Determinants of Social Cohesion: Cross-Country Evidence

Yabibal M. Walle

Determinants of social cohesion: cross-country evidence

Yabibal M. Walle

Bonn 2022

Yabibal M. Walle is a researcher in the "Transformation of Economic and Social Systems" programme at the German Institute of Development and Sustainability (IDOS).

Email: yabibal.walle@idos-research.de

Disclaimer:

The views expressed in this paper are those of the author(s) and do not necessarily reflect the views or policies of the German Institute of Development and Sustainability (IDOS).

JRF

MEMBER Johannes-Rau-
OF Forschungsgemeinschaft

Printed on eco-friendly, certified paper.

Preface

This Discussion Paper is part of IDOS's research project "**Policies for Social Cohesion in Africa**". Social cohesion – or social solidarity – within societies is a key success factor for sustainable development in Africa. Social cohesion is particularly under-pressure in most world regions, including Africa. The inter-disciplinary IDOS team aims to identify patterns of social cohesion in Africa, analyse factors that influence the degree of social cohesion and identify domestic and international policies that contribute to the creation and consolidation of social cohesion. The team addresses five issue areas:

- **Measurement** and understanding of patterns of social cohesion in African countries;

- **Inclusive economic development,** including urbanisation, financial sector development, and foreign direct investment with an emphasis on how to maximise opportunities for sustainable economic development;

- **Social policy, poverty and health**, addressing the specific role that different social and health policies can have in promoting social cohesion;

- **Values, political institutions and resource mobilisation,** spanning from the relevance of value orientations for the functioning of political institutions to tax systems, which affect the interaction between citizens and the state; and

- **Conflict and societal peace**, including the influence of political institutions and regime transitions on societal peace in post-conflict societies and how international support can contribute to social cohesion.

This research is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ).

We hope that IDOS research will not only help to better understand the drivers and consequences of social cohesion but will also inform effective policies that contribute to cohesive societies worldwide.

Bonn, October 2022

Julia Leininger[1], Armin von Schiller[2] and Francesco Burchi[3]

---

[1] Julia Leininger is head of the research programme "Transformation of political (dis-)order" at IDOS and co-lead of the research project "Social cohesion in Africa".

[2] Armin von Schiller is co-lead of the research project "Social cohesion in Africa" and senior researcher in the programme "Transformation of political (dis-)order".

[3] Francesco Burchi is co-lead of the research project "Social cohesion in Africa" and senior researcher in the programme "Transformation of economic and social systems".

Abstract

Noting that few studies to date have investigated the determinants of social cohesion in a comprehensive and systematic manner, this paper examines the macro-level determinants of social cohesion using a panel of up to 92 developing and developed countries for the period 1990–2020. Employing the system GMM dynamic panel data estimator, which addresses endogeneity concerns by means of internal instruments, I find that the levels of education, government size, globalisation, and economic development have significantly positive effects on most dimensions of a country's social cohesion. In contrast, inflation, corruption and income inequality are detrimental to social cohesion.

Keywords: Social cohesion, education, globalisation, inflation, corruption, government size, income inequality, GDP per capita

Acknowledgements

Contents

Tables

Figures in Appendix

Abbreviations

ISD	Indices of Social Development
US	United States
ESS	European Social Survey
KOF	Konjunkturforschungsstelle (Swiss Economic Institute)
SCR	Social Cohesion Radar
IDOS	German Institute for Development and Sustainability
UNESCO	United Nations Education, Scientific and Cultural Organization

1   Introduction

The importance of social cohesion as "the glue that holds society together" (Leininger et al., 2021) and as an essential prerequisite for long-term economic growth (Easterly, Ritzen, & Woolcock, 2006; Sommer, 2019) is well documented. Moreover, there is a large body of literature addressing its definition and measurement (Chan, To, & Chan, 2006; Langer et al., 2017; Leininger et al., 2021). Leaving aside the concept and operationalisation of social cohesion, there is also a growing (mis)perception that social cohesion in many countries is under strain due to, among other factors, globalisation, rising inequality, and surging migration flows (Dragolov et al., 2016; Leininger et al., 2021). However, the literature on the factors that determine social cohesion remains sparse and not particularly comprehensive. Typically, studies on the determinants of social cohesion consider a single socioeconomic factor, such as education (e.g. Heyneman, 2000; Helliwell & Putman, 2007), globalisation (Fischer, 2012; Verhoeven & Ritzen, 2022) and income inequality (Vergolini, 2011; Olivera, 2015). As an exception to this, the works by Dragolov et al. (2016) and Dragolov, Koch & Larsen (2018) remain the only attempts to examine the macro-level determinants of social cohesion in a cross-country framework. However, the pioneering works by Dragolov et al. (2016, 2018) are limited in two major aspects. First, they focus, respectively, on 35 Western and 22 Asian countries only and do not cover countries from other regions. Second, they rely largely on explanatory analyses based on partial correlations, leaving causality questions unresolved. Against this background, the present study provides the first systematic and comprehensive evidence on the macro-level determinants of social cohesion based on a global cross-country dataset and a regression analysis that addresses endogeneity concerns.

Social cohesion is a broad concept with a wide range of definitions.[4] In most definitions, it encompasses such societal characteristics as social and institutional trust, cooperation for the common good, and inclusive identity (e.g. Chan et al., 2006; Leininger et al., 2021). Although other definitions include broader issues such as poverty, inequality and quality of life as components of social cohesion (Langer et al., 2017; OECD (Organisation for Economic Co-operation and Development), 2011) some argue that these are determinants or consequences of social cohesion, rather than its constituting elements (Leininger et al., 2021; Schiefer & Van der Noll, 2017; Walkenhorst & Unzicker, 2018). Notwithstanding this ongoing discussion on what constitutes social cohesion, I restrict my focus to the core elements mentioned in most definitions: trust, cooperation for the common good, and inclusive identity (Chan et al., 2006; Langer et al., 2017; Leininger et al., 2021). Moreover, it is noteworthy that the various dimensions of social cohesion are neither directly interchangeable nor comparable, nor are they mutually exclusive, making it difficult to construct a single index of social cohesion. As a result, I employ different indices to measure different aspects of social cohesion.

The main dataset to this study is the Indices of Social Development (ISD), which is hosted by the International Institute of Social Studies at Erasmus University Rotterdam (ISD, 2022). For the years 1990 to 2020, the ISD synthesises about 275 indicators to measure six dimensions of social development: civic activism, interpersonal safety and trust, intergroup cohesion, clubs and associations, gender equality, and inclusion of minorities. While these indices were originally created to measure social development, we can see that, with the exception of gender equality,[5] five of the six dimensions of the ISD are indeed among the widely accepted dimensions of social cohesion according to most definitions and operationalisations of the concept of social cohesion (e.g. Leininger et al., 2021). A key advantage of this dataset is that

---

4   A comprehensive review of the theoretical and empirical literature on social cohesion can be found in Chan et al. (2006), Schiefer & Van der Noll (2017), and Leininger et al. (2021), among others.

