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Abstract

We use data on the subjective well-being (SWB) of more than 91,000 individuals in 30 member countries of the Organization for Economic Cooperation and Development (OECD) to assess the well-being effects of unemployment, inflation and national income growth. The relationships found are used to construct an index of national economic performance in terms of SWB. Applying the index to the period 1990-2009, we find that economic performance has improved in OECD overall and in the majority of countries, and that there has been a convergence of performance within the OECD. We then present evidence that OECD countries' economic performance, as measured, is positively related to institutional change towards more trade openness and better governance quality.

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1. Introduction

Using subjective measures of well-being has gained increasing attention in economics over the last two decades (Frey and Stutzer 2002, Di Tella and MacCulloch 2006, Kahneman and Krueger 2006). One strand of this literature has studied how subjective well-being (SWB) is related to macroeconomic conditions, focusing on long-term developments in per capita income (Easterlin 1974, Stevenson and Wolfers 2008, Deaton 2008, Easterlin et al. 2010), and on rates of unemployment and inflation (Di Tella et al. 2001, Wolfers 2003) along with short-term changes in national income (Di Tella et al. 2003, Welsch 2007). While there is evidence that – due to habituation – SWB hardly rises with long-term increases of a country's income (Easterlin 1974, Easterlin et al. 2010), SWB is positively related to year-to-year increases in national income (Di Tella et al. 2003, Welsch 2007, Easterlin et al. 2010), in addition to being negatively related to levels of unemployment and inflation (Di Tella et al. 2001, 2003, Wolfers 2003).

Using information on people's SWB has recently been advocated by a group of renowned economists as a means for assessing social and economic performance of countries (Stiglitz et al. 2009, Oswald 2010). In this vein, a comparative evaluation of national economic performance in terms of SWB has been undertaken with respect to a group of member states of the European Union in the 1990s by Welsch (2011). As is common in macroeconomics, the concept of national economic performance in that study refers to the standard goals of growth, employment and price stability.[1]

A question unresolved in this type of analysis is whether the relationships between SWB and the macroeconomic indicators, identified with respect to a limited number of West European countries, generalize to a broader set of nations and beyond the 1990s. Another issue lacking investigation is the role for SWB of institutional change through its effects on economic performance. This issue is important because the last two decades were

[1] One leading macroeconomic textbook states that "a successful economy is an economy that combines high output growth, low unemployment and low inflation" (Blanchard et al. 2010, p. 27).

characterized by several elements of institutional reform and international integration, including the transition of Eastern European countries from socialism to capitalism and their accession to the European Union, the introduction of the Euro as a common currency, the creation of the North American Free Trade Agreement, and the removal of trade barriers worldwide. With respect to such developments, economists have emphasized the positive impacts of trade openness (Sachs and Warner 1995, Frankel and Romer 1999) and improved governance quality (Acemoglu et al. 2001, Rodrik et al. 2004), whereas the general public has often been critical towards "globalization".

This study uses data for 91,195 individuals from the World Values Surveys, 1990-2008, to investigate the relationship between people's SWB on the one hand and the macroeconomic target variables unemployment, inflation, and national income change on the other in 30 member countries of the Organization for Economic Cooperation and Development (OECD).[2] Controlling for personal socio-demographic characteristics (including household income and the individual employment status) as well as region and time dummies, we find that self-reported life satisfaction in the OECD countries displays a statistically significant negative relationship to the unemployment rate and the inflation rate, and a significant positive relationship to the annual rate of GDP growth. These results are robust to using several estimation methods and to controlling for the *level* of GDP. In fact, including per capita GDP does not affect the results for the rates of unemployment, inflation and growth and yields an insignificant coefficient for this variable itself.

We use the estimated relationships to construct an index of regression-weighted economic performance in terms of SWB. Applying the index to the period 1990-2009, we find that national economic performance has improved in OECD overall and in the majority of countries, and that there has been a convergence of performance within OECD. We then present evidence that OECD countries' economic performance, measured this way, is

[2] The analysis is restricted to developed countries (OECD countries) because the rate of unemployment is not a sufficiently well-defined variable in less developed countries due to the existence of large informal sectors in these economies (Blanchard et al. 2010).

positively related to the prevailing degree of trade openness and the quality of governance. We argue that both increased openness and improved institutional quality are correlates of economic and political integration and conclude that international integration has enhanced SWB by improving OECD countries' national economic performance.

Exploration of the relationship between macroeconomic indicators and subjective well-being was pioneered by Di Tella et al. (2001). In a regression analysis for twelve member countries of the European Union (EU12), 1975-1991, they found a statistically significant inverse relationship between life satisfaction and the unemployment and inflation rates prevailing in those countries. Di Tella et al. (2003) experimented with including per capita GDP or changes thereof in several versions of a life satisfaction equation for EU12, over the period 1975-1992. When they added the change in per capita GDP to an equation over unemployment and inflation, they found at least one of those three variables to be insignificant. A similar analysis, also for EU12, was conducted by Welsch (2011) for the period 1992-2002. He found life satisfaction to be negatively associated with the rates of unemployment and inflation but positively associated with the annual GDP growth rate, thus establishing a macroeconomic social welfare function over growth, employment and price stability.[3]

Against the background of the preceding literature, this paper makes three main contributions. First, it estimates the relationship between life satisfaction on the one hand and the rates of (short-term) GDP growth, unemployment and inflation on the other not just for

[3] The analysis of those papers as well as the analysis of the present paper focuses on short-term macroeconomic performance. This is to be distinguished from papers that address the relationship between subjective well-being and long-term income growth. With respect to that issue, the seminal paper by Easterlin (1974) suggests that economic growth does not "improve the human lot" in terms of subjective well-being. The validity of this so-called Easterlin Paradox has been contested by Stevenson and Wolfers (2008), whereas Easterlin et al. (2010) defend the non-existence of a positive relationship between income and well-being over the long term. Di Tella and MacCulloch (2008) show that the happiness-income paradox is robust to inclusion of a large set of social and environmental control variables. In view of the differentiation between the short term and the long term, we do not regard the results of the present paper to be in contradiction to Easterlin's position because, though we find year-on-year changes in GDP to be significant determinants of life satisfaction, GDP *levels* are insignificant. It should also be noted that a rising time path of average income affects people differently than the same average growth but with fluctuations along the way (Friedman, 2005, p. 86). Our result that the annual change of GDP is significant whereas per capita income is insignificant may reflect precisely this difference.

EU12 but for the almost entire set of OECD countries, and it does this for a more extended time period than previous papers. Second, it employs the estimated relationships to construct a composite macroeconomic performance index and uses it for a comparative assessment of the overall macroeconomic performance of OECD countries over the past two decades. Third, it investigates how overall economic performance, as measured, is related to changes in the institutional environment.

The paper proceeds as follows. Section 2 presents the empirical background, the methodological framework, and the data. Section 3 presents and discusses the empirical results on aggregate economic performance and section 4 investigates the relationship between economic performance and institutional change. Section 5 concludes.

2. Empirical Framework

2.1 Macroeconomic Performance of OECD Countries, 1990-2009

Table 1 presents rankings of 30 OECD countries in terms of GDP growth, employment and price stability over the period 1990-2009. As seen, the three criteria imply considerably diverging orderings. In terms of the range, the discrepancy is particularly large in the case of Japan, which shows the best performance with respect to price stability but ranks only 29th with respect to growth. A similar discrepancy between a high degree of price stability and poor growth can be found in the case of Switzerland which, interestingly, performs extremely well in terms of both price stability *and* employment. On the other hand, the fast growing Slovak Republic performs relatively bad with respect to inflation, but even more so with respect to employment. To a lesser extent, the discrepancy between strong growth and poor price stability applies to Korea and Ireland, but these two countries differ in that Korea performs much better in terms of employment than does Ireland.

In contrast to these countries, there are a few others which show a rather balanced performance in terms of all three criteria, in particular New Zealand, Norway, and the United

Kingdom. These countries perform reasonably well in terms of all indicators, taking positions between 9 (employment in Norway) and 20 (growth in the United Kingdom). There is no country that performs very good or very bad with respect to all three criteria. However, Luxembourg is in the top-ten group with respect to growth and employment and in the intermediate group with respect to price stability. On the other hand, Italy is in the bottom-ten group in terms of growth and employment and just barely in the intermediate group in terms of price stability.

In a more aggregate perspective, the rankings based on the three criteria are either negatively related or unrelated to each other. Specifically, the rankings based on growth and inflation are negatively and significantly (at the 1-percent level) correlated (r =- 0.586). The rankings based on growth and employment are virtually uncorrelated (r = -0.051) whereas the rankings based on inflation and employment are insignificantly correlated (at r = 0.210).

It may be noted that this assessment refers to the average performance across two decades. The assessment could, of course, be differentiated according to sub-periods. We abstain from such a differentiation at this place.[4] The important point is that even in a fairly long-term perspective the macroeconomic performance scores are far from uniform in terms of the various policy goals. Therefore, the question arises as to how these goals are to be weighted and how successful the countries were in terms of their weighted performance.

The remainder of the paper deals with these issues, using the relative contribution of the macroeconomic variables to citizens' life satisfaction as the basis for weighting them.

2.2 Data

Our life satisfaction regressions are based on data from the World Values Surveys (WVS), referring to 91,195 individuals in 30 OECD countries in the years 1990, 1995-2001 and 2005-

[4] A more differentiated discussion will be given in section 3.

2008.[5] The WVS were conducted in four so-called waves around 1990, 1995, 2000, and 2005 (see http://www.worldvaluessurvey.org).[6] The data used in this study refer to 1990 (first wave), 1995-1999 (second wave), 2000-2001 (third wave) and 2005-2008 (fourth wave). Since the persons surveyed differ from year to year, our database is a pooled cross-section time series. Overall, we have 77 country-year clusters, the number of years per country ranging from 1 to 4 and averaging about 2.5.

Data on life satisfaction (*LS*), which is our measure of SWB, are elicited as the response to the following question: "All things considered, how satisfied are you with your life as a whole these days?" *LS* is measured on a 10-point scale, where 1 = "dissatisfied" and 10 = "satisfied". In addition to *LS*, measured this way, we take from the WVS data on people's socio-demographic characteristics.

Data on macroeconomic variables (annual percentage rates of unemployment, inflation, and GDP growth; levels of GDP per capita, exports, and imports) are taken from the OECD online database (http://www.oecd.org).

Data on institutional quality come from several sources. The variable "civil liberties" is taken from Freedom House (http://www.freedomhouse.org). Civil liberties are rated by a team of regional experts and scholars on the basis of a checklist of 15 civil liberty questions grouped into four subcategories: freedom of expression and belief, associational and organizational rights, rule of law, personal autonomy and individual rights. The aggregate civil liberties ratings are coded as integers ranging from 1 (most free) to 7 (least free). We inverted the original data such that 1 indicates "least free" and 7 indicates "most free".

[5] The countries in our sample are Canada, Mexico, USA (region OECD-America); Japan, Korea (region OECD-Asia); Australia, New Zealand (region OECD-Pacific); Austria, Belgium, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Switzerland, UK (region OECD-Western Europe); Czech Republic, Hungary, Poland, Slovak Republic, Turkey (region OECD Eastern Europe); Denmark, Finland, Iceland, Norway, Sweden (region OECD-Scandinavia). OECD countries Chile and Slovenia are excluded because data are incomplete.

[6] The WVS methodology consists of the administration of detailed questionnaires in face-to-face interviews. The questionnaires from the most recent waves have consisted of about 250 questions. In each country the questionnaires are administered to between about 1,000 and 3,500 persons with an average in the fourth wave of about 1,330 interviews per country.

The variable "control of corruption" is the Corruptions Perceptions Index (CPI) provided by Transparency International (http://www.transparency.org). The CPI is an aggregate indicator that brings together data from various sources by independent institutions. All sources measure the overall extent of corruption (frequency and/or size of bribes in the public and political sectors). Evaluation of the extent of corruption is done by country experts, both residents and non-residents, and business leaders. The annual CPI is available from 1995 onwards. The scale of the data ranges from 1 (highly corrupt) to 10 (highly clean).

In robustness checks we used the variables "voice and accountability" and "control of corruption" from the World Bank's Worldwide Governance Indicators (http://info.worldbank.org/governance/wgi/index.asp). The data are in units of a standard normal distribution, with mean zero, standard deviation of one, and running from approximately -2.5 to 2.5, with higher values corresponding to better governance. The data are available from 1996 onwards.

Summary statistics of all data used are presented in Table A1 in the Appendix.

2.3 Econometric Approach

Our life satisfaction equation is stated as follows:

$$LS_{ict} = \alpha \cdot unemployment_{ct} + \beta \cdot inflation_{ct} + \gamma \cdot growth_{ct} + \delta \cdot controls_{ict} + \varepsilon_{ict} \qquad (1)$$

where LS_{ict} denotes life satisfaction of individual *i* in country *c* and year *t*, $controls_{ict}$ is a vector of the individual's socio-demographic characteristics (age, age-squared, sex, marital status, employment status, household income, number of children) that are usually included in SWB regressions (Frey and Stutzer 2001, Di Tella and MacCulloch 2006), and ε_{ict} is an error term. Also included are dummy variables for the respective waves of the WVS and for the OECD regions (America, Asia, Pacific, Eastern Europe, Western Europe, and Scandinavia). Region dummies have been found to effectively control for unobserved country heterogeneity

in WVS data when degrees of freedom do not permit the use of country fixed effects (Fischer 2010).

It is not clear in general whether life satisfaction should be treated as a cardinal phenomenon. If not, an ordered discrete choice model should be estimated rather than a linear regression model. Research that has applied both approaches has found little difference between the results of a linear regression and an ordered logit or probit (Ferrer-i-Carbonell and Frijters 2004). To facilitate interpretation, we used least squares as the primary method and an ordered probit as a robustness check. As a further robustness check we included GDP per capita as an additional independent variable. Standard errors are heteroskedasticity robust and corrected for clustering at the country-year level.

