because firms find themselves producing at suboptimal levels \textit{ex post}. If lower current output affects the accumulation of resources, growth is adversely affected. There are also reasons to believe that growth and volatility could be positively linked. Black (1988) argues that countries may have a choice between high variance, high-expected-returns technologies and low-variance, low-expected-returns technologies. In such a world, countries with high average growth would also have high variance. A final argument for a positive link concerns precautionary savings (Mirman, 1971). If there is a precautionary motive for savings, higher volatility should lead to a higher savings rate, and hence a higher investment rate. Once again, to the extent that higher investment leads to higher growth, we should observe a positive relationship between growth and volatility.

The remainder of this chapter elaborates upon the aims and content of this thesis.
1.2 Methodology

In the empirical part of the thesis we make use of two frequently used multivariate data analysis techniques. First, we use factor analysis to measure latent (non-observed) constructs, like health, human capital, democracy, political instability or governance. Factor analysis is a statistical approach that can be used to analyze interrelationships among a large number of variables and to explain the common part of these variables. The main goals of factor analysis are to: (1) reduce the number of variables with a minimum loss of information and (2) detect structure in the relationships between variables by classifying variables. Therefore, factor analysis is applied as a data reduction or structure detection method. To illustrate the use of factor analysis we use a simple example. In Chapter 2 we argue that there are various indicators of democracy, which itself is not observable and therefore latent. Suppose we have two variables to represent democracy: 1) democratic accountability and 2) political rights. The question is whether these two variables are measuring different dimensions of democracy or not. We find that the correlation is about 0.85, meaning that they are highly correlated and probably represent the same dimension of democracy.

In Figure 1.2 we summarize the correlation between the two variables in a scatterplot. A regression line can then be fitted that represents the explained or common variance of the two variables, while the difference between a single observation and the regression line represents the unique variance of each indicator.

This example of two indicators shows that democracy can be represented by a one-factor model. In case of a large set of indicators, the decision of when to stop extracting factors will be based on the amount of random variability left. The next step in factor analysis is to compute the factor scores for each country, which is an approximation of the regression line. The created factor is actually a linear combination of the two variables. This example illustrates the basic idea of factor analysis, by combining two highly correlated variables into one factor, which represents democracy. The individual factor scores for each country and the number of dimensions (factors) identified are particular useful for further analyses.
The second multivariate data analysis technique that we use is structural equation modelling. When the variables of interest are easily observable and can be measured without an error, regression analysis will generally suffice for the analysis of dependence. However, often the variables of interest are non-observable or latent. Therefore factor analysis should be used as a statistical technique to analyze the dimensions of a latent construct. However, the factor scores obtained should not be used directly into a regression model because of measurement errors within the latent construct, which causes inconsistent estimation results. Alternatively, a structural equation model should be used to analyze the dependence. A structural equation model is characterized by two basic components: 1) the structural model, which relates independent to dependent variables; 2) the measurement model which allows to use several variables (or indicators) for a single latent independent or dependent variable. More simply, the first part of the model can be compared to regression analysis, while the second part of the model is related to factor analysis. By combining these two analyses in one model, one reduces the measurement error and increases the reliability. The structural equation model is commonly presented by a path diagram\(^1\). Path diagrams show the interconnection between variables that are used to indicate causal relationships. We illustrate structural equation modeling by

\(^1\) For a more extensive and non-technical description of a structural equation model see http://www.statsoft.com/textbook/stsepath.html
examining the effect of democracy on income. Figure 1.3 shows our estimated path diagram. For simplicity reasons we use a bivariate regression. The latent construct democracy is enclosed in a circle and the observed variable income per capita is represented by a rectangle. The error terms are represented by $\varepsilon_i$. The arrows leading from the latent democracy variable to indicators of democracy indicate the hypothesized effect. The strength of the effects is indicated by $\lambda_i$. The arrow $\gamma$ leading from the latent variable democracy to GDP per capita represent the hypothesized impact of democracy on income.

**Figure 1.3 Structural equation model**

1.3 Health and political factors

The first research question of this thesis is what effect political variables have on health. Mounting evidence suggests that economic differences between countries cannot entirely explain cross-country differences in health and health policy. Thus, countries with similar levels of economic development, such as India and South Africa, can have radically different levels of health and different health systems. It is therefore important to extend the analysis to broader structural factors, such as the political environment, to better understand global health inequalities. A country’s political structure affects virtually every aspect of society, including health.

There are various empirical studies on the relationship between political factors and health. Many of these studies claim that democracy reduces infant mortality rates, and by extension, improves the living standards of the poor (Moon and Dixon, 1985; Dasgupta, 1993; Boone, 1996; Przeworski et al., 2000; Zweifel and Navia, 2000; Bueno de Mesquita et al., 2003; McGuire, 2001; Siegle et al., 2004; Franco et al., 2005). This view is consistent with prominent political economy models that suggest that democracies produce more public goods and have more income redis-
tribution than non-democracies (Meltzer and Richard, 1981; Lake and Baum, 2001; Bueno de Mesquita et al., 2003; Boix, 2003; Acemoglu et al., 2005).

According to Ruger (2005), democracy is generally understood to produce competition for popular support among elites who are trying to maintain or win elected office. Democratic institutions might therefore relate to health through, for example, social health care programmes that result from greater political voice and participation.

The first issue that is addressed in this study is the problem of the measurement error in health data. Using individual indicators of health that contain some measurement error leads to biased and inconsistent estimations. This is especially the case for developing countries. Also, using different health indicators may lead to different results. We use factor analysis to come up with a qualitatively better indicator of health. We construct two new measures of health. The first is based on the health of individuals, while the second is based on the quality of the health care sector.