5   Existing literature (e.g. Dragolov et al., 2018) views gender equality as a determinant of social cohesion rather than as an element of it.

data are available every five years for the period 1990–2020 for more than 90 countries, allowing for meaningful macro-level analyses of the determinants of social cohesion.

As potential macro-level determinants of social cohesion, I consider education, globalisation, inflation, corruption, government size, GDP per capita and income inequality. In fact, other cultural, geographic and historical factors could be even more important and "deeper" determinants of social cohesion. However, not only are these factors largely irrelevant for current policy-making – as we can hardly change them – but they are also mostly constant over the time period I consider and hence can be treated as unobserved fixed effects in the panel data estimation. Hence, my investigation focuses on factors that can be changed through concerted policy action.

As an estimation methodology, I employ the system GMM dynamic panel data estimator (Arellano & Bover, 1995; Blundell & Bond, 1998) and my choice of this estimator is driven by two considerations. First, as social cohesion is a persistent phenomenon, current degrees of cohesion are highly dependent on past cohesion levels and hence the macro-level econometric model should include the lagged dependent variable as one of its covariates. However, the popular within- and random-effects panel data estimators would lead to biased inferences if they are applied to dynamic panel models, a problem known in the literature as the Nickell bias (Nickell, 1981). Second, it is highly plausible that most of the potential determinants of social cohesion I consider could also be endogenous to social cohesion, and finding valid instrumental variables for each of the potentially endogenous variables is a daunting, if not impossible, task. With a combination of first differencing and the use of internal instruments, the system GMM panel data estimator not only overcomes the Nickell bias associated with the lagged dependent variable, but also accounts for the potential endogeneity of other explanatory variables (Arellano & Bover, 1995; Blundell & Bond, 1998).

To anticipate some of the results, I first note that my results confirm the persistence of social cohesion, with past cohesion levels being the most important determinant of current cohesion levels. Moreover, the levels of education, government size, globalisation and economic development have significant and positive effects on social cohesion. On the other hand, inflation and corruption have significantly negative effects on social cohesion. It is also noteworthy that while the statistical significance of the estimated effects of macro-level variables on social cohesion may differ across dimensions, the signs of the effects remain largely similar, except for participation in clubs and associations. As an exception to this generalisation, however, the level of participation in clubs and associations is found to be negatively affected by education and government size.

This paper contributes to the social cohesion literature in two important ways. First, while there are a number of studies that link social cohesion to a single socioeconomic factor (e.g. Helliwell & Putman, 2007; Fischer, 2012; Vergolini, 2011; Olivera, 2015), and other studies that focus on specific regions of the world (e.g. Dragolov et al., 2016, 2018), I am not aware of any work that considers multiple determinants of social cohesion in a single study and in a global cross-country context. Moreover, existing cross-country studies by Dragolov et al. (2016, 2018) rely on correlation analyses and leave causality issues unanswered. Therefore, the first and most important contribution of the paper is to provide the first endogeneity-robust cross-country evidence on the potential macro-level determinants of social cohesion worldwide. Second, the existing discourse on the determinants of social cohesion is heavily tilted toward a few variables, such as education, inequality, and globalisation, and is silent about other factors that have emerged as important determinants in this study: inflation, corruption and government consumption expenditure. Therefore, the second contribution of this study is to highlight the relevance of inflation, corruption and government size as previously unknown macro-level determinants of social cohesion.

The remainder of this paper is organised as follows. Section 2 reviews the existing theoretical and empirical literature on the macro-level determinants of social cohesion. Section 3 provides concise summary and description of the data, and discusses the empirical strategy followed in this paper. Main results of the study are presented and discussed in Section 4. Section 5 concludes.

2   Review of the literature

In this section, I provide a theoretical and empirical review of the literature on the potential determinants of social cohesion. Before discussing the theoretical and empirical literature on some potential determinants of social cohesion, three important remarks are in order.

1. It should be remembered that perhaps the most important determinants of social cohesion are different geographical endowments, historical events and religious and political movements that have shaped the nation-building processes, affected the development of national narratives, created national borders, and influenced different laws, societal hierarchies, and cultures over the centuries. For instance, Nunn and Wantchekon (2011) show that the differences in the intensity of the transatlantic and the Indian Ocean slave trades experienced by Africans in the pre-colonisation period significantly explain the different levels of social trust in contemporary African societies.[6] Similarly, Becker et al. (2016) show that the highly regarded, transparent and efficient bureaucracy of the historical Habsburg Empire has such a long-lasting effect that Central and Eastern European countries that were once part of the empire demonstrate significantly higher trust and lower corruption levels than other neighbouring countries in the region. However, while such studies provide answers to the "deeper" determinants of social cohesion, they often conclude with recommendations to improve other "intermediate" factors of social cohesion, such as transparency, because the deeper determinants are unchangeable by current policy actions. Therefore, this review of the literature and, with that, the empirical analysis in this paper, focuses on immediate and intermediate factors that can be influenced by concerted policy action: education, economic development, income inequality, inflation, corruption, globalisation and government size.

2. In selecting these variables from the universe of potential determinants of macro-level social cohesion, I have followed three main criteria. First, the variable must have been considered a potential driver of social cohesion in existing survey-based or cross-country studies. If this is not the case, for example in the case of inflation, I have tried to focus on those variables for which there are sound theoretical reasons to expect a strong impact on social cohesion. Second, the available data for the variable should have sufficient coverage across countries and show significant variation over time. Third, noting that macro-level variables correlate significantly with each other, I selected those variables for which data are broadly available. For example, while the availability of jobs could be a potential determinant of social cohesion, it is likely to be strongly correlated with GDP per capita. In the absence of employment data for a large number of countries for the period under study, I have preferred to use GDP per capita instead of the rate of employment.

3. Noting that the concept of social cohesion is still a largely vague concept with a wide range of definitions, its constituent elements also vary substantially from definition to definition.[7] As the choice of potential determinants of social cohesion could directly

---

6   For reviews on the historical origins of comparative development in general, see Nunn (2009) and Spolaore and Wacziarg (2013).

7   A detailed review of historical development of the concept can be find in Chan et al. (2006).

depend on the definition of social cohesion I adopt, I restrict my focus to the core elements of social cohesion mentioned in most definitions: trust, cooperation for the common good and inclusive identity (Chan et al., 2006; Langer et al., 2017; Leininger et al., 2021). In particular, I adopt the definition of social cohesion recently proposed by Leininger et al. (2021). Building largely on Chan et al. (2006), Leininger et al. (2021) define social cohesion as:

> the vertical and the horizontal relations among members of society and the state, which hold society together. Social cohesion is characterised by a set of attitudes and manifestations that includes trust, an inclusive identity, and cooperation for the common good. It is the glue that holds society together.

Accordingly, the definition of social cohesion proposed by Leininger et al. (2021) incorporates trust (social trust and institutional trust), cooperation for the common good (horizontal cooperation and vertical cooperation with the state) and inclusive identity.