3. Economic Performance and Subjective Well-Being

3.1 Regression Results

Columns A–D in Table 2 report the main estimation results for several versions of eq. (1); detailed results are presented in Table A2 in the Appendix. Columns A and B in the respective tables report least squares estimates whereas columns C and D show results from using an ordered probit maximum likelihood estimator. Our discussion focuses on the macroeconomic variables.[7]

Regression A shows that life satisfaction is negatively and significantly related to the rates of unemployment and inflation and positively and significantly related to the rate of GDP growth. The coefficient on unemployment is about 2.38 as large (in absolute terms) as that on

[7] With respect to regions, people in Western and Eastern Europe, Asia and the Pacific region are found to be significantly less satisfied than people in Scandinavia, which is the base category. People in OECD America are not significantly different from people in Scandinavia. The lowest satisfaction level is found in OECD Asia, the second lowest in OECD Eastern Europe. Dummies for the waves of the WVS are found to be insignificant. With respect to the individual-level socio-demographic variables, all regressions yield the same qualitative results, and these results are consistent with common findings for developed countries (see Frey and Stutzer 2002 for a review): positive and significant coefficients on being female, being married or living together, and on income; negative and significant coefficients on being unemployed and on being divorced, separated or widowed; life satisfaction first decreasing then increasing in age (with turning point in the late 40s). In quantitative terms, large differences exist between being married and being divorced (about 0.62 on a 10-point scale) and between being (full-time) employed and being unemployed (0.85). See Table A2 in the Appendix.

inflation and 0.74 times as large as that on the growth rate.[8] Specification B adds per-capita income to regression A. This has virtually no effect on the coefficients on unemployment, inflation and growth. Per-capita income itself is found to be insignificant, which is consistent with the so-called happiness income paradox of a non-existing relationship between per-capita income and happiness (Easterlin et al. 2010).

In regression C, which is the ordered probit counterpart to regression A, the coefficients retain their sign and significance. Though their magnitudes differ, their *ratios* are similar as in regression A (unemployment/inflation = 3.00; unemployment/growth = 0.86). In regression D, which is the ordered probit counterpart to regression B, per capita income is again insignificant, and the inclusion of this variable has no effect on the other results.

It follows from these checks that the signs, statistical significance, and the *relative* coefficient values for the rates of unemployment, inflation, and growth are robust to the estimation method and to the inclusion of per capita GDP. The latter variable is always statistically insignificant.

It can also be noted that the small standard errors of the coefficients (relative to their mean) indicate a high degree of precision of the estimated relationships. We take this to indicate that preferences over the macroeconomic outcomes are rather stable across countries and across time.

With respect to economic significance, we refer to the least-squares estimates because they are more accessible to interpretation than are the coefficients from the ordered probit. As seen in columns A and B of Table 2, a 1-percentage point increase in the unemployment rate is associated with a drop in life satisfaction by about 0.03 on a 10-point scale. To illustrate, this is about 5 percent of the effect of being shifted from ‘married’ to ‘divorced’ status, or more than 3 percent of the effect of *personally* becoming unemployed (which are among the life events that affect SWB most strongly; cf. footnote 7). The effect of a 1-percentage point

[8] The coefficient estimates are consistent with earlier findings that a given rate of unemployment is more detrimental to SWB than is a rate of inflation of the same magnitude (Di Tella et al. 2001, 2003, Wolfers 2003).

increase in the inflation rate is somewhat less than one half in comparison with the unemployment rate, whereas the effect of a 1-percentage point drop in the GDP growth rate is about one third larger.

In view of robustness and ease of interpretation, we consider regression A in Table 2 to be the preferred specification on which to base the index of national economic performance.

3.2 National Economic Performance of OECD Countries

The coefficient on the unemployment rate, α, is usually taken to reflect the average person's fear of joblessness (Di Tella et al. 2001, Frey and Stutzer 2002), which is to be distinguished from the effect on SWB of personally being unemployed. The estimated coefficient on personal unemployment (relative to being full-time employed) is -0.848 (see Table A2). We used this latter coefficient to compute an adjusted value $\tilde{\alpha} = -0.036$ instead of α, which accounts for the circumstance that a change in the aggregate rate of unemployment changes the number of unemployed persons and hence affects SWB through this additional channel (Di Tella et al. 2001).

Using our estimation results, we computed an index of regression-weighted national economic performance (NEP) in terms of SWB as follows:

$$NEP_{ct} = -0.036 \cdot unemployment_{ct} - 0.013 \cdot inflation_{ct} + 0.042 \cdot growth_{ct}. \qquad (2)$$

The index values can be thought of as representing the composite well-being effect by country and year of unemployment, inflation, and national income changes in comparison with a hypothetical situation in which these variables take values of zero. This index provides an indicator of national macroeconomic well-being.

Figure 1 presents the index values for our set of countries over the period 1990-2009 and several sub-periods. The information contained in this figure resolves the ambiguity of country rankings in terms of the three individual criteria discussed in subsection 2.1.

With respect to the average across the entire period, the top three countries are South Korea, Luxembourg, and Norway, whereas the bottom three countries are Poland, Turkey, and the Slovak Republic. While the index values of the top performing countries are close to zero, they are negative and rather sizable, in absolute terms, for the countries with poor performance. The difference between South Korea (top) and Poland (bottom) amounts to 0.99 on the 10-point life satisfaction scale. To illustrate in terms of personal circumstances, this is almost 120 percent of the difference between personally being employed and unemployed (0.848). Comparatively poor macroeconomic performance thus has a similar effect on the average citizen's subjective well-being as if *everybody* was shifted from employed to unemployed status.

Considering the five-year sub-period 1990-1994, the difference between the bottom and the top amounts to 2.65, thus being more than 250 percent as large as in the overall time period. The differences in performance sharply decrease in the subsequent sub-periods, amounting to 0.37 in 2005-2009. During the macroeconomic crisis (2009) the range went up to 0.65. However, even in this year, national economic well-being of the worst performing countries was greater than in the first half of the 1990s.[9]

With respect to individual countries, macroeconomic performance was improving or stationary in most of the cases. Large improvements can be found in Poland, Hungary, and Turkey. In Poland, the index value in 2005-2009 was 2.25 points higher than in 1990-1995. To illustrate, this is more than 250 percent of the effect of changing from unemployed to employed status. In a few other countries, a deterioration of performance can be observed. A striking example is Germany, whose index value in 2005-2009 is 0.14 points lower than in 1990-1994. Japan, South Korea, and Luxembourg also display a declining trend in macroeconomic performance, though the decline is smaller.

[9] It cannot be ruled out that the weights people place on the different macroeconomic variables may have changed during the crisis. Data availability does not permit to check this possibility.

Figure 2 provides an aggregate view of the OECD countries' macroeconomic performance through time. The following results stand out. First, mean economic performance (or mean economic well-being) across OECD countries has followed an increasing trend over the past two decades (disregarding the crisis of 2008-2009). Second, performance in the worst performing countries has been improving tremendously. Third, the performance in the best performing countries has been deteriorating slightly. The bottom line on this is that the past two decades have seen an increase and a convergence of macroeconomic well-being in OECD countries.

Figure A1 in the Appendix provides similar information with respect to OECD sub-regions. This reveals that there were improvements in economic performance especially in Eastern Europe, and less so in Western Europe, America, and Scandinavia. In addition, there was a convergence within all of those regions, that is, a tendency for the range to become smaller.

4. Economic Performance and Institutional Change

4.1 Institutional Change in OECD

Having measured the OECD countries' national economic performance in terms of SWB, we turn to the second issue of this study, the roles of economic integration and institutional change for national economic performance. Previous research has identified positive economic impacts of trade openness and improved institutional quality, especially as a support for productivity (Sachs and Warner 1995, Frankel and Romer 1999, Acemoglu et al. 2001, Rodrik et al. 2004).

While economic integration is usually proxied by increased openness to international trade (Sachs and Warner 1995, Frankel and Romer 1999), institutional quality is a complex construct. With respect to institutional quality (or governance quality), it has been found useful to distinguish between two dimensions, one focusing on the operation of the

democratic process and another relating to the effectiveness of the institutional framework within which individuals, firms, and communities operate (Helliwell and Huang 2008). We follow this differentiation and capture the former dimension by an indicator of the “respect of civil liberties”, while the latter dimension is captured by an indicator of the “control of corruption”. Civil liberties, in addition to their “ultimate” value associated with people's desire for social and political participation, have been ascribed an instrumental value in their capacity to enhance economic development (Sen 1999). Similarly, control of corruption has been found to affect a variety of economic indicators that may be relevant for national economic performance (Judge et al. 2011).

Figure 3 provides an aggregate view of trade openness, the respect of civil liberties, and the control of corruption prevailing in OECD countries across time. In these diagrams, trade openness is measured in a standard fashion by the sum of exports and imports as a fraction of national income, civil liberties are measured on a scale from 1 (least free) to 7 (most free), and control of corruption is measured on a scale from 0 (highly corrupt) to 10 (highly clean). The diagrams illustrate that the mean values (across countries) of all three indicators show an increasing trend. With respect to openness, this reflects an increase in both the maximum and (to a smaller degree) the minimum values. In the case of civil liberties, the maximum values are constant (at the maximum of the measurement scale), whereas the minimum values have been rising after the turn of the century. With respect to the control of corruption, the maximum values have been decreasing somewhat, whereas the minimum values increased over the last one and a half decades. As shown in Figures A2-A4 in the Appendix, increases in openness and the institutional improvements (especially in terms of civil liberties) were particularly pronounced in OECD regions Eastern Europe and America.

4.2 The Relationship between Institutional Change and Economic Performance

Figure 4 provides scatter plots of the index of national economic performance by country and year against 3-year moving averages of trade openness, civil liberties, and the control of corruption, respectively, and the corresponding regression lines. This analysis reveals that macroeconomic performance, in terms of SWB, is positively and significantly correlated with the degree of economic integration and measures of institutional quality, both across countries and time.

We augmented this bivariate analysis by running a multivariate regression with the index of national economic performance by country and year as the dependent variable and the measures of trade openness, respect of civil liberties, and control of corruption as explanatory variables. The regression also included country and year dummies and was estimated using a linear least squares estimator.

Table 3 shows that all three explanatory variables have sizeable and statistically significant positive coefficients. An increase of openness by 1 percentage point is associated with an increase in economic performance by 0.02 points, which implies that an increase by 1 standard deviation (1 SD) or 3.1 percent is associated with an increase by 0.06 points. An increase in respect of civil liberties by 1 point on the 7-point scale (by 1 SD or 0.78) is associated with an increase in performance by 0.16 points (0.12 points), whereas better control of corruption by 1 point on the 10-point scale (by 1 SD or 2.03) is associated with an increase in performance by 0.032 (0.065) points.

As a robustness check, Table A3 in the Appendix presents results of multivariate regressions of the index of national economic performance on alternative governance indicators, along with trade openness and country and year dummies. Similar as “civil liberties” from Freedom House, the variable “voice and accountability” from the World Bank’s Worldwide Governance Indicators is positively and significantly related to the index of national economic performance. In the same vein, the variable “control of corruption” from

the Worldwide Governance Indicators is positively and significantly related to the index of national economic well-being, similar as the corresponding variable from Transparency International. Trade openness also retains a positive and significant coefficient.

4.3 Discussion

We thus found evidence that trade openness and the quality of governance go with greater macroeconomic well-being in OECD countries. We acknowledge that these correlations do not establish causality. However, by using instrumental-variable techniques, previous research has shown that openness and governance quality impact on economic development rather than the other way round (Frankel and Romer 1999, Acemoglu et al. 2001, Rodrik et al. 2004), and we take these findings as an indication that the same direction of causality may apply to national economic performance as conceptualized in this study.

To put our results in perspective, we would argue that both increased openness and better governance are correlates of a more fundamental trend towards international integration within OECD over the last two decades (Sachs and Warner 1995). This view is consistent with the evidence discussed above that increases in openness and institutional improvements were particularly strong in countries of Eastern Europe and America which were confronted with requests for institutional reform in the process of accession to the European Union and the North American Free Trade Agreement, respectively. In addition to those formal requests for reform, institutional competition between countries may have risen in the face of increased economic competition (Sachs and Warner 1995, Bergh and Hojer 2008), thus contributing to institutional change. There are thus several political and economic channels through which international integration may have enhanced macroeconomic well-being in the OECD region.

5. Conclusions

Given that SWB has become increasingly important as a standard for assessing social and economic performance, this paper has used data of more than 91,000 individuals in 30 OECD member countries to assess the well-being effects of unemployment, inflation and national income growth. The relationships found were used to construct an index of national economic performance in terms of SWB. Applying the index to the period 1990-2009, we found that economic performance has improved in OECD overall and in the majority of countries, and that there has been a convergence of performance within the OECD. In addition, evidence has been found that OECD countries' economic performance, as measured, is positively related to institutional change towards more trade openness and better governance quality.

Our estimates are based on a pooled cross-section time series over the past two decades. The high precision of the estimated coefficients suggests that preferences over the macroeconomic outcomes are rather homogeneous across countries and stable across time. In addition, one of the central findings – that unemployment is more important to well being than is inflation – is consistent with earlier results based on data from the 1970s and 80s. Nevertheless, it is an open question whether or not the macroeconomic disruptions due to the recent financial crisis may have affected people's macroeconomic priorities. This is an issue for future research that may be addressed when appropriate data become available. Meanwhile, the results presented in this paper should be interpreted as referring to broad intermediate-term developments of economic performance rather than short-term episodes.

References

Acemoglu, D., Johnson, S., Robinson, J.A. (2001), The Colonial Origins of Comparative Development: An Empirical Investigation, *American Economic Review* 91, 1369-1401.

Bergh, A., Hoijer, R., *Institutional Competition* (Edward Elgar, Cheltenham, 2008).

Blanchard, O., Armighini, A., Giavazzi, F., *Macroeconomics: A European Perspective* (Pearson Education, Harlow, 2010).

Deaton, A. (2008), Income, Health and Well-Being Around the World: Evidence from the Gallup World Poll, *Journal of Economic Perspectives* 22, 53-72.

Di Tella, R., MacCulloch, R.J., Oswald A.J. (2001), Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness, *American Economic Review* 91, 335-341.

Di Tella, R., MacCulloch, R.J., Oswald, A.J. (2003), The Macroeconomics of Happiness, *Review of Economics and Statistics* 85, 809-827.

Di Tella, R., MacCulloch, R.R. (2006), Some Uses of Happiness Data in Economics, *Journal of Economic Perspectives* 20, 25-46.

Di Tella, R., MacCulloch, R. (2008), Gross National Happiness as an Answer to the Easterlin Paradox, *Journal of Development Economics* 86, 22-42.

Easterlin, R.A., Does Economic Growth Improve the Human Lot? Some Empirical Evidence. In: *Nations and Households in Economic Growth. Essays in Honor of Moses Abramovitz*, P.A. David, M.S. Reder, Eds. (Academic Press, New York, 1974).

Easterlin, R.A., Angelescu McVey, L., Switek, M., Sawangfa, O., Smith Zweig, J. (2010), The Happiness-Income Paradox Revisited, *Proceedings of the National Academy of Sciences of the United States of America* 107, 22463-22468.