We use the created health measures to examine the effect of political factors on health. Because our health variables and our political variables are both latent constructs, we make use of a Structural Equation Model (SEM) including a number of control variables suggested by previous studies. After employing the general-to-specific approach, we conclude that some dimensions of the political system significantly influence health. More specially, we find that democracy has a positive, while regime instability has a negative effect on the quality of health of individuals. Furthermore, we find that governance has a positive effect on the quality of the health care sector, while government instability has a significant negative influence.

1.4 Human capital and political factors

The second research question of this thesis is what effect political factors have on human capital accumulation. One of the stylized facts of economic development is that the enrolment rate of primary education is much higher in democratic societies compared to authoritarian societies (cf. Feng, 2003).

In the absence of well-defined measures of human capital researchers used various imperfect measures, such as years of schooling or attainment rates. In practice, proxies for human capital have been chosen in an arbitrary way and there is a lot of variability in the underlying definitions (Stroombergen et al., 2002).

At the same time, most studies treat human capital as a one-dimensional concept. This is in contrast to the definition of human capital of the OECD (2001),
according to which human capital is “The knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being” (OECD, 2001, p.18). This definition suggests that human capital is a multi-faceted concept.

We use factor analysis to come up with a better measure of human capital. We use indicators of education, skills, experience, and technological development. Our results suggest that we can distinguish between two types of human capital: basic human capital and advanced human capital. The first is related to higher education and scientific development, while the latter is more related to basic skills such as reading and writing. Using these two factors as a dependent variable in a structural equation model, we find that democracy has a significant positive effect on basic human capital, while government instability has a significant negative impact on basic human capital. For advanced human capital we find that governance has a positive effect, while government instability has a negative effect.

1.5 IMF debt repayment and political factors

The third research question of this thesis is what effect political variables have on debt repayment performance to the International Monetary Fund (IMF). The creditworthiness of a sovereign nation depends on both the government's ability and willingness to repay its debt commitments. The economic circumstances determine the ability of a country to repay, while political factors impinge on the willingness to do so (cf. Schwartz and Zurita, 1992; Eaton and Gersovitz, 1981). As Reuss (1996) notes, willingness is a key factor that distinguishes sovereign loans from other types of credit, as creditors have only limited legal redress when a sovereign government chooses not to repay its debt in time even though it could do so. The main reason that countries repay is reputation. Countries repay to have the opportunity to get access to funds of the IMF in the future. Hajivassiliou (1987) concludes that a history of debt repayment problems has a strongly dampening effect on the availability of new funds and a tightening of limits on arrears.

We examine to what extent political factors are robust determinants of the likelihood that a country will repay an IMF loan. We use a multinomial logit model for about 130 countries in the period 1985 to 2007. Our findings suggest that democracy decreases the likelihood of payment problems, while autocratic regimes repay their outstanding loans in advance. We also conclude that regime instability and government instability increase the probability of payment problems to the IMF.
while regime instability also increases the probability of repaying the outstanding debt at once. We find that good government governance decreases the likelihood of payment problems to the IMF. Finally, the effect of cabinet ideology is ambiguous. Leftwing governments have more repayment problems, but the presence of leftwing or nationalistic governments also significantly increases the likelihood that a country will repay its total debt at once.

### 1.6 Economic volatility and political factors

The final research question of this thesis is what effect political factors have on economic instability. Acemoglu et al. (2003) argue that countries facing high macroeconomic volatility not only suffer from unsustainable and distortionary macroeconomic policies but also face a weak institutional environment. In fact, they conclude that differences in the quality of institutions are the major cause of the large cross-country differences in economic volatility. Macroeconomic variables appear to be the mediating channels through which institutional causes lead to economic instability.

Most studies use the standard deviation of the GDP growth rate as indicator of economic volatility. However, this measure does not take differences in growth performance into account. Because growth and volatility are determined by the same underlying data generating process, we use the relative standard deviation, which is defined as the standard deviation divided by the absolute mean growth rate, as dependent variable.

We examine the effect of political factors on economic growth volatility, using a dynamic panel model in which we include various economic control variables as suggested by previous studies. In line with the findings of Mobarak (2005), we conclude that democracy is negatively related to economic volatility. We also find that some dimensions of political instability and policy uncertainty significantly increase economic volatility.

### 1.7 Outline of the thesis

The remainder of this thesis is organized as follows.

In Chapter 2 we deal with the measurement of political institutions. We start by a theoretical explanation of factor analysis. Thereafter, static and dynamic factor analysis is applied on indicators of the type of regime, stability of the regime, policy
stability and governance. After a discussion of the appropriate factor models, the results of the factor analysis are presented and discussed.

In Chapter 3 we examine the relation between health and political institutions. We begin with the theoretical reasons why political variables may influence the health status of a country. Next, we use factor analysis to measure the health status of a country. We construct two measures of health and use these in a structural equation model where various dimensions of the political system are used as ‘explanatory’ variables.

In Chapter 4 we conduct an empirical assessment of the impact of political institutions on human capital. We first apply factor analysis on a number of human capital indicators. In the second part of the chapter we use these dimensions to examine the effect of political institutions on human capital.

In Chapter 5 we focus on the relationship between the political situation in a country and the repayment performance to the IMF. First, we review the literature on repayment performance to the IMF. Secondly, we use a multinomial logit model to estimate the relation between the stages of debt repayment to the IMF employing the political variables found in the dynamic factor analysis of Chapter 2.

In Chapter 6 we deal with the relation between economic volatility and political institutions. We start with a theoretical explanation of the reasons why political institutions may affect output volatility and the measurement of output volatility. Thereafter, we use the results of the dynamic factor analysis on democracy, political instability and policy instability of Chapter 2 in a dynamic panel model to examine the effect of political variables on economic volatility.

Finally, in Chapter 7 we provide an overview of our main findings and conclude.