Education

Education is one of the most widely discussed drivers of social cohesion. In fact, modern public education in the West began in the late eighteenth and early nineteenth centuries primarily as a state-led initiative to promote nation-building and state-formation processes through citizen formation, which included the fostering of social cohesion (e.g. Green & Preston, 2001; Green, Preston, & Janmaat, 2007; Heyneman, 2000). However, skills formation has gradually become the primary goal of public education in most developed economies, at least since World War II (Green & Preston, 2001). Awareness of the role of education in promoting social cohesion seems to have gained traction in recent years among national governments and international bodies that are fearful of increasing societal tensions caused by rising inequality, globalisation, and migration (Dragolov et al., 2016). For example, the 2006 Spring European Council outlines that efficiency and equity of Europe's education and training systems must be boosted as they are "critical factors to develop the EU's long-term potential for competitiveness as well as for social cohesion" (European Council, 2016).

In their influential work on the impact of social cohesion on economic growth, Easterly et al. (2006) single out education as an important policy lever to promote social cohesion. Their suggestion, in turn, builds on an earlier work by Heyneman (2000), who argues in detail that one of the most important goals and achievements of public education in several countries has been to strengthen social cohesion. Heyneman mentions four ways in which education could promote social cohesion. First, the educational opportunities it provides to all citizens of a nation play an important role in reducing inequalities in a society and thus strengthening its social fabric. Second, a successful education system requires a consensus on what young people should be taught about the various social contracts and history, and this is an important factor in bringing people together with a common purpose and giving them a sense of belonging to society. Besides the consensus, the negotiations and compromises that lead to reaching that consensus are expected to positively contribute to a socially cohesive society. Third, schools can play a critical role in promoting inclusiveness and cohesion by providing an environment in which people of different ethnic and religious backgrounds interact, learn, and negotiate to live in tolerance and work together for the common good. Fourth, effective schools often have democratic mechanisms, such as school councils, where disagreements about whether schools are successfully using the three mechanisms above can be resolved.

On the empirical side, a few papers have examined the relationship between education and social cohesion or its components. For example, using the pooled time-series and cross-sectional data from the United States (US) General Social Survey from 1972 through 1996 and from the DDB-Needham Life Style survey data from 1975 through 1997, Helliwell & Putman (2007) show that individuals with more education tend to be more engaged citizens in terms of

social trust as well as political and social engagement. In a rare macro-level study on the determinants of social cohesion, Dragolov et al. (2016) find that progress towards the knowledge economy (which includes education, economic innovation and infrastructure related to information and communications technology) is positively related to social cohesion in 35 Western economies. Dragolov et al. (2018) documents a similarly positive effect of education on social cohesion in 22 South, Southeast, and East Asian economies. However, the results by Dragolov et al. (2016, 2018) are based on correlation analyses and do not account for issues of reverse causality and confounding factors. The present paper attempts to fill this gap in the literature by employing an endogeneity-robust estimation strategy and including as many countries worldwide as data availability allows.

While the positive role of education in social cohesion is widely recognised in both the theoretical and empirical literature, there are, however, some historical anomalies to this conclusion. Mickelson & Nkomo (2012), for example, point out that highly educated people living under Nazism, fascism, and apartheid enforced undemocratic practices that denied their fellow citizens the right to full citizenship, professional opportunities, and social participation, and even denied certain groups the right to life. Nevertheless, given the broad range of countries I consider and because I control for several confounders and country-specific effects, I expect the impact of education on social cohesion to be positive in our sample, which includes 92 countries worldwide for the period 1990–2020.

Economic development

Economic development can foster social cohesion in a variety of ways. First, economic development is ultimately the most important determinant of a society's ability to provide economic satisfaction to its citizens (e.g. Acemoglu, 2012; Mankiw, 2020). Moreover, despite the ongoing debate on whether an increase in economic development could increase the subjective well-being of people in a given country over time, there is little doubt that a greater proportion of citizens in rich countries report being happy and satisfied in life than in low-income countries (see, for example, Sacks et al., 2010; Easterlin, 2015). Indeed, achieving welfare gains through economic development has proven to be one of the few robust determinants of state legitimacy (e.g. Gilley, 2006; Yang & Zhao, 2015). Thus, economic development could promote social cohesion by serving as a symbol of success in achieving a "common good" for which people cooperate with each other and with the state.

Second, economic development could promote social cohesion through its role in poverty reduction. There seems to be near-universal agreement that world poverty and hunger must be eradicated (e.g. United Nations, 2015; Todaro & Smith, 2012), and economic growth has emerged over the past three decades as the most effective tool for significantly reducing the proportion of people living in hunger and poverty (e.g. Dollar & Kraay, 2002; UN, 2015; Balasubramanian, Burchi, & Malerba, 2023). Economic development as a means to eradicate poverty could therefore also be a unifying factor to rally citizens around a common agenda (Todaro & Smith, 2012).

Third, economic development provides the financial resources the state needs to provide public goods and social protection, and to uphold the rule of law. This in turn strengthens support for the nation-building process and trust in government and institutions (Yang, Dong, & Chen, 2021), thus promoting social cohesion.

Fourth, research has shown that there is a clear relationship between the availability of jobs and social cohesion, while the relationship between unemployment and levels of trust and civic engagement is negative (World Bank, 2012). Moreover, an increase in unemployment could lead to social and political unrest that could undermine social cohesion. Since economic growth is usually accompanied by an increase in the quality and quantity of jobs available to individuals,

it could therefore strengthen social cohesion by increasing the availability of well-paying and high-quality jobs (Sommer, 2019).

Fifth, although the relationship between growth and instability may be nonlinear, as rapid growth in low-income countries can sometimes be accompanied by social unrest, poor economies tend to be unstable, and growth is generally negatively correlated with political instability (Alesina & Perotti, 1994). Hence, economic development could also promote social cohesion by reducing social and economic turmoil.

Turning to the empirical side, Vergolini (2011) use data from Round 1 of the European Social Survey (ESS), which was carried out between autumn 2002 and spring 2003 in 18 European countries to examine if the economic situation of individuals has an effect on their level of social trust and their societal participation. Employing a multi-group analysis, Vergolini (2011) finds that people with economic problems tend to show a lower level of social engagement than individuals who do not experience economic difficulties. The author explains this result by noting that participation in community life requires certain skills that could be costly for the poor to acquire, which may lead low-income individuals having a lower level of trust and negative attitudes toward the working of the institutions. Yang, Dong, & Chen (2021), based on data from the Asian Barometer Survey, report that the country's economic performance is positively associated with public trust in government in China. The aforementioned panel studies by Dragolov et al., (2016, 2018) have also considered economic prosperity as one determinant of social cohesion at the macro level. Using data from the social cohesion Radar and employing cross-country correlation analyses, the researchers document that national affluence measured by GDP per capita as well as human development is positively correlated with social cohesion in the Western world (Dragolov et al., 2016) as well as in South, Southeast, and East Asian economies (Dragolov et al., 2018).