Ferrer-i-Carbonell, A., Frijters, P. (2004), How Important is Methodology for the Estimates of the Determinants of Happiness?, *Economic Journal* 114,641-659.

Fischer, J.A.V. (2010), Accounting for Unobserved Country Heterogeneity in Happiness Research: Country Fixed Effects versus Region Fixed Effects, MPRA Paper No. 22272.

Frankel, J., Romer, D. (1999), Does Trade Cause Growth?, *American Economic Review* 89, 379-399.

Frey, B.S., Stutzer, A. (2002), What Can Economists Learn from Happiness Research?, *Journal of Economic Literature* 40, 402-435.

Friedman, B.M. (2005) *The Moral Consequences of Economic Growth*, Alfred A. Knopf, New York.

Helliwell, J.F., Huang, H. (2008), How's Your Government? International Evidence Linking Good Government and Well-Being, *British Journal of Political Science* 38, 595-619.

Judge, W.Q., McNatt, D.B., Xu, W.C. (2011), The Antecedents and Effects of National Corruption: A Meta-Analysis, *Journal of World Business* 46, 93-103.

Kahneman, D., Krueger, A.B. (2006), Developments in the Measurement of Subjective Well-Being, *Journal of Economic Perspectives* 20, 3-24.

Oswald, A.J. (2010), Emotional Prosperity and the Stiglitz Commission, *British Journal of Industrial Relations* 48, 651-669.

Rodrik, D., Subramanian, A., Tebbi, F. (2004), Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development, *Journal of Economic Growth* 9, 131-165.

Sachs, J., Warner, A. (1995), Economic Reform and the Process of Global Integration, *Brookings Papers on Economic Activity*, 1-118.

Sen, A., *Development as Freedom* (Oxford University Press, Delhi, 1999).

Stevenson, B., Wolfers, J. (2008), Economic Growth and Subjective Well-Being: Reassessing the Easterlin Paradox, *Brookings Papers on Economic Activity*, 1-87.

Stiglitz, J.E., Sen, A., Fitoussi J.-P. (2009), Report of the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP), available at http://www.stiglitz-sen-fitoussi.fr/en/documents.htm.

Welsch, H. (2007), Macroeconomics and Life Satisfaction: Revisiting the "Misery Index", *Journal of Applied Economics* 10, 237-251.

Welsch, H. (2011), The Magic Triangle of Macroeconomics: How Do European Countries Score?, *Oxford Economic Papers* 63, 71-93.

Wolfers, J. (2003), Is Business Cycle Volatility Costly? Evidence from Surveys of Subjective Well-Being, *International Finance* 6, 1-26.

Table 1: Ranking of OECD Countries, 1990-2009

Country	GDP Growth	Unemployment	Inflation	Range
Australia	7	17	16	10
Austria	18	8	10	10
Belgium	23	19	7	16
Canada	17	20	8	12
Czech Republic	24	11	24	13
Denmark	25	14	5	20
Finland	19	27	4	23
France	27	21	3	24
Germany	26	22	6	20
Greece	12	26	25	14
Hungary	16	18	28	12
Iceland	8	2	23	21
Ireland	1	23	18	22
Italy	30	25	19	11
Japan	29	6	1	28
Korea	2	3	21	19
Luxembourg	4	7	12	8
Mexico	9	4	27	23
Netherlands	14	5	11	9
New Zealand	15	15	13	2
Norway	11	9	9	2
Poland	6	28	29	23
Portugal	22	13	22	9
Slovak Republic	3	29	26	26
Spain	10	30	20	20
Sweden	21	12	14	9
Switzerland	28	1	2	27
Turkey	5	24	30	25
United Kingdom	20	16	15	5
United States	13	10	17	7

The rankings are based on average rates of annual GDP growth, unemployment, and inflation. OECD countries Chile and Slovenia are excluded because the data necessary for the econometric analysis to be conducted below are incomplete. Source of original data: OECD Economic Outlook.

Table 2: Main estimation results of life satisfaction regressions

	A (OLS)	B (OLS)	C (Ordered Probit)	D (Ordered Probit)
Unemployment rate	-0.031*** (0.010)	-0.031*** (0.011)	-0.018*** (0.006)	-0.019*** (0.006)
Inflation rate	-0.013*** (0.003)	-0.013*** (0.003)	-0.006*** (0.001)	-0.006*** (0.002)
GDP growth rate	0.042*** (0.011)	0.042*** (0.011)	0.021*** (0.006)	0.021*** (0.006)
GDP per capita		-0.001 (0.005)		-0.003 (0.003)
Individual controls	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes
Wave dummies	Yes	Yes	Yes	Yes
Observations	91195	91195	91195	91195
R^2/Pseudo R^2	0.133	0.133	0.032	0.032

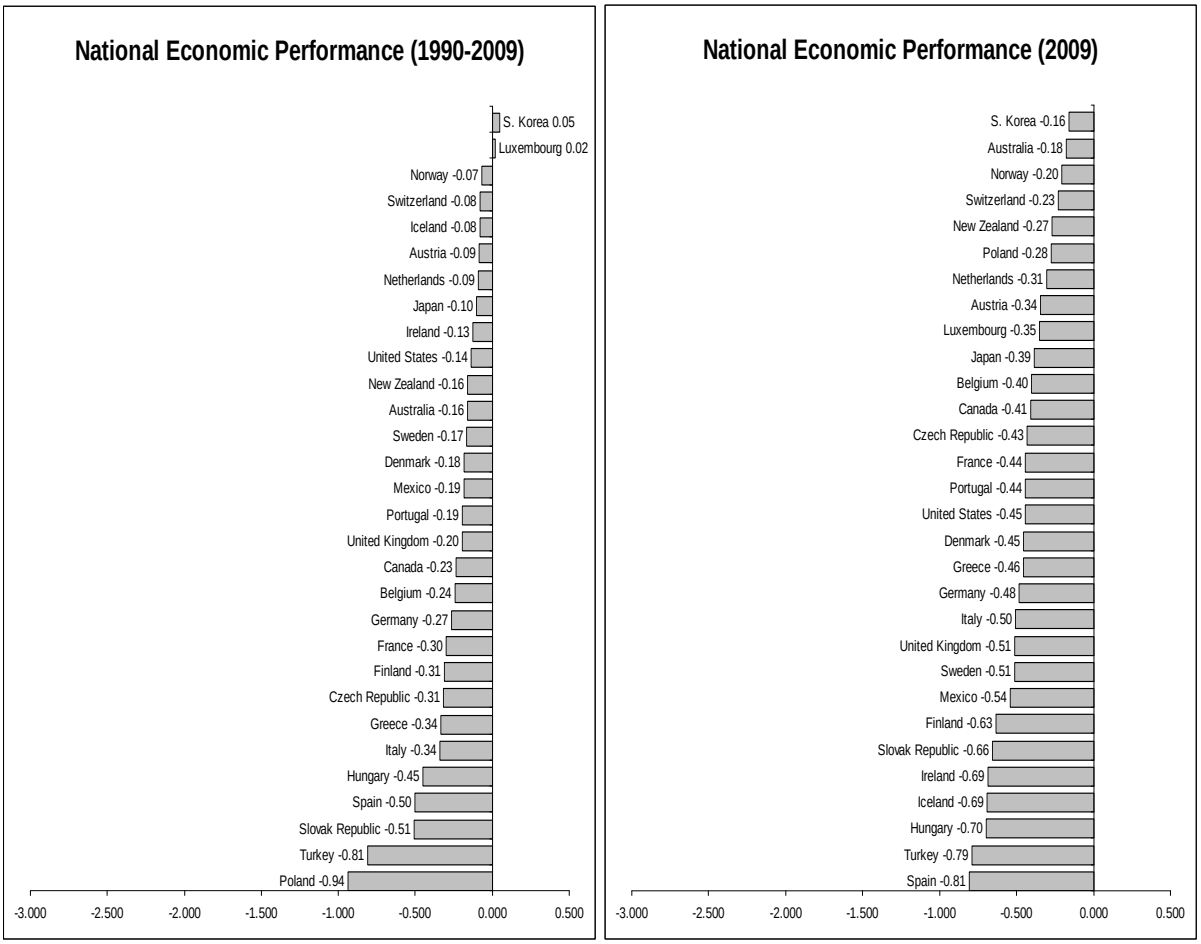
Dependent variable: life satisfaction (10-point scale). The rates of unemployment, inflation, and growth are measured in percent. GDP per capita is measured in thousand PPP-adjusted USD2000. Robust standard errors in parentheses are adjusted for clustering at the country-year level. ***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent level, respectively.

Table 3: Estimation results of NEP regressions

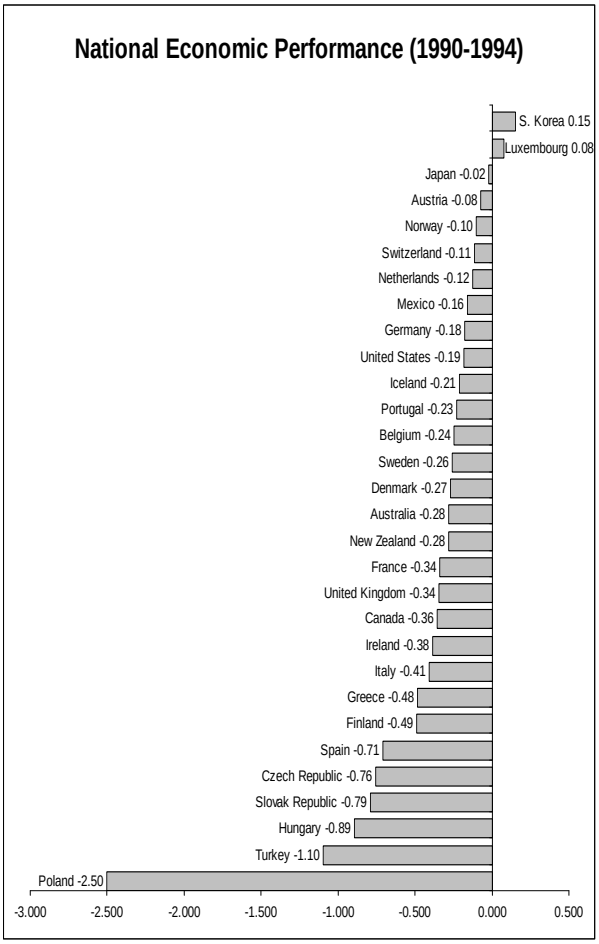
Dependent variable: National Economic Performance (NEP)		
	Coefficient.	Standard Deviation
Trade Openness	2.033***	0.640
Civil Liberties	0.162***	0.020
Control of Corruption	0.032**	0.014
Country Dummies	Yes	
Year Dummies	Yes	
Observations	441	
Adjusted R^2	0.698	

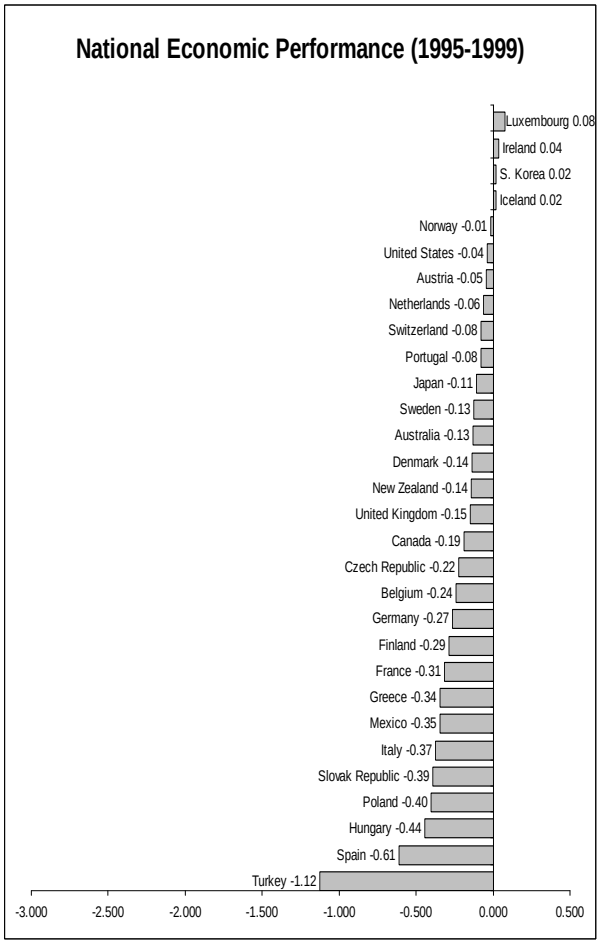
Regression of National Economic Performance by country and year (30 OECD countries, 1995-2009) on Trade Openness, Civil Liberties, and Control of Corruption. Trade Openness is the sum of exports and imports as a decimal fraction of national income. Civil liberties are measured on a scale from 1 (least free) to 7 (most free), and control of corruption is measured on a scale from 0 (highly corrupt) to 10 (highly clean). Method: Ordinary Least Squares. *** (**) denotes significance at $P < 0.01$ ($P < 0.05$).

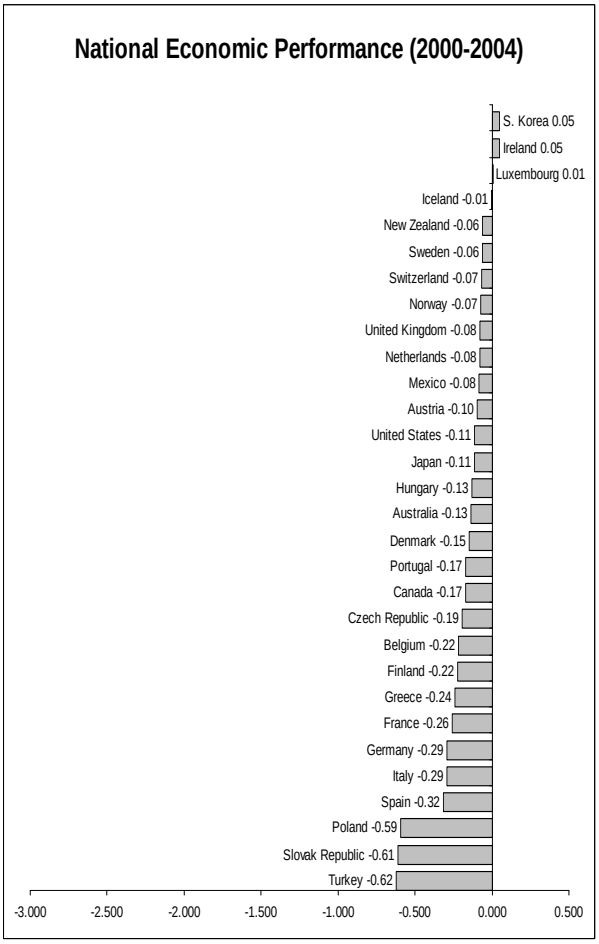
Figure 1. National Economic Performance = - 0.036 *unemployment* - 0.013 *inflation* + 0.042 *growth* is the regression-weighted contribution of the percentage rates of unemployment, inflation and annual national income growth to life satisfaction (LS). LS data are taken from the World Values Surveys and refer to 30 OECD countries (*23*). They are the response to the question "All things considered, how satisfied are you with your life as a whole these days?" and are coded for each individual from a score of 1 (dissatisfied) to 10 (satisfied). The regression equation includes individuals' socio-demographic characteristics and region and time dummies. N = 91,159; R2 = 0.133. The coefficients on the macroeconomic variables are significant at P < 0.01 (*24*).



(Figure 1 continued overleaf)


National Economic Performance (1990-1994)
S. Korea 0.15
Luxembourg 0.08
Japan -0.02
Austria -0.08
Norway -0.10
Switzerland -0.11
Netherlands -0.12
Mexico -0.16
Germany -0.18
United States -0.19
Iceland -0.21
Portugal -0.23
Belgium -0.24
Sweden -0.26
Denmark -0.27
Australia -0.28
New Zealand -0.28
France -0.34
United Kingdom -0.34
Canada -0.36
Ireland -0.38
Italy -0.41
Greece -0.48
Finland -0.49
Spain -0.71
Czech Republic -0.76
Slovak Republic -0.79
Hungary -0.89
Turkey -1.10
Poland -2.50
-3.000
-2.500
-2.000
-1.500
-1.000
-0.500
0.000
0.500


National Economic Performance (1995-1999)
Luxembourg 0.08
Ireland 0.04
S. Korea 0.02
Iceland 0.02
Norway -0.01
United States -0.04
Austria -0.05
Netherlands -0.06
Switzerland -0.08
Portugal -0.08
Japan -0.11
Sweden -0.13
Australia -0.13
Denmark -0.14
New Zealand -0.14
United Kingdom -0.15
Canada -0.19
Czech Republic -0.22
Belgium -0.24
Germany -0.27
Finland -0.29
France -0.31
Greece -0.34
Mexico -0.35
Italy -0.37
Slovak Republic -0.39
Poland -0.40
Hungary -0.44
Spain -0.61
Turkey -1.12
-3.000
-2.500
-2.000
-1.500
-1.000
-0.500
0.000
0.500


National Economic Performance (2000-2004)
S. Korea 0.05
Ireland 0.05
Luxembourg 0.01
Iceland -0.01
New Zealand -0.06
Sweden -0.06
Switzerland -0.07
Norway -0.07
United Kingdom -0.08
Netherlands -0.08
Mexico -0.08
Austria -0.10
United States -0.11
Japan -0.11
Hungary -0.13
Australia -0.13
Denmark -0.15
Portugal -0.17
Canada -0.17
Czech Republic -0.19
Belgium -0.22
Finland -0.22
Greece -0.24
France -0.26
Germany -0.29
Italy -0.29
Spain -0.32
Poland -0.59
Slovak Republic -0.61
Turkey -0.62
-3.000
-2.500
-2.000
-1.500
-1.000
-0.500
0.000
0.500

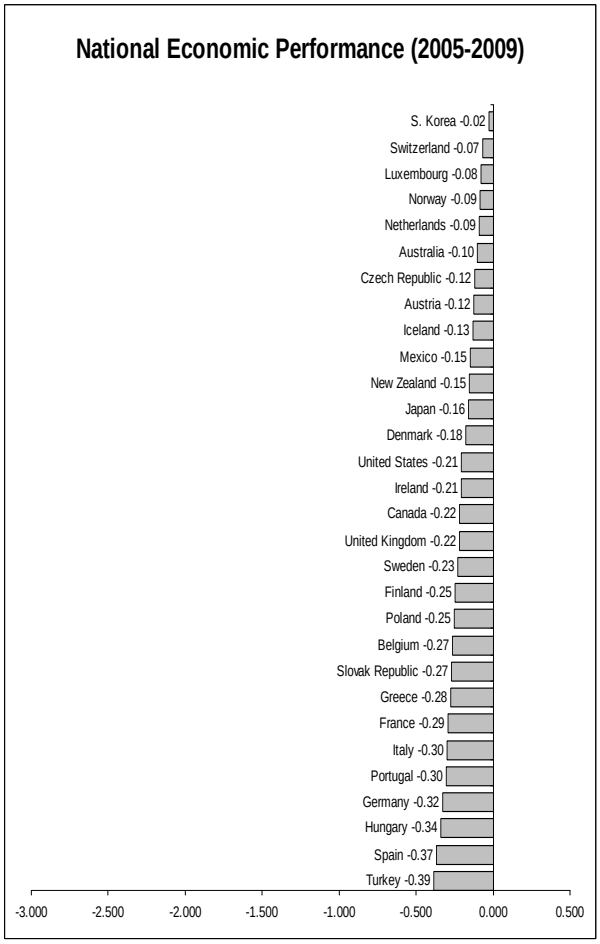

National Economic Performance (2005-2009)
S. Korea -0.02
Switzerland -0.07
Luxembourg -0.08
Norway -0.09
Netherlands -0.09
Australia -0.10
Czech Republic -0.12
Austria -0.12
Iceland -0.13
Mexico -0.15
New Zealand -0.15
Japan -0.16
Denmark -0.18
United States -0.21
Ireland -0.21
Canada -0.22
United Kingdom -0.22
Sweden -0.23
Finland -0.25
Poland -0.25
Belgium -0.27
Slovak Republic -0.27
Greece -0.28
France -0.29
Italy -0.30
Portugal -0.30
Germany -0.32
Hungary -0.34
Spain -0.37
Turkey -0.39
-3.000
-2.500
-2.000
-1.500
-1.000
-0.500
0.000
0.500

Figure 2: National Economic Performance in 30 OECD Countries. For National Economic Performance see legend to Figure 1. The figure shows the mean, minimum, and maximum values together with the corresponding trend lines.

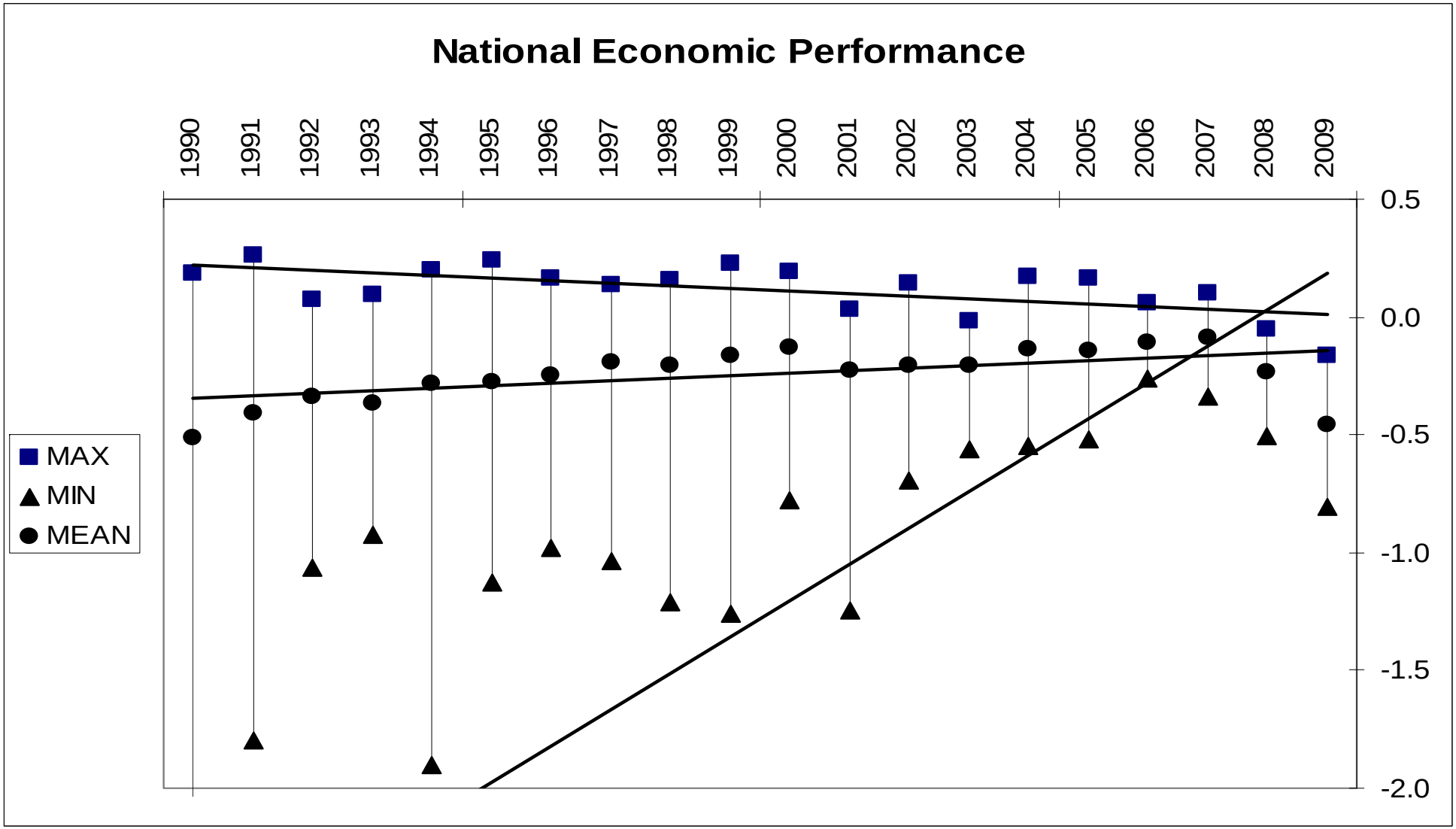


Figure 3: Trade Openness, Civil Liberties, and Control of Corruption in 30 OECD Countries. Trade Openness is the sum of exports and imports as a percentage of national income. Civil liberties are measured on a scale from 1 (least free) to 7 (most free), and control of corruption is measured on a scale from 0 (highly corrupt) to 10 (highly clean). The figure shows the mean, minimum, and maximum values of the respective variable together with the corresponding trend lines.

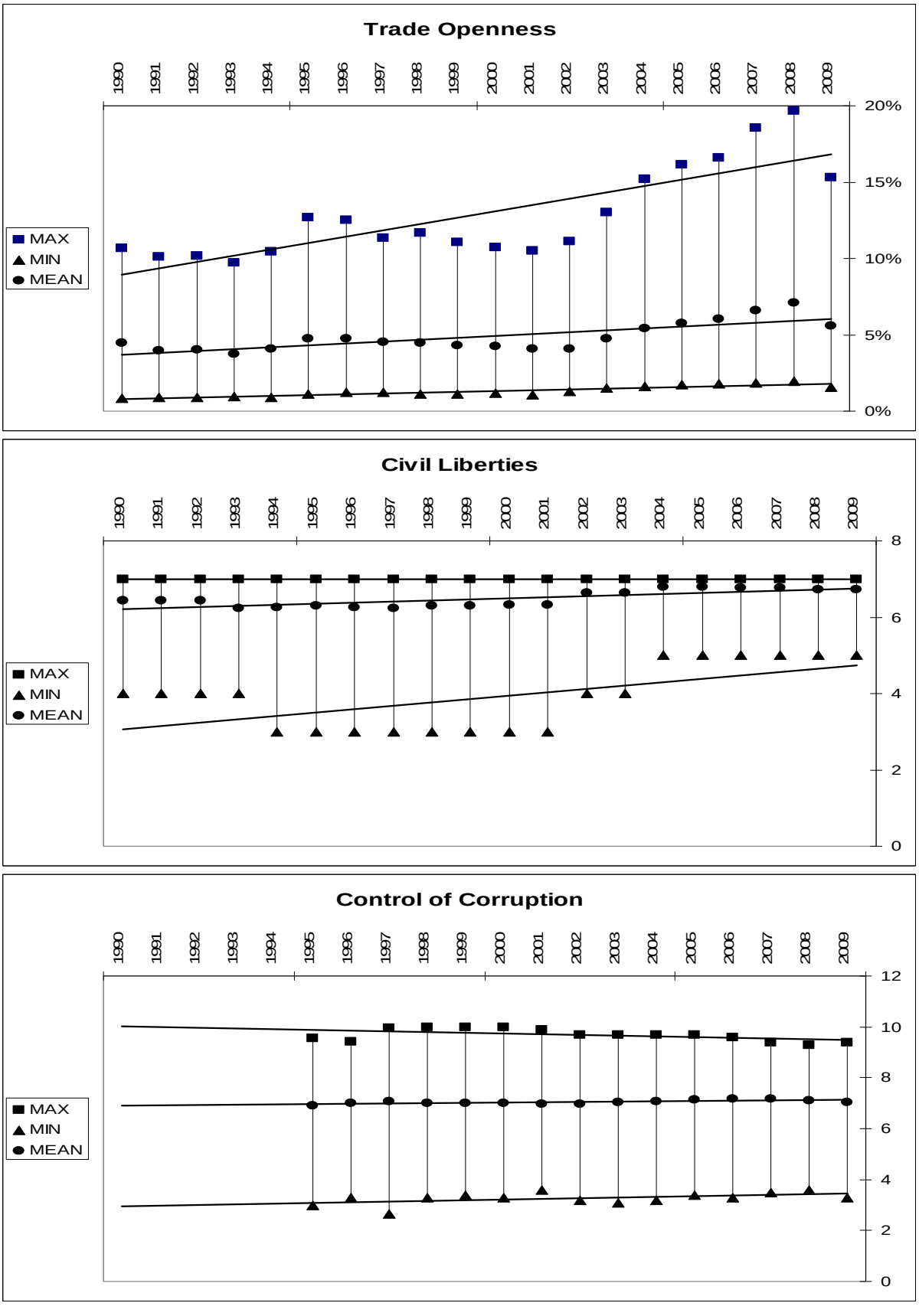
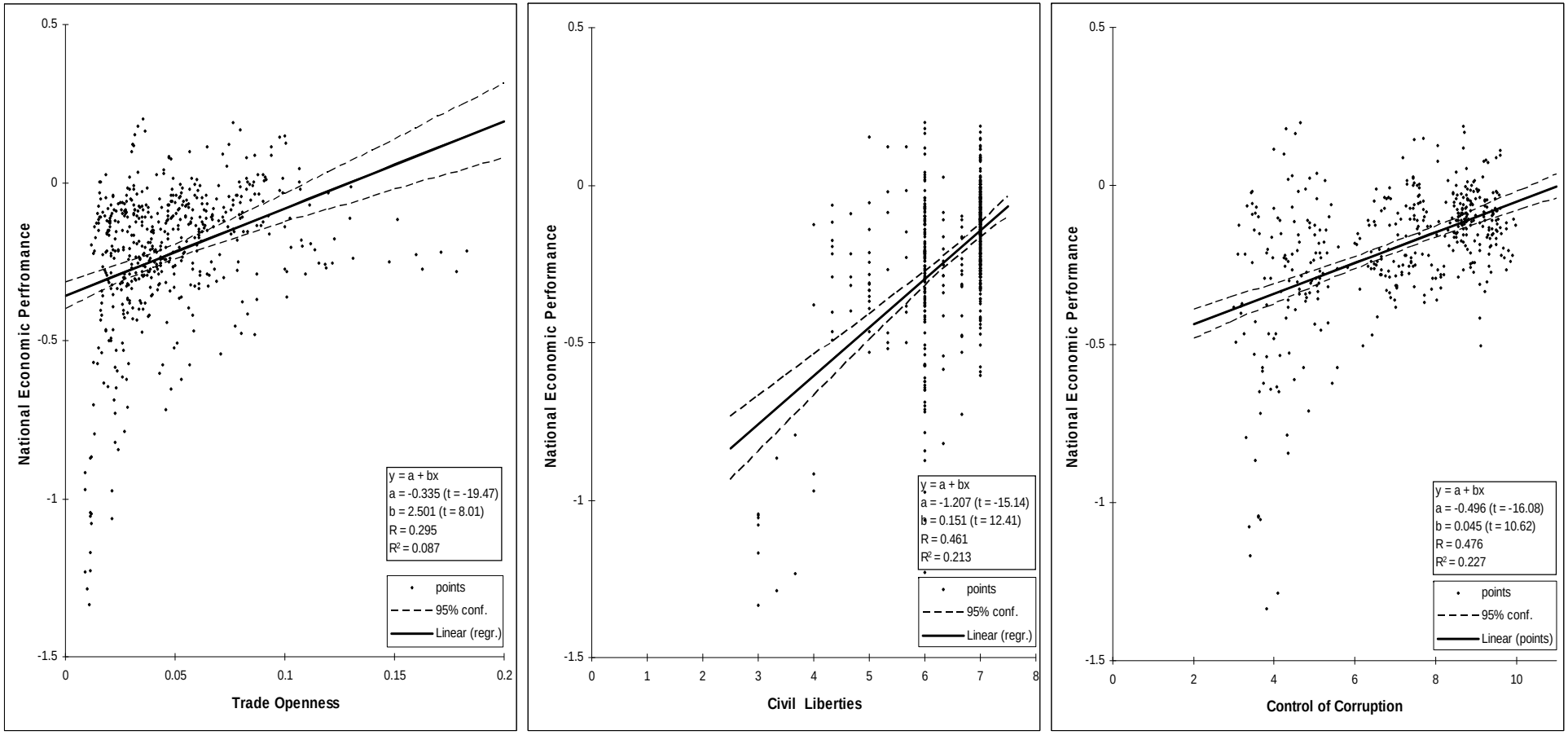