In sum, there appear to be convincing reasons to expect that economic development is a positive determinant of a country's level of social cohesion. However, this may depend on a number of other factors, including the extent to which the fruits of economic development have been appropriated by broad segments of the population.

Income inequality

Inequality is so closely related to the concept of social cohesion that in some definitions of social cohesion it is seen not as a determinant but as a constituent element of social cohesion (e.g. Easterly et al., 2006; OECD, 2011; Langer et al., 2017). However, several authors, while acknowledging the important effect of inequalities on social cohesion, recommend that equality/inequality should not be considered as a component of social cohesion (Leininger et al., 2021; Schiefer & Van der Noll, 2017; Walkenhorst & Unzicker, 2018).

There are several reasons why inequalities in general, and income inequality in particular, may negatively affect social cohesion. First, while equality breeds a shared sense of purpose, inequality leads people to believe that they do not have much in common with others who are not like them (Rothstein & Uslaner, 2005; Langer et al 2017; Uslaner, 2019). People in unequal societies are more likely to believe that a problem affecting other groups in their society does not affect them, and people at the bottom of the income distribution are more likely to believe that the societal structure has been unfair towards them (Langer et al., 2017). As a result, unequal societies are less inclusive and inequality is likely to erode the feeling of belonging to a shared national project (Langer et al., 2017). Second, sharp inequalities between different societal groups (horizontal inequalities) are major sources of political conflict and violence in a society (Stewart 2008; Vergolini, 2011). Scholars argue, however, that perceptions on the acceptable level of inequality are a more important determinant of social discontent and propensity to engage in social struggles (Gijsberts, 2002), and thus social cohesion (Vergolini, 2011), than the actual level of inequality. This is because there is no such thing as a perfectly

equal society in modern societies, and some degree of inequality is a necessary outcome of a capitalist society in which owners of factors of production are rewarded for their contribution to the production process (Todaro & Smith, 2012).

Probably due to the availability of data, in particular the European Social Survey (ESS), most studies examining the relationship between inequality and social cohesion focus only on European countries, although there are a few studies on other regions too. Olivera (2015), using data from 270,000 individuals from 34 European countries who participated in the different waves of the survey during 2002–2012, confirms that changes in inequality levels are negatively associated with generalised trust. Goubin (2018) also uses the ESS (period 2006–2012), but distinguishes between measures of income inequality, poverty, economic strain and unequal distributions of wealth. Noting that these indicators measure different dimensions of inequality, she applies an exploratory factor analysis to reduce their information contents. From the analysis, she obtains two significant factors, which broadly load on economic deprivation and imbalances in economic outcomes. Using these two factors as explanatory variables, she finds that only economic deprivation is significantly linked to social cohesion, implying that the relationship between inequality and social cohesion could depend on the type of inequality indicator considered.

There are also cross-country studies that examine the role of inequality on social cohesion, although most of them focus on social trust. For example, using cross-country data for 63 countries for 2004, Rothstein & Uslaner (2005) document that income inequality is negatively related to social trust. Similarly, Zmerli & Castillo (2015) report for the case of Latin America that income inequality erodes political trust. Studying the psychological consequences of income inequality, Buttrick & Oishi (2017) show that living in unequal societies is associated with increased levels of mistrust and anxiety about social status. Considering the broader concept of social cohesion beyond trust, the Bertelsmann Stiftung's two cross-country panel data studies on the determinants of social cohesion (Dragolov, 2016, 2018) have documented that low levels of income inequality are among the best predictors of social cohesion in the West and in Asia.

In general, there are convincing theoretical reasons and empirical evidence that income inequality is an important and negative determinant of social cohesion at the macro level. Thus, I expect to find a negative impact of income inequality on social cohesion in this study.

Inflation

Several reasons make inflation a potential candidate as a macro-level determinant of social cohesion. The first reason is that inflation affects different sections of society differently and hence could worsen income inequality and aggravate societal tensions. For example, Agénor (2004) argues that inflation disproportionately harms low-income groups compared with high-income groups for a variety of reasons. First, incomes of the poor (wage or income from self-employment) are often defined in nominal terms and not hedged against inflation, leading to a rapid decline in the purchasing power of their earnings. Second, the poor often hold their wealth in cash and have too few real assets such as land or real estate. Hence, the value of their wealth declines more rapidly than that of high-income groups. Third, their holding of cash balances makes them subject to an inflation tax, which means that they pay a higher tax rate than is officially acknowledged by policy-makers. All these effects make inflation particularly harmful for low-income individuals, and hence could erode their trust in and cooperation with the state and between citizens. A second reason why inflation could be a potential candidate as a determinant of social cohesion is that high inflation is often an important syndrome of broader macroeconomic instability (Rodrik, 2004). Macroeconomic instability and mismanagement often lead to political grievances and political unrest, thereby eroding social cohesion. As a third reason, inflation can be so high that basic needs, such as food and energy, become unaffordable for a large segment of society, which in turn leads to political unrest. For example, the Civil Unrest Index compiled by Verisk Maplecroft sees a direct link between recent global food and

energy price surges and the fact that more than half of 198 countries they tracked have recorded an increasing risk of social unrest (Soltvedt, 2022).

On the empirical side, I am not aware of any study examining the role of inflation on social cohesion. However, given the above theoretical discussion, I expect inflation to have a negative effect on social cohesion at the macro level and I will consider it as one potential candidate in the empirical analysis.

Corruption

There is little debate on the strong correlation between corruption and social cohesion, both theoretically and empirically. More debatable, however, is the direction of causality. Often, both corruption and social cohesion are found to be the result of a much deeper, third factor. For example, research has shown that the highly transparent and efficient bureaucracy of the Habsburg Empire led to the high level of trust and low level of corruption seen in contemporary Central and Eastern European countries that were once part of the Empire, compared to other countries in the region (Becker et al., 2016). On the other hand, it has also been argued that a high level of social cohesion is required to implement social policies and institutional reforms that would curb corruption (Easterly et al., 2006; Rothstein & Uslaner, 2005), making corruption more of a consequence than a cause of lower social cohesion. My interest in this paper is, however, in examining whether corruption can affect social cohesion, regardless of the existence of a reverse causal effect that runs from social cohesion to corruption.