Figure 4: National Economic Performance by country and year (30 OECD countries, 1997 - 2009) plotted against 3-year-moving-averages of trade openness, civil liberties, and control of corruption.



Appendix

Table A1: Summary Statistics

	Observations	Mean	S.D.	Min	Max
Variables used in Life Satisfaction Regression:					
Life Satisfaction	91195	7.2454	2.1040	1	10
Male	91195	0.4838	0.4997	0	1
Female	91195	0.5162	0.4997	0	1
Age	91195	44.2898	16.6579	15	98
Age-squared	91195	2239.07	1610.20	225	9604
Single	91195	0.2058	0.4043	0	1
Married	91195	0.6015	0.4896	0	1
Living Together	91195	0.0548	0.2276	0	1
Divorced	91195	0.0512	0.2205	0	1
Separated	91195	0.0171	0.1295	0	1
Widowed	91195	0.0696	0.2545	0	1
Children	91195	1.8117	1.6099	0	20
Full Time Emp.	91195	0.4090	0.4917	0	1
Part Time Emp.	91195	0.0833	0.2764	0	1
Self Employed	91195	0.0714	0.2575	0	1
Retired	91195	0.1808	0.3848	0	1
Housewife	91195	0.1340	0.3406	0	1
Student	91195	0.0478	0.2133	0	1
Other Occupat.	91195	0.0193	0.1375	0	1
Unemployed	91195	0.0544	0.2269	0	1
Income Scale	91195	4.8323	2.5776	1	10
Wave1	91195	0.2583	0.4377	0	1
Wave2	91195	0.1923	0.3941	0	1
Wave3	91195	0.3441	0.4751	0	1
Wave4	91195	0.2052	0.4039	0	1
Western Europe	91195	0.4290	0.4949	0	1
Eastern Europe	91195	0.1711	0.3766	0	1
Scandinavia	91195	0.1342	0.3408	0	1
America	91195	0.1565	0.3633	0	1
Asia/Pacific	91195	0.1092	0.3119	0	1
Unempl. Rate	91195	7.7453	3.97755	1.76	22.96
Inflation Rate	91195	8.5190	16.10201	-0.71	80.41
Growth Rate	91195	3.0569	2.69201	-5.70	10.65
Income per cap.	91195	21816.3565	7906.98462	7458.39	49921.32
Variables used in National Economic Performance (NEP) Regression					
NEP-Index	441	-0.2002	0.2191	-1.2580	0.2406
Openness	441	0.0510	0.0311	0.0108	0.1968
Civil Liberties (Freedomhouse)	441	6.5442	0.7825	3	7
Control of Corr. (Transpar. Int'l.)	441	7.0477	2.0269	2.66	10
Variables used in Robustness Checks of NEP Regressions:					
NEP-Index	330	-0.1953	0.1989	-1.2131	0.1937
Openness	330	0.0535	0.0325	0.0113	0.1968
Voice/Account. (World Bank)	330	1.2037	0.4354	-0.6762	1.8267
Control of Corr. (World Bank)	330	1.3799	0.7807	-0.5951	2.4666

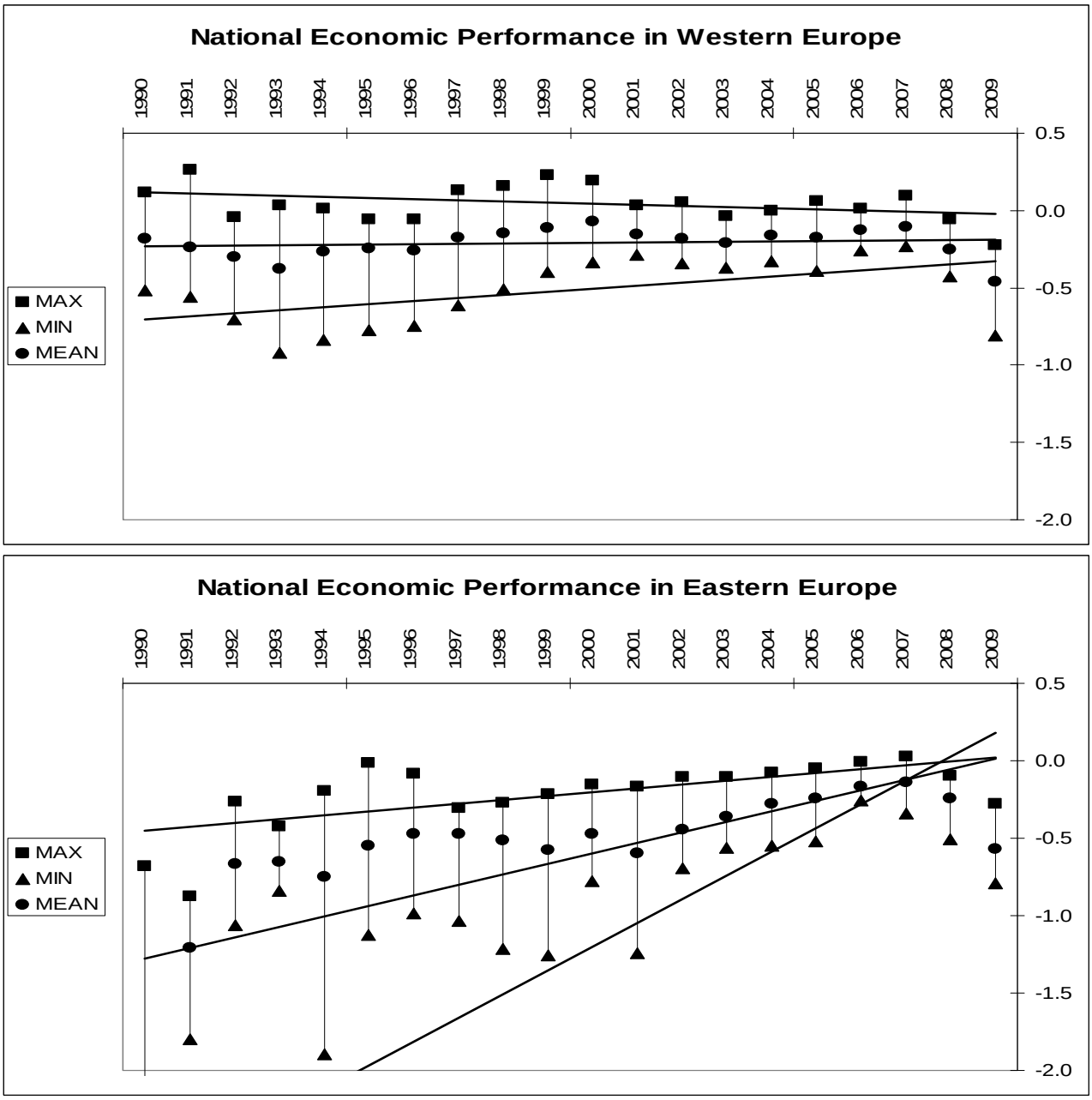
Table A2: Detailed results of life satisfaction regressions. Dependent variable: life satisfaction (10-point scale). The rates of unemployment, inflation, and national income growth are measured in percent. Income per capita is measured in thousand PPP-adjusted USD2000. Robust standard errors in parentheses are adjusted for clustering at the country-year level. ***, **, and * indicate significance at P < 0.01, P < 0.05, and P < 0.1, respectively.

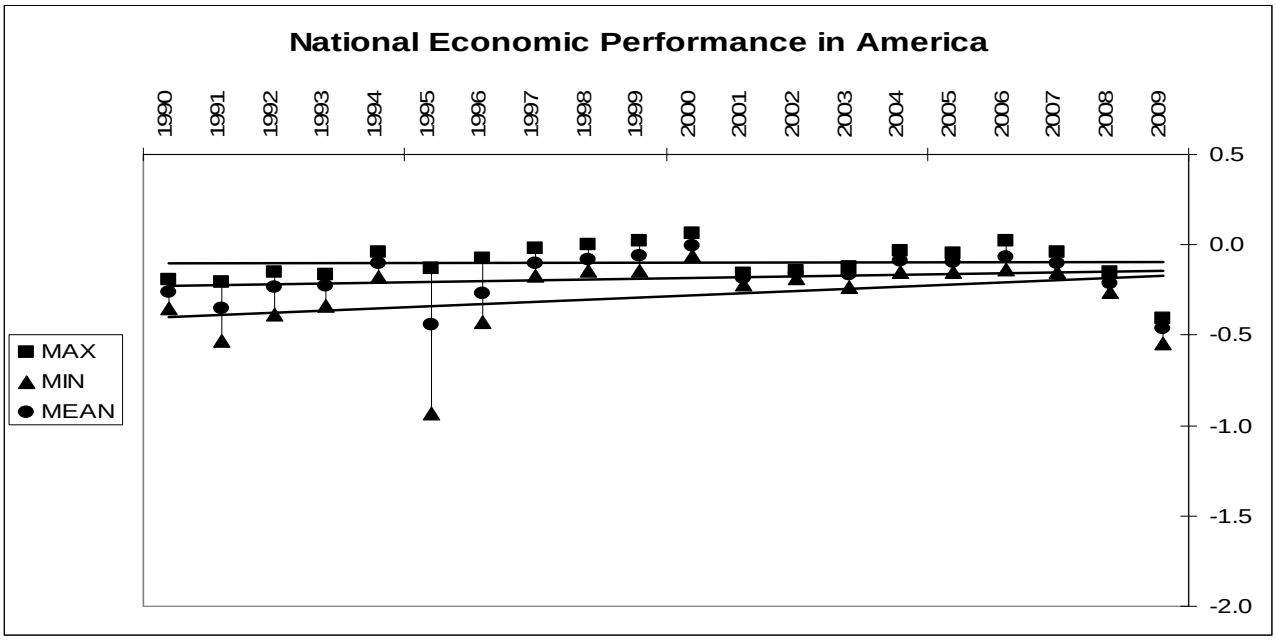
	A (OLS)	B (OLS)	C (Ordered Probit)	D (Ordered Probit)
Unemployment rate	-0.031*** (0.010)	-0.031*** (0.011)	-0.018*** (0.006)	-0.019*** (0.006)
Inflation rate	-0.013*** (0.003)	-0.013*** (0.003)	-0.006*** (0.001)	-0.006*** (0.002)
Income growth rate	0.042*** (0.011)	0.042*** (0.011)	0.021*** (0.006)	0.021*** (0.006)
Income per capita		-0.001 (0.005)		-0.003 (0.003)
Male	Reference	Reference	Reference	Reference
Female	0.083*** (0.026)	0.083*** (0.026)	0.045*** (0.013)	0.046*** (0.013)
Age	-0.061*** (0.004)	-0.061*** (0.004)	-0.033*** (0.002)	-0.032*** (0.002)
Age^2	0.001*** (0.000)	0.001*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Single	Reference	Reference	Reference	Reference
Married	0.421*** (0.037)	0.421*** (0.037)	0.221*** (0.021)	0.222*** (0.021)
Living together	0.164*** (0.057)	0.164*** (0.057)	0.083*** (0.031)	0.084*** (0.031)
Divorced	-0.198*** (0.051)	-0.197*** (0.051)	-0.101*** (0.024)	-0.098*** (0.024)
Separated	-0.564*** (0.069)	-0.563*** (0.069)	-0.267*** (0.032)	-0.266*** (0.032)
Widowed	-0.153*** (0.046)	-0.153*** (0.046)	-0.083*** (0.023)	-0.083*** (0.023)
Children	0.003 (0.013)	0.003 (0.013)	0.007 (0.007)	0.006 (0.007)
Full time employed	Reference	Reference	Reference	Reference
Part time employed	-0.063 (0.045)	-0.063 (0.045)	-0.025 (0.022)	-0.024 (0.022)
Self employed	0.022 (0.049)	0.021 (0.051)	0.029 (0.024)	0.025 (0.025)
Retired	-0.044 (0.051)	-0.044 (0.051)	0.006 (0.027)	0.006 (0.027)
Housewife	0.131* (0.069)	0.130* (0.069)	0.093*** (0.034)	0.090*** (0.034)
Student	0.075* (0.045)	0.075* (0.044)	0.031 (0.024)	0.030 (0.024)
Other occupation	-0.270*** (0.077)	-0.271*** (0.077)	-0.103*** (0.040)	-0.104*** (0.040)
Unemployed	-0.848*** (0.075)	-0.848*** (0.075)	-0.381*** (0.035)	-0.381*** (0.035)
Income	0.110*** (0.009)	0.110*** (0.009)	0.053*** (0.004)	0.053*** (0.004)
Region dummies	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes
Observations	91195	91195	91195	91195
R^2/Pseudo R^2	0.133	0.133	0.032	0.032