The level of corruption in a society could affect social cohesion in diverse ways. First, corruption instils distrust between people and toward institutions. Corruption in the public sector reflects badly on society as a whole (Capshaw, 2005). Using data from a large survey of the US for the period 2000–2004, Richey (2010) shows that increasing governmental corruption leads to decreasing beliefs that others are trustworthy. Similarly, Linde and Erlingsson (2013) show that high-profile corruption cases over the past decade in Sweden have significantly increased citizens' perceptions that politicians and officials are corrupt and significantly decreased their trust in political institutions. Second, corruption weakens the positive effects of other determinants of social cohesion. For instance, Heyneman (2004) argues that if the public feels that corruption is rampant in the education system, they will also believe that the nation-building process is unfairly tilted against their interests and those of their children, thereby leading to a lower level of social cohesion. Corruption also leads to greater inequality, which in turn strains social cohesion (Vergolini, 2011; Uslaner, 2019). Third, as corruption is based upon loyalty to the in-group and not to the larger society (Rothstein and Uslaner, 2005), corrupt governments are likely to reject universalist social programmes, missing valuable opportunities to promote social cohesion and an inclusive identity. Fourth, corruption control (or low corruption) is an integral component of the overall institutional quality of a country and often reflects developments in other dimensions of institutional development (Baltagi, Demetriades, & Law, 2009; Zergawu, Walle, & Giménez-Gómez, 2020). The extent of corruption control could thus also be an indicator of a country's general institutional quality, which in turn is positively correlated with social cohesion.

Apart from the aforementioned US-specific survey-based study of Richey (2010) on the detrimental role corruption plays in social trust, I am not aware of any study that has examined the impact of corruption on social cohesion in a cross-country framework. In particular, the cross-country studies by Dragolov et al. (2016, 2018) do not consider corruption as one potential macro-level determinant of social cohesion in the West or in Asia. In light of the strong theoretical underpinnings and survey-based evidence on the negative effects of corruption on social trust, I consider corruption control as a potential candidate macro-level determinant of social cohesion in this paper. I expect a country's level of corruption control to have a positive impact on social cohesion.

Globalisation

Globalisation is a broad concept that encompasses several other economic, social and political aspects. For the sake of simplicity, I adopt one of the most widely used definitions of globalisation given by Clark (2000, 86) as follows: "globalization describes the process of creating networks of connections among actors at multicontinental distances, mediated through a variety of flows including people, information and ideas, capital, and goods". This definition is also adopted by the Swiss Economic Institute (KOF) globalisation index (Dreher, 2006; Dreher, Gaston, & Martens, 2010), which is arguably the most widely used index of globalisation to date (Potrafke, 2015).

Several authors and institutions argue that globalisation is a big spoiler of social cohesion. Indeed, one of the main developments that has sparked political and academic interest in social cohesion over the past three decades is the rapid pace of globalisation and its alleged impact on social cohesion (Chan et al., 2006; Green & Janmaat, 2011; Schiefer & Van der Noll, 2017). A number of surveys undertaken at the turn of the 21st century have shown that the majority of the population in Western European countries believed that social cohesion was deteriorating and that globalisation and the associated economic transformations were often considered the main culprit for that (Schiefer & Van der Noll, 2017).

Globalisation could affect social cohesion in at least four main ways. First, by increasing the flow of goods, services, capital and labour across national borders, globalisation makes countries highly interconnected (Ritzer & Dean, 2015). This interconnectedness could then lead to an erosion of social cohesion, especially as it is likely to be followed by higher diversity (due to migration) and income inequality (as there will be winners and losers in the process) (Verhoeven & Ritzen, 2022). Second, some scholars warn that globalisation could undermine the role a country's national identity as a source of identification and a provider of cultural norms and institutional arrangements that give structure and orientation to its citizens (Touraine, 2000). As a response to this, individuals could resort to identifying themselves with sub-national entities such as ethnicity, which could further erode social cohesion (Schiefer & Van der Noll, 2017). Third, globalisation could also make a positive contribution to social cohesion, especially when it leads to substantial economic growth, as in Asian economies, which in turn could promote trust in government (Yang et al., 2021). This could particularly be the case if growth is broad-based and proceeds are also used for low-income groups. Fourth, globalisation also offers individuals the opportunity to engage with different foreign cultures and values and educate them to be more tolerant of foreigners and minorities, thus promoting an inclusive identity.

Although few studies to date have examined the impact of globalisation on social cohesion with its multiple dimensions, several studies have examined its impact on trust. In one of the largest studies on globalisation and trust, Fischer (2012) combines individual-level survey data from 1981 to 2007, repeated cross-sections of 260,000 persons from 80 countries, with KOF's measure of a country's degree of economic globalisation (Dreher, 2006) for the same period. She reports that globalisation indeed lowers trust in political institutions, but the effect is larger for those who have no interest in politics, are unwilling to indicate their political leaning, or who have low educational levels. Recent studies tend to report more favourable evidence on the role of globalisation on social cohesion. For example, the cross-country studies covering 35 Western economies (Dragolov et al., 2016) and 22 South and East Asian economies (Dragolov et al., 2018) do not find any clear pattern on the effect of globalisation, as measured by the KOF Index of Globalization, on any of the dimensions of social cohesion. Verhoeven & Ritzen (2022) even report that globalisation in the first two decades of the 21st century has increased institutional trust in twelve North and Western European countries. The extensive survey-based study of Verhoeven & Ritzen (2022) also shows that while income inequality and diversity have undermined social cohesion, the overall effect was compensated for by the globalisation-induced increase in government expenditure in education and culture.

In sum, the effects of globalisation on social cohesion are multifaceted and context-specific, and the empirical evidence is largely mixed (Vrolijk, 2022). Therefore, I do not expect a priori a positive or negative impact of globalisation on social cohesion in the data I consider.

Government size

The share of government final consumption expenditure to gross domestic product (GDP) (in short, government size) could have both positive and negative impacts on social cohesion. First, as previously discussed in the role of economic development on social cohesion, a government's ability to provide the state's social services, such as social security, natural disaster aid, public infrastructures (e.g. roads and telecommunication networks), as well as expenditure on law enforcement could crucially affect individuals' trust in and cooperation with the state and with each other. Hence, the more the government uses its resources to increase social welfare and uphold the rule of law, the stronger will be the level of cohesion in the society. In this context, the much-discussed Wagner's Law predicts that the size of government increases as income increases because people (in a modern industrial society) continue to exert pressure on governments and industry to increase government involvement and spending in the provision of social services (Wagner, 1890). Moreover, the fact that welfare states are characterised by both higher government spending and higher social trust has sparked a lively debate about whether there is causality from the welfare state to higher social cohesion, or whether higher social cohesion enables the initiation and implementation of welfare state policies (e.g. Brewer, Oh, & Sharma, 2014). If causality runs from the welfare state to social trust, this implies that a higher government size (in terms of government spending relative to GDP) could be a positive determinant of social cohesion. Second, although results on the impact of government spending on economic growth are largely mixed (e.g., Landau, 1983; Levine & Renelt, 1992; Wu, Tang & Lin, 2010), the preponderance of evidence suggests that public spending on infrastructure (also called "productive spending") promotes economic growth (e.g. Irmen & Kuehnel, 2009; Zergawu et al., 2020). Hence, government size could also foster social cohesion through its effect on economic development. Third, a larger government could crowd out private investment as it indirectly implies higher taxes and economic distortions (e.g. Levine & Renelt, 1992). In this way, a large government could lead to inefficient resource allocation, reduce competition, and result in lower economic development, ultimately undermining social cohesion. Along these lines, some authors even consider high government spending relative to GDP as a sign of macroeconomic instability (e.g. Levine & Renelt, 1992; Levine et al., 2000). Thus, a large government could also have a negative impact on social cohesion if government spending leads to economic inefficiencies that eventually affect the social and economic well-being of society.

While there is a large body of literature on the relationship between government size and economic growth, the empirical literature on the impact of government size on social cohesion is relatively thin. If any, it is related to the debate on whether welfare states foster social trust or not. In this regard, Brewer et al. (2014) use data from the World Value Survey covering 18 OECD countries to examine whether an increase in social spending increases social trust. The authors find that each additional percentage point of GDP spent on social spending five years earlier is associated with a 4.7 percent increase in the likelihood that respondents in that country trust other people.

In sum, in view of the fact that the theoretical predictions on the role of government size on social cohesion are inconclusive and there is lack of empirical evidence on it, this paper attempts to provide empirical evidence, using a panel data of 92 countries worldwide for the period 1990 to 2020.

3 Data and empirical strategy

3.1 Data

3.1.1 Measuring social cohesion

One of the main challenges in empirically studying the determinants of social cohesion in a cross-country framework is the lack of data for a long period of time and for a large number of countries worldwide. On the one hand, the debate over the definition of the concept of social cohesion and its measurement is still ongoing and does not seem to be settling soon. On the other hand, existing well-developed social cohesion indices cover no more than a decade and only a handful of countries. The Bertelsmann Stiftung's Social Cohesion Radar (SCR) (Bertelsmann Stiftung, n.d.), for example, covers 22 societies in South, Southeast and East Asia (SSEA) for the period 2004–2015 (Bertelsmann Stiftung, 2017). Similarly, the German Institute for Development and Sustainability (IDOS) dataset covers only African countries, and does so for five Afrobarometer waves between 2008 and 2018 (Leininger et al., 2021). Nevertheless, some studies have attempted to circumvent this lack of long time-series data by using other indices originally conceived to measure other socioeconomic concepts. For example, Easterly et al. (2006), in their seminal work on the effects of social cohesion on institutions and economic growth, use two direct indicators of social cohesion, namely social trust and membership rates in organisations and civic participation, and two indirect measures, namely income distribution measures and ethnic fractionalisation. Similarly, Addison and Baliamoune-Lutz (2020) use the ethnic tensions index of the International Country Risk Guide database to examine the impact of social cohesion on foreign direct investment (FDI) inflows. While indirect measures of social cohesion, such as ethnic fractionalisation, may be useful proxies for social cohesion in studies of the effects of social cohesion on other socioeconomic variables, they are less relevant to a study of the determinants of social cohesion. This is because these indicators might themselves be deeper or intermediate determinants of social cohesion rather than being constituent elements of social cohesion. Moreover, they do not vary over time and thus do not reflect social cohesion responses to changes in the macroeconomic environment and policies, making meaningful econometric analysis of the determinants of social cohesion virtually impossible.

In this paper, I proxy social cohesion using data from the Indices of Social Development (ISD), which is hosted by the International Institute of Social Studies at Erasmus University Rotterdam, the Netherlands. Originally designed to be a measure of "social development", the ISD includes the following six dimensions: civic activism, participation in clubs and associations, intergroup cohesion, interpersonal safety and trust, gender equality and inclusion of minorities. However, we can see that, except for gender equality, five of the six dimensions of the ISD are indeed among the widely accepted dimensions of social cohesion according to most definitions and operationalisations of social cohesion (e.g., Easterly et al., 2006; Leininger et al., 2021; Bertelsmann Stiftung, 2017). A key advantage of the ISD dataset is that data are available every five years for the period 1990 to 2020 for more than 100 countries, allowing for meaningful macro-level analysis of the determinants of social cohesion.

Referring interested readers to the ISD website (ISD, 2022) and to Foa & Tanner (2012) for more details, I briefly describe here how each of the five ISD indices is constructed and how they relate to the concept of social cohesion.

1. **Interpersonal safety and trust:** Interpersonal safety and trust in the ISD dataset is developed primarily as a measure of the extent to which individuals can trust others in a society whom they have met for the first time (ISD, 2022). While this conceptual framework is consistent with most definitions of social trust in the social cohesion literature (e.g. Easterly et al., 2006; Leininger et al., 2021), ISD's operationalisation is, however, broader than that of the social cohesion literature. In particular, interpersonal safety and trust in the

ISD dataset not only includes measures of social trust from a wide variety of surveys, but other indicators of trustworthiness, such as reported levels of crime victimisation, and survey responses on feelings of safety and security in one's neighbourhood. It also uses data on incidence of homicide, and risk reports on the likelihood of physical attack, extortion, or robbery (ISD, 2022). In general, this indicator relies not only on perceptual data on social and institutional trust, as is often the case in the social cohesion literature (e.g. Easterly et al., 2006; Leininger et al., 2021), but additionally on actual incidences of crime and personal transgressions.

2. **Civic activism:** Civic activism in the ISD dataset refers to "the social norms, organisations, and practices which facilitate greater citizen involvement in public policies and decisions" (ISD, 2022). In terms of measurement, this category includes access to civic associations, engagement with the media, and participating in nonviolent demonstrations or petitions. In this way, civic activism is expected to help ensure accountability, transparency, and inclusiveness in public institutions. Unlike the concept of "cooperation for the common good" dimension of social cohesion, however, ISD's indicator of civic activism may not necessarily be a reflection of cooperation "for the common good" beyond one's own individual interests and "despite incentives for non-cooperation" (King, Samii, & Snilstveit, 2010; Leininger et al., 2021). Nevertheless, civic activism in the ISD context has many communalities with empirical measures of cooperation for the common good suggested in the social cohesion literature. For example, Leininger et al. (2021) measure cooperation for the common good using indicators such as membership rates in voluntary, non-religious associations or organisations, the degree of participation of citizens in civil society organisations (CSOs) and citizens' community engagement in raising an issue with the government. Thus, despite some theoretical differences between the definition of civic activism in the ISD dataset and the concept of cooperation for the common good as a building block of social cohesion, there is broader overlap when it comes to the actual measurement of the two concepts.

3. **Participation in clubs and associations:** The index "participation in clubs and associations" (in short, club membership) in the ISD data measures "the level of participation in voluntary activities conducted amongst individuals in the same locale, such as a village or neighbourhood" (ISD, 2022). To operationalise this concept, the ISD measures the extent of involvement in neighbourhood and associational life by looking at data on membership in local volunteer groups, time spent with relatives and in local clubs, attendance at community meetings, and involvement in development associations. Accordingly, this indicator largely resembles the "horizontal cooperation" component of social cohesion mentioned by Leininger et al. (2021). As a drawback of this measure, however, its operationalisation includes not only memberships that promote the common good, but also membership in any communal activity, including in a religious organisation or political party.