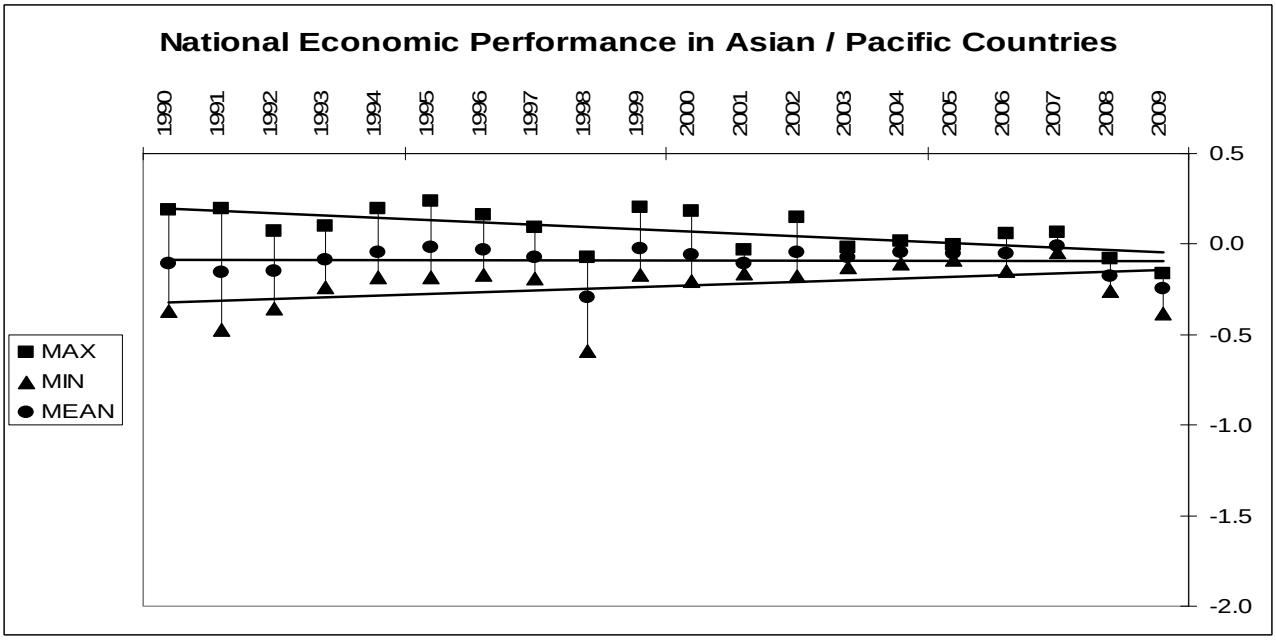
Table A3: Regression of National Economic Performance by country and year (30 OECD countries, 1996-2009) on trade openness and alternative governance indicators ("Voice and Accountability" and "Control of Corruption" from World Bank Governance Indicators). Method: Ordinary Least Squares. ***, **, and * indicate significance at $P < 0.01$, $P < 0.05$, and $P < 0.1$, respectively.

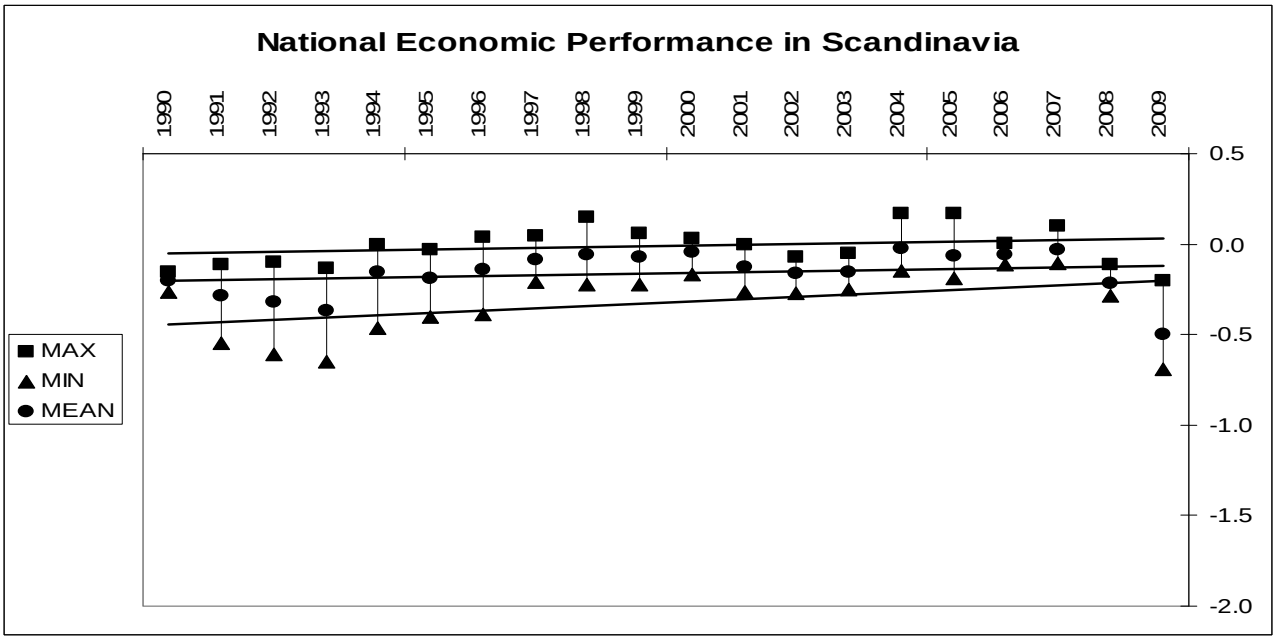
	Dependent variable: National Economic Performance					
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error.
Trade Openness	2.675***	0.716	2.835***	0.713	2.672***	0.713
Voice and Accountability	0.212**	0.084			0.181**	0.086
Control of Corruption			0.103**	0.046	0.083*	0.047
Country Dummies	Yes		Yes		Yes	
Year Dummies	Yes		Yes		Yes	
Observations	330		330		330	
Adj. R^2	0.618		0.616		0.621	

Figure A1: National Economic Performance in OECD sub-regions. For National Economic Performance see legend to Figure 1. The figure shows the Mean-, Min-, and Max-values together with the corresponding trend lines.




National Economic Performance in America
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
0.5
0.0
-0.5
-1.0
-1.5
-2.0
MAX
MIN
MEAN


National Economic Performance in Asian / Pacific Countries
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
0.5
0.0
-0.5
-1.0
-1.5
-2.0
MAX
MIN
MEAN


National Economic Performance in Scandinavia
1990
1991
1992
1993
1994
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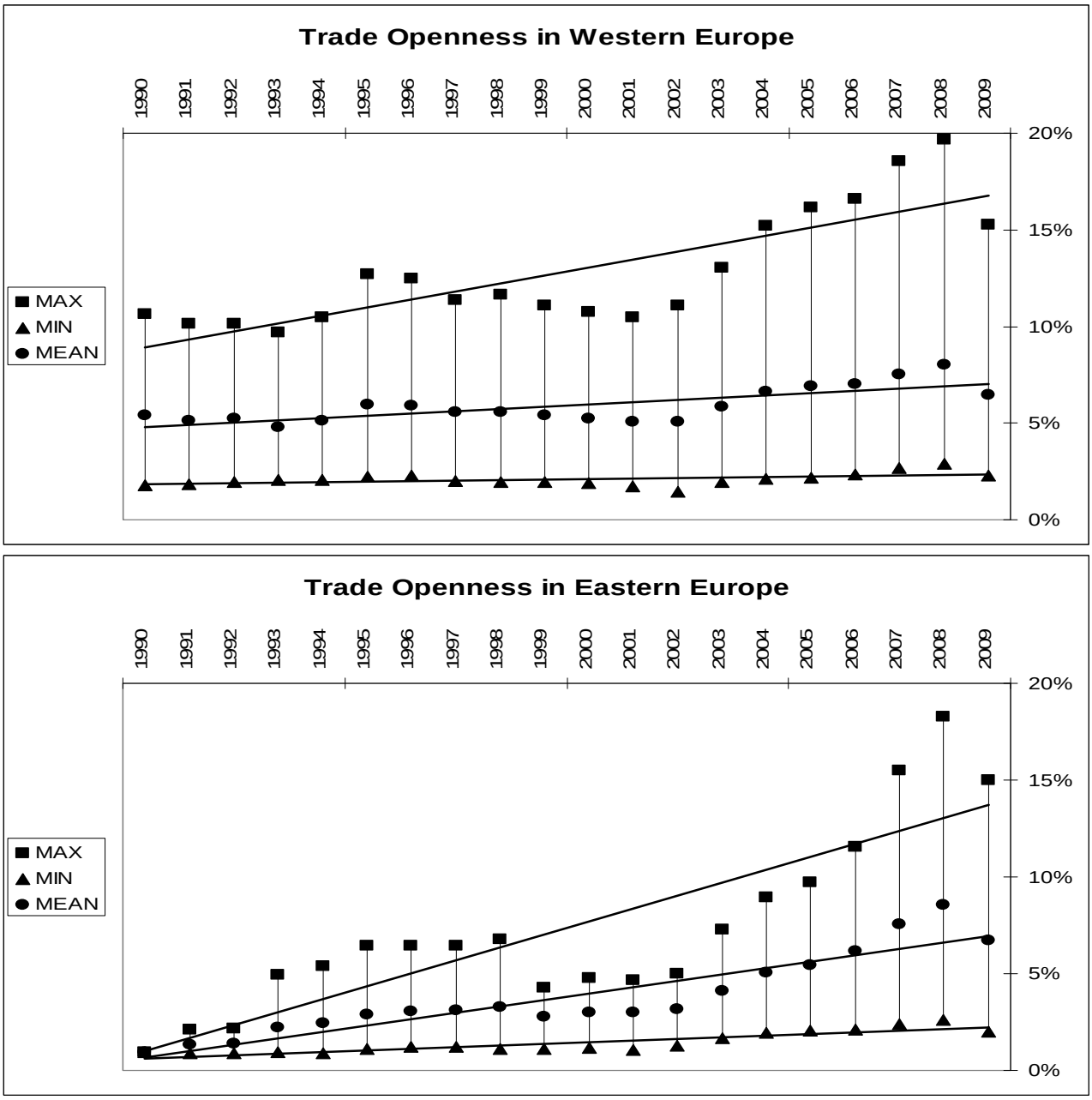
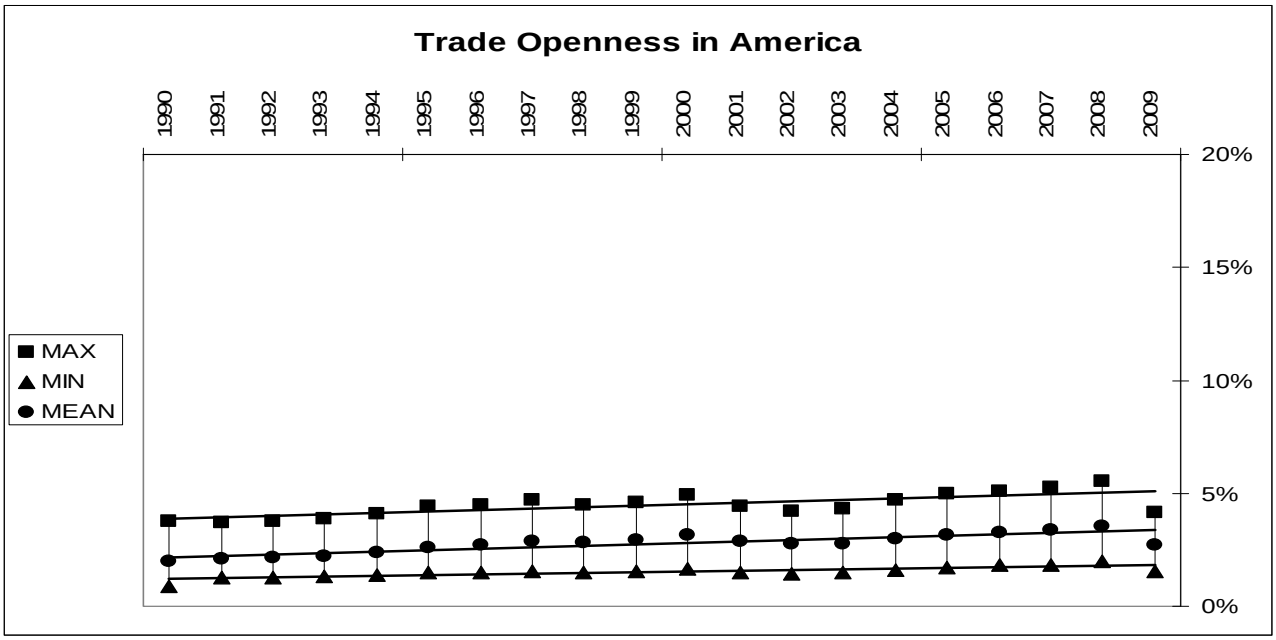
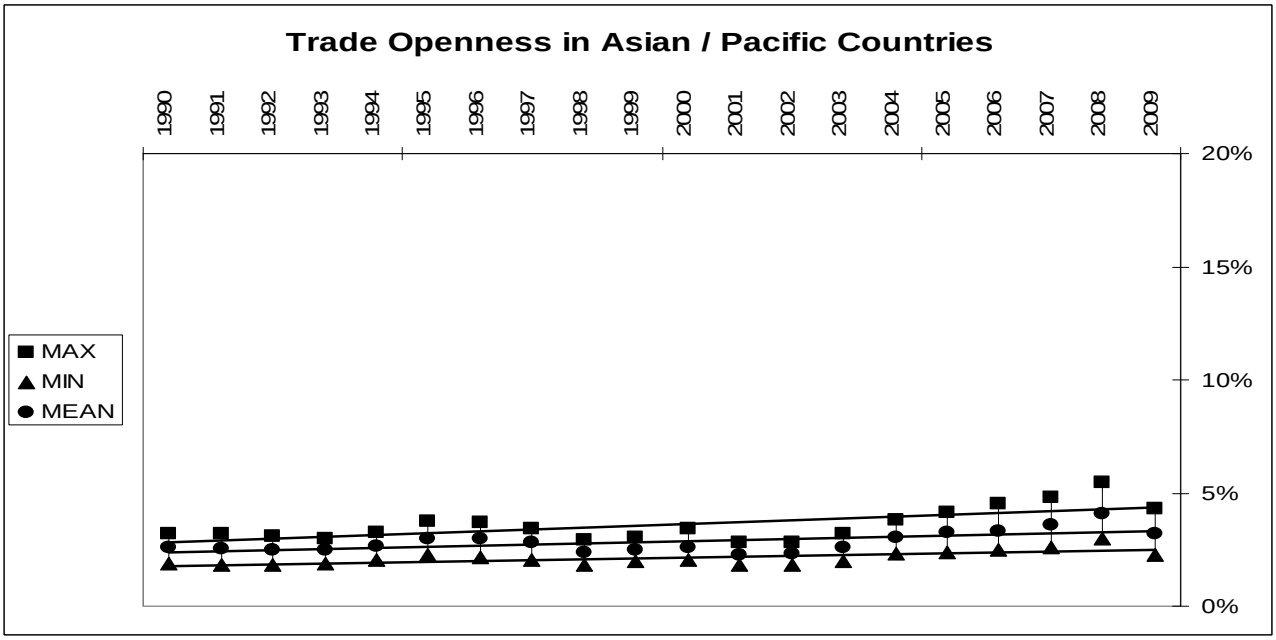
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
0.5
0.0
-0.5
-1.0
-1.5
-2.0
MAX
MIN
MEAN