4. **Intergroup cohesion:** ISD's index of "intergroup cohesion" measures "the extent or absence of routinised conflict between ethnic, religious, or other social identity groups" (Foa & Tanner, 2012). Thus, while participation in clubs and associations measures cohesion within narrower local units, cross-group cohesion provides information on whether or not intra-group cohesion is accompanied by cohesion between different social groups. ISD's measure of intergroup cohesion is based on data on intergroup disparities, perceptions of being discriminated against, and feelings of distrust against members of other groups. Thus, this index appears to be largely consistent with the inclusive identity dimension of social cohesion (Leininger et al., 2021).

5. **Inclusion of minorities:** This indicator measures the degree of discrimination that minority groups such as indigenous peoples, migrants, refugees, or lower-caste groups face in a society (ISD, 2022). On the measurement side, this indicator focuses on whether minorities are discriminated against by managers, administrators, and community members in the allocation of jobs, benefits, and other social and economic resources. To this end, the index

is constructed using data on actual access to education and labour-force participation of minorities as well as expert evaluations and public opinion surveys on different biases against minorities. Therefore, similar to intergroup cohesion, this indicator also corresponds to the inclusive identity dimension of social cohesion discussed in Leininger et al. (2021).

Summary statistics and pairwise correlations among the five ISD indices mentioned above are presented in Table 1. As can be seen from the table, the values of these indices vary considerably between observations, with mean values lying around 0.5. It is a desirable feature of the dataset that it has considerable variation, since our goal is to explain differences in social cohesion in terms of differences in macro-level variables. These variations are also observable across time, as can be seen in the figures for some selected countries presented in Appendix A. For example, while China and Germany have experienced a generally downward trend in terms of interpersonal safety and trust in the period 1990 to 2020, the trend has been upward in Mexico and Nigeria.

The correlation coefficients documented in Panel B of Table 1 show that all five social cohesion indices are positively correlated and the correlations are in general statistically significant. Two patterns are particularly worth noticing from these correlations. First, the correlations lack statistical significance in two cases involving participation in clubs and associations, namely between club membership and trust as well as between club membership and group cohesion. This might be related to the fact that club membership data has the lowest number of observations of all the social cohesion indices. It could also reflect the fact that the measurement of participation in clubs and associations is so broad that it includes items that have little to do with social cohesion, including participation in religious and political organisations. Second, correlation coefficients are the highest when they involve inclusion: except with club membership, inclusion is correlated with the other three indices with a correlation coefficient of more than 0.5. This could perhaps imply that inclusiveness is at the core of social cohesion and that achieving inclusiveness might help achieve the other dimensions of social cohesion as well.

Table 1: Social cohesion indicators: Summary statistics and pairwise correlation

Panel A: Summary statistics					
Variable	Obs	Mean	SD	Min	Max
Trust	401	0.501	0.080	0.244	0.774
Civic	457	0.525	0.081	0.303	0.878
Club	291	0.503	0.078	0.138	0.709
Intergroup	410	0.551	0.106	0.204	0.789
Inclusion	309	0.484	0.062	0.284	0.725
Panel B: Pearson's Correlation Coefficient					
	Trust	Civic	Intergroup	Club	
Civic	0.467***				
	(400)				
Intergroup	0.234***	0.332***			
	(356)	(388)			
Club	0.084	0.192***	-0.016		
	(339)	(352)	(314)		
Inclusion	0.571***	0.720***	0.523***	0.052	
	(337)	(346)	(326)	(305)	

Note: *** p<0.01, ** p<0.05, * p<0.1. Numbers in parenthesis indicate the number of observations used to compute the correlation coefficients.

3.1.2 Potential macro-level determinants of social cohesion

As potential macro-level determinants of social cohesion, I consider inflation, government size, corruption, education, income inequality, globalisation and GDP per capita. Table 2 documents the definition and data sources of the variables as well as the summary statistics and pairwise correlations.

Table 2: Explanatory variables: Definition, data source, summary statistics and pairwise correlation

Panel A: Variable definition and data source		
Variable	Definition	Source
Inflation	Inflation measured as the percentage change in the CPI	The World Bank
Government size	Government consumption expenditure as a percentage of GDP	The World Bank
Political corruption	Political corruption index (D) (v2x_corr)	V-Dem (Varieties of Democracy)
Secondary education	Secondary school enrolment, percentage of all eligible children	UNESCO
Globalisation	KOF Globalisation Index	KOF Swiss Economic Institute (Gygli et al., 2019)
Gini coefficient	Gini coefficient, SWIID Version 9.3	Solt (2020)
GDP per capita	GDP per capita, constant 2015 dollars	The World Bank

Panel B: summary statistics					
Variable	Obs	Mean	SD	Min	Max
Inflation	457	29.076	232.439	-1.320	3373.800
Government size	457	16.244	4.919	1.150	34.460
Political corruption	457	0.402	0.302	0.002	0.960
Secondary education	457	78.182	32.612	5.385	159.160
Globalisation	457	62.092	16.793	23.837	90.668
Gini coefficient	427	0.378	0.091	0.212	0.633
GDP per capita	453	15208	19150	303	99609

Panel C: Pearson's correlation coefficient						
	Inflation	Government size	Political corruption	Secondary education	Globalisation	Gini coefficient
Government size	-0.283***					
Political corruption	0.353***	-0.469***				
Secondary education	-0.194***	0.384***	-0.518***			
Globalisation	-0.472***	0.381***	-0.628***	0.811***		
Gini coefficient	0.269***	-0.452***	0.643***	-0.453***	-0.578***	
GDP per capita	-0.392***	0.428***	-0.761***	0.789***	0.858***	-0.622***

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$ Summary statistics are calculated for all variables in levels, while correlations are calculated for variables in logarithmic forms.

The Pearson's correlation coefficients in Panel C of Table 2 show that many of the variables are significantly correlated with each other. In particular, GDP per capita is highly correlated with political corruption, secondary education, and globalisation, with correlation coefficients above 0.76, implying that our estimation may have difficulty disentangling the separate effects of these variables on social cohesion. In particular, we may not be able to identify the impact of economic development on social cohesion when the above growth determinants are included in the same regression. Moreover, secondary education is also highly correlated with KOF's measure of globalisation, with a correlation coefficient of 0.81, indicating that we cannot include both variables in the same regression.

Finally, data availability restricts our sample to a maximum of 92 countries. A list of these countries can be found in Appendix B. The biggest restriction comes from the lack of data for our dependent variables (ISD data). In particular, I have retained the countries for which at least three of the seven five-year data points for the dependent and the core explanatory variables (inflation, education, government size and inflation) are not missing.