Figure A2: Trade Openness in OECD sub-regions. Trade Openness is the sum of exports and imports as a fraction of national income. The figure shows the Mean-, Min-, and Max-values together with the corresponding trend lines.




Trade Openness in America
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
20%
15%
10%
5%
0%
MAX
MIN
MEAN


Trade Openness in Asian / Pacific Countries
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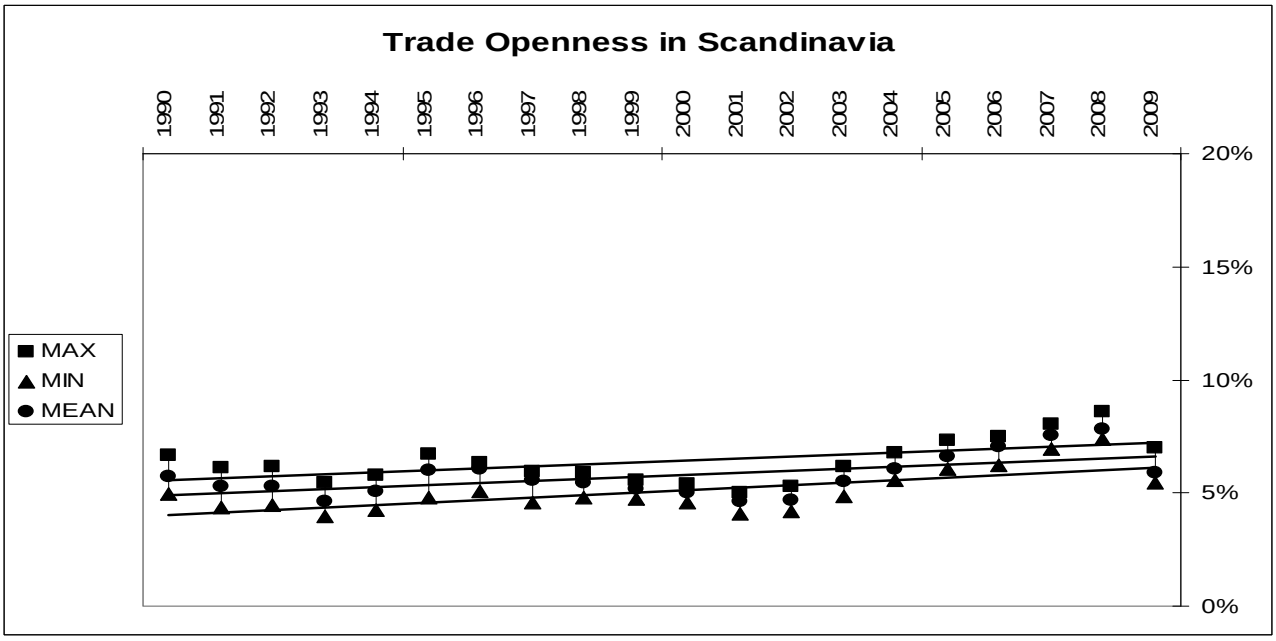
Trade Openness in Scandinavia
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10%
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MAX
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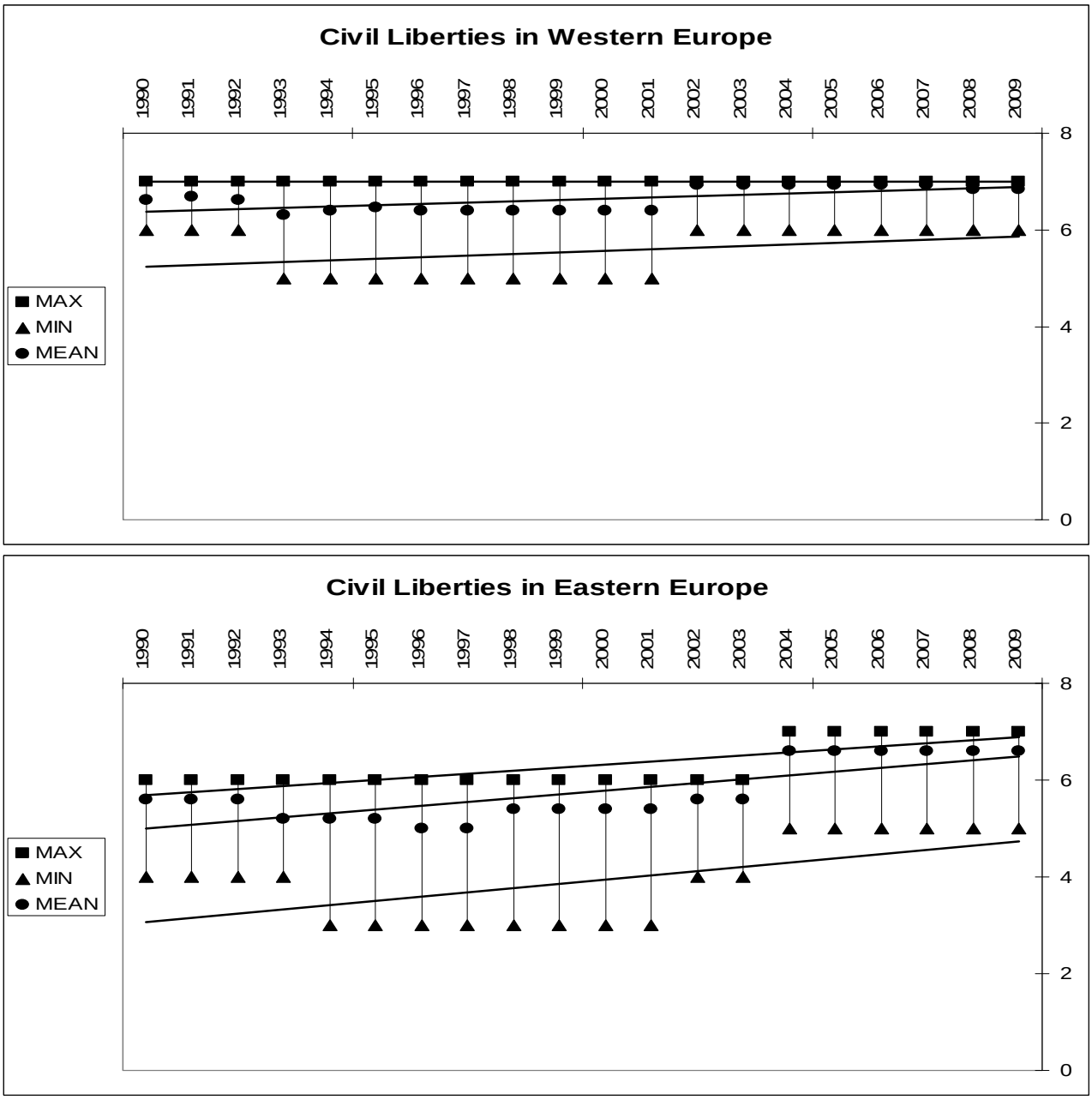
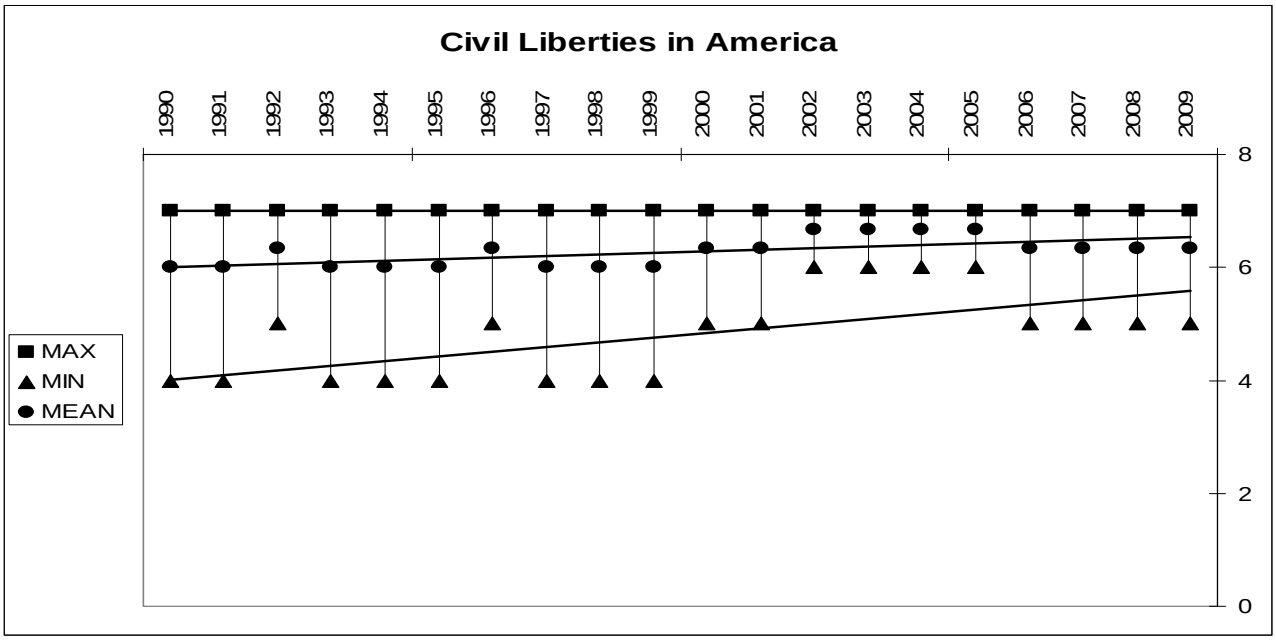
Figure A3: Civil Liberties in OECD sub-regions. Civil liberties are measured on a scale from 1 (least free) to 7 (most free). The figure shows the Mean-, Min-, and Max-values together with the corresponding trend lines.




Civil Liberties in America
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4
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MAX
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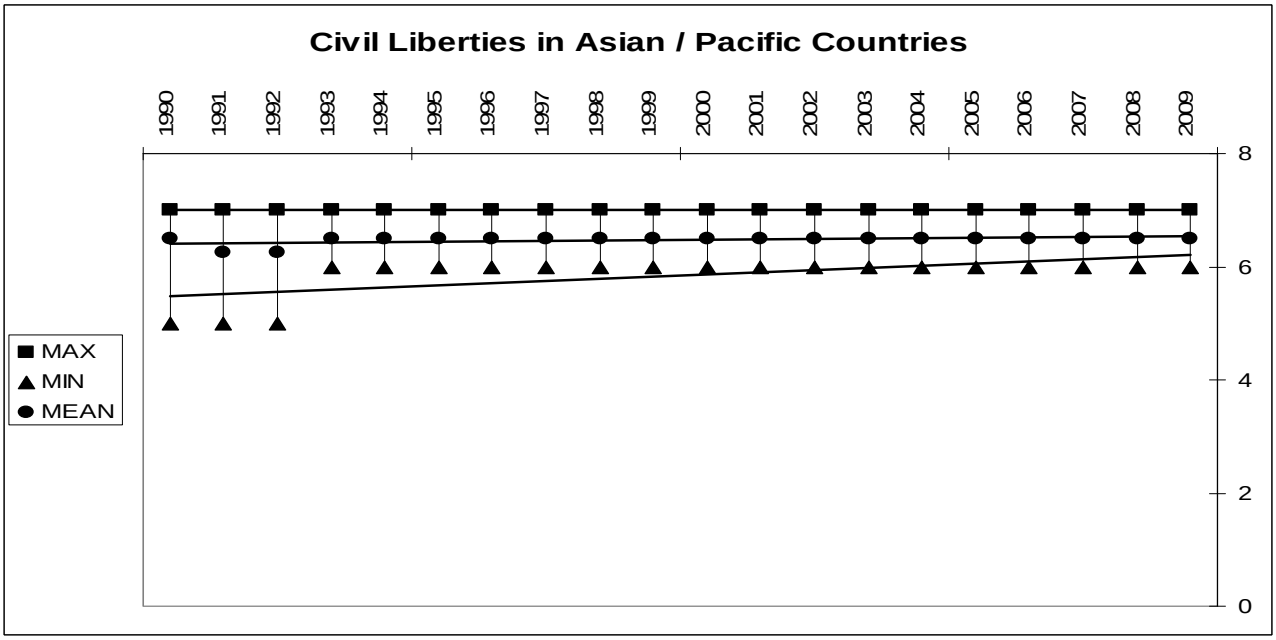
MEAN


Civil Liberties in Asian / Pacific Countries
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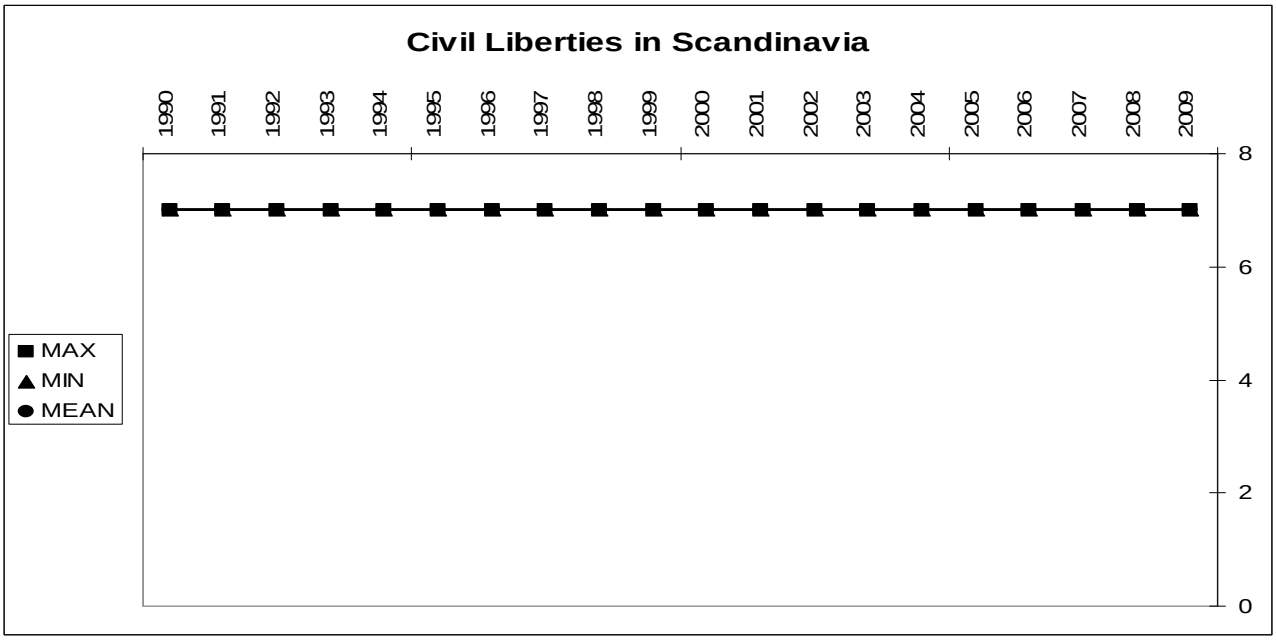
Civil Liberties in Scandinavia
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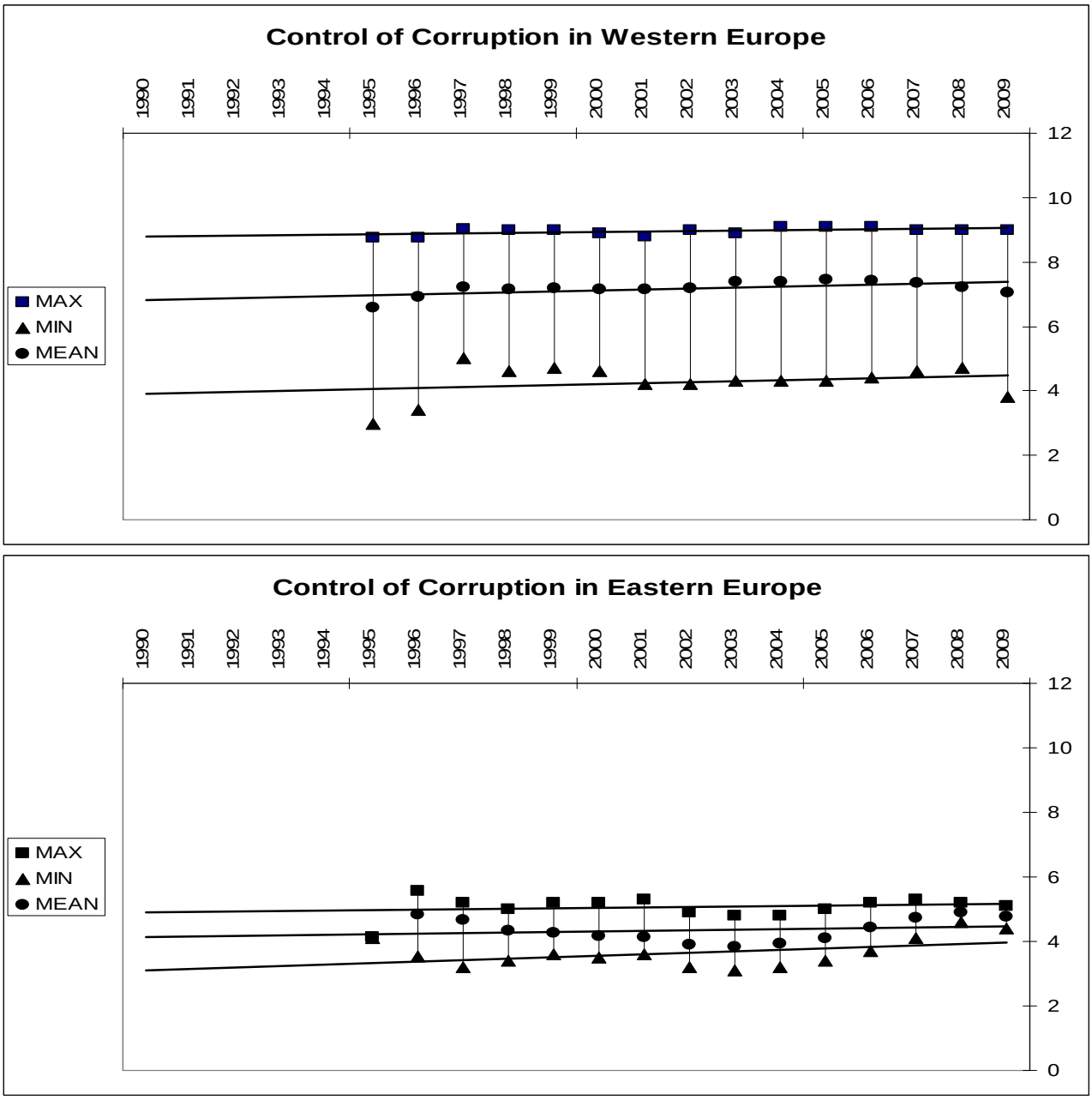
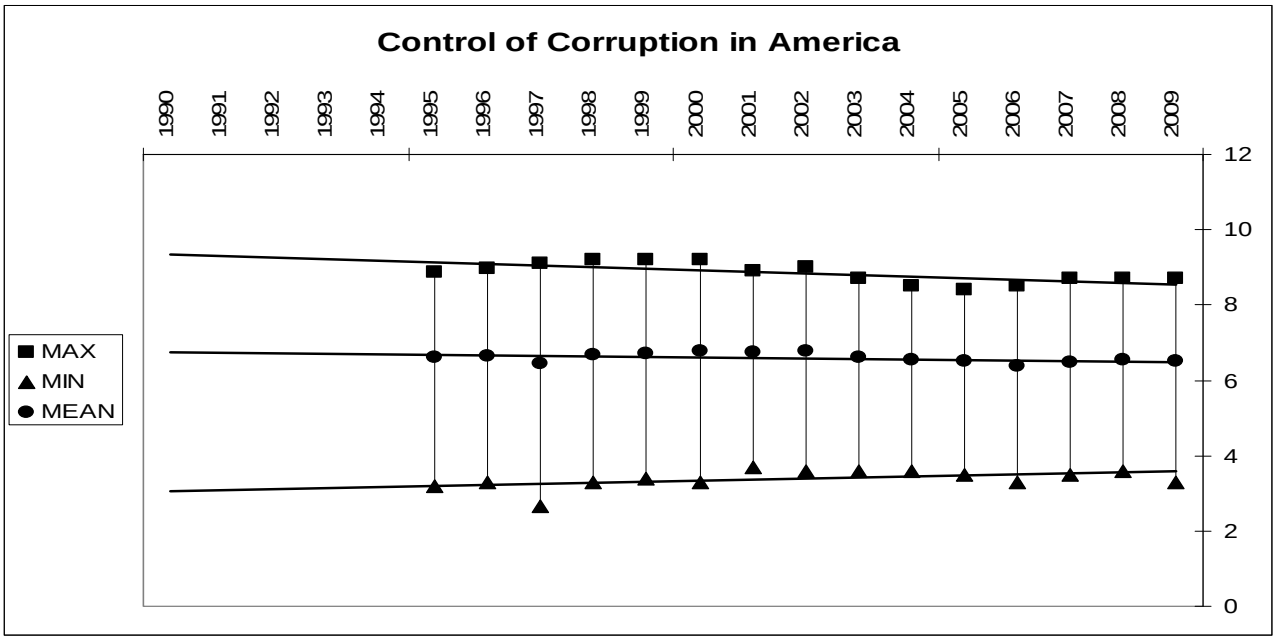
Figure A4: Control of Corruption in OECD sub-regions. Control of corruption is measured on a scale from 0 (highly corrupt) to 10 (highly clean). The figure shows the Mean-, Min-, and Max-values together with the corresponding trend lines




Control of Corruption in America
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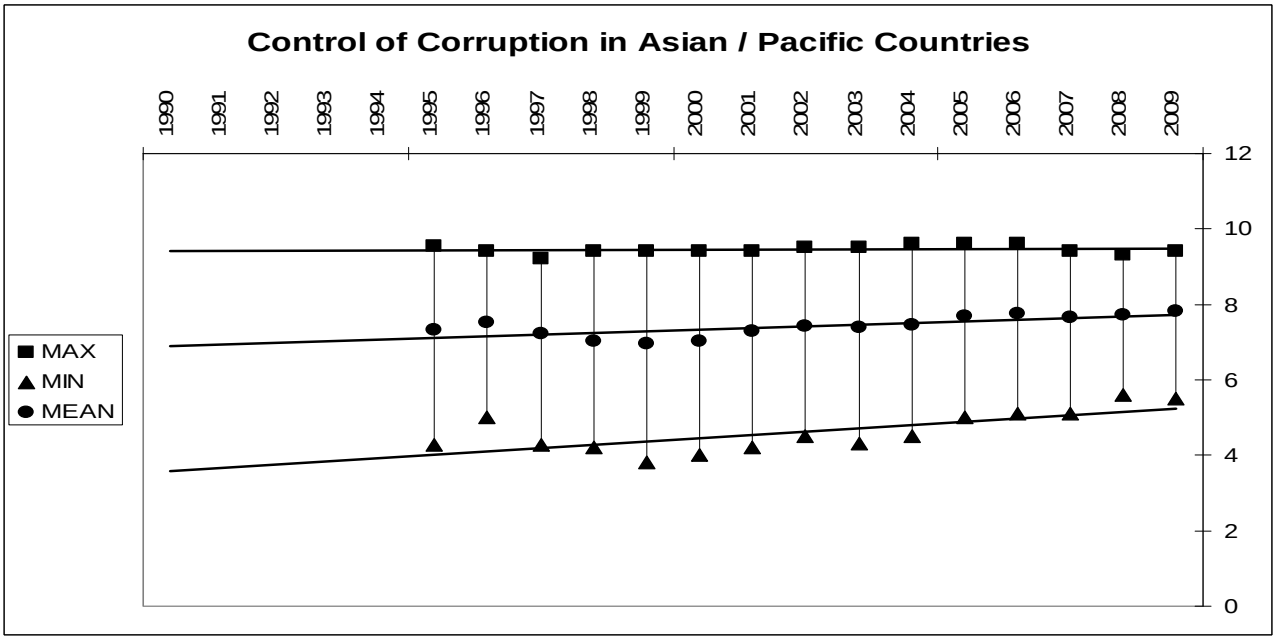
Control of Corruption in Asian / Pacific Countries
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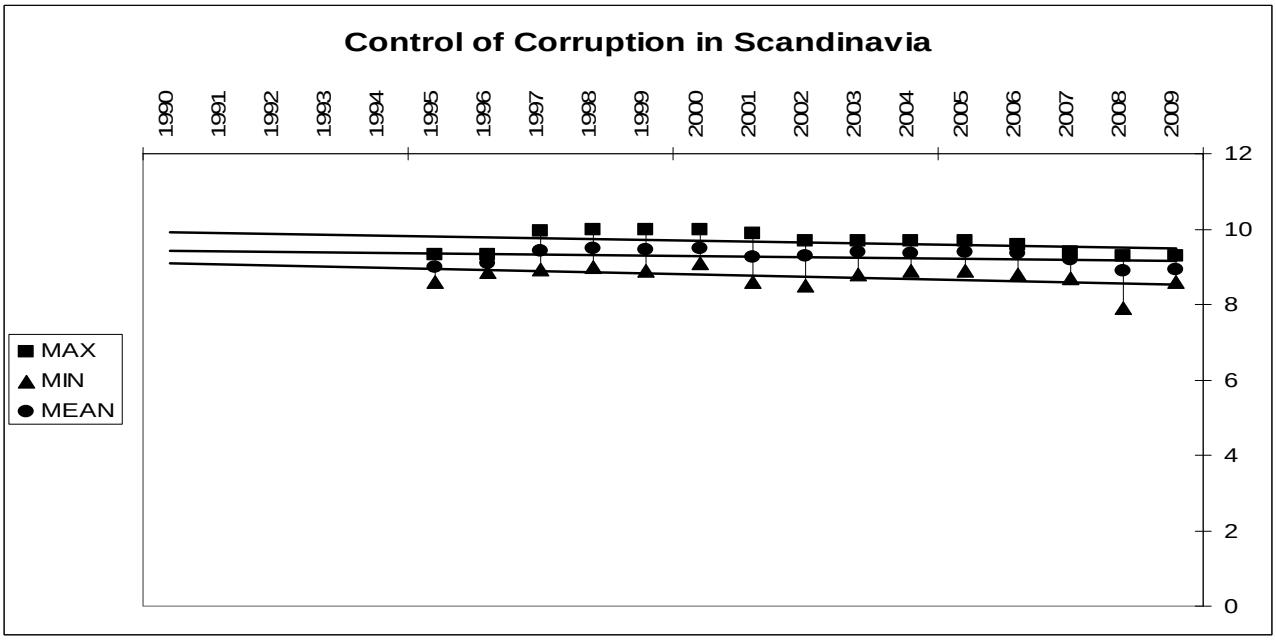
Control of Corruption in Scandinavia
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