3.2   Model specification and estimation strategy

The main goal of this paper is to empirically examine the macro-level determinants of social cohesion. To this end, we estimate the following empirical specification:

$$SoCo_{i,t} = \beta_0 + \beta_1 SoCo_{i,t-1} + \beta_2 X_{i,t} + Period_t + \mu_i + \varepsilon_{i,t} , t = 1,2,..T, i = 1,2,...N, (1)$$

where $SoCo_{i,t}$ represents one of the five social cohesion indices for country i and time period t. As social cohesion data are measured every five years for the period 1990–2020, I have seven data points per country and $t-1$ refers to the data observed five years ago. The lagged level of social cohesion ($SoCo_{i,t-1}$) is included in (1) to account for the fact that social cohesion is a persistent phenomenon in which current level depends significantly on past levels (Nunn & Wantchekon, 2011; Dragolov et al., 2016; Uslaner, 2002, 2019). As mentioned in the previous subsection, the explanatory variables $X_{i,t}$ include secondary education, inflation, globalisation, corruption control, rule of law, GDP per capita, income inequality as measured by the Gini coefficient and financial development. To minimise chances of endogeneity, the corresponding data for the explanatory variables stacked in $X_{i,t}$ are obtained as the five-year averages prior to the year the dependent variable $SoCo_{i,t}$ is measured. For instance, for the social cohesion data measured in 1990, the corresponding data for the explanatory variables are taken as the average values for the period 1985–1989. Hence, the explanatory variables are made "predetermined" by construction. Period and country fixed effects are denoted by $Period_t$ and μ_i, respectively. Finally, $\varepsilon_{i,t}$ represents the idiosyncratic error term.

With respect to the estimation strategy, I rely on the system GMM dynamic panel data estimator (Arellano & Bover, 1995; Blundell & Bond, 1998). This estimator has two desirable properties that make it more appropriate to estimate (1) than other panel data estimators. First, estimators that do not remove the country specific fixed effect μ_i (such as pooled OLS or the random effects estimator) lead to biased estimators, as the lagged dependent variable $SoCo_{i,t-1}$ will be correlated with μ_i by construction. Second, although the fixed effect (within) estimator could remove μ_i using the within transformation, it however introduces another correlation between the transformed idiosyncratic error term and the transformed lagged dependent variable, a problem known in the literature as the Nickell bias (Nickell, 1981). Third, it is highly plausible that most of the potential determinants of social cohesion I consider could also be endogenous to social cohesion, and finding valid instrumental variables for each of the potentially endogenous variables is a daunting, if not impossible, task. With a combination of first differencing and the use of internal instruments, the system GMM panel data estimator not only overcomes the Nickell bias associated with the lagged dependent variable, but also accounts for the potential endogeneity of other explanatory

variables (Arellano & Bover, 1995; Blundell & Bond, 1998). In what follows, I provide a brief intuitive explanation of how the system GMM estimator works and refer interested readers to Arellano & Bond (1991), Arellano & Bover (1995), Blundell & Bond (1998) and Roodman (2009a).

As a precursor to system GMM, I first discuss the difference GMM estimator. The latter estimator removes unobserved country-specific effects μ_i by applying the first differencing transformation to (1). However, this transformation introduces new correlations between the first-differenced error terms ($\varepsilon_{i,t}$-$\varepsilon_{i,t-1}$) and the first-differenced lagged dependent variable ($SoCo_{i,t-1} - SoCo_{i,t-2)}$ at $t - 1$. As a solution to this, and to account for potential endogeneity of other covariates, the difference GMM estimator uses lagged levels as instruments for the variables in first differences (e.g. uses $SoCo_{i,t-2}$ and deeper lags to instrument ($SoCo_{i,t-1} - SoCo_{i,t-2}$)). As the number of instruments will typically be higher than the number of equations, a GMM estimation is used to estimate the parameters ($\beta_0, \beta_1, \beta_2$). However, research has shown that the difference GMM estimator may lead to substantially biased and imprecise estimates in finite samples in some cases, for example, when the series are highly persistent (Arellano & Bover, 1995 and Blundell & Bond, 1998). The system GMM is suggested as a response to these particular limitations of the difference GMM estimator. In the system GMM estimator, Arellano & Bover (1995) and Blundell & Bond (1998) suggest augmenting the equation in first differences (i.e. difference GMM) with an equation in levels, where the latter are instrumented by first differences. Simulation evidence shows that this use of a system of equations – one in first differences and the other in levels – indeed reduces the biases and imprecision of the first difference GMM estimator.

From a practical point of view, several issues must be taken into account when applying the GMM system estimator. The first is related to the problem of "too many" instruments (Roodman, 2009a, b). If all eligible lag levels are used as instruments for the variables in first differences, it is easy to see that, for each variable to be instrumented, the number of instruments grows quadratically in the time dimension T. Thus, the number of instruments can easily be so large that there could be "too many" instruments. Known consequences of having "too many" instruments include that the instrument set could be invalid and that the Hansen test of over-identification can produce implausible high p-values. To solve this problem, we use only the first two lags of the variables in levels as instruments for the variables in first differences. This restriction is often sufficient to keep the number of instruments below the number of countries, a threshold often used by practitioners (Roodman, 2009a, b). Second, to make the system GMM estimator efficient, it is customary to use two-step GMM estimation. However, Windmeijer (2005) has shown that the two-step standard errors are downward biased, often exaggerating the statistical significance of coefficient estimates. As a solution to this, we employ the correction suggested by Windmeijer (2005) to minimise this bias. Finally, our estimation is performed using the "xtabond2" Stata package of (Roodman, 2009b).

4   Results

In this section, I present estimation results on the macro-level determinants of social cohesion. The results are documented in tables 3 to 7, with each table devoted to a particular dimension of social cohesion. In each table, I present system GMM estimates from six different specifications. As most explanatory variables often impact on different dimensions of social cohesion through their effects on economic prosperity and income inequality, I deliberately exclude the latter two variables in Specification (1). Hence, Specification (1) will be my preferred specification to examine the impacts of inflation, government size, corruption and education on dimensions of social cohesion. Specification (2) includes income inequality, while Specification (3) introduces KOF's measure of globalisation, although education has to be removed from Specification (3) because of its high correlation with globalisation (0.81). Specification (4) is another means of measuring the impact of globalisation on social cohesion when the Gini index is excluded from the regression. Specification (5) and (6) allow us to estimate the impact of GDP

per capita on social cohesion, with the two specifications differing on whether we control for income inequality. Other variables that are highly correlated with GDP per capita, such as political corruption, secondary education, and globalisation are excluded from both specifications. Unless and otherwise stated, the remarks on statistical significance refer to the 5% level.

4.1 Interpersonal safety and trust

Table 3 documents system GMM estimation results on the determinants of social cohesion as measured by the degree of interpersonal safety and trust in a country. As discussed in the previous section, *interpersonal safety and trust* in the ISD dataset measures the degree to which individuals can trust others in a society whom they have met for the first time (ISD, 2022). It is also noteworthy that this indicator relies not only on perception data, as is often the case in the social cohesion literature (e.g. Leininger et al., 2021); it also incorporates data on actual incidence of crime and personal transgressions.

Table 3: Determinants of interpersonal safety and trust

	(1)	(2)	(3)	(4)	(5)	(6)
Lag trust	0.508***	0.423***	0.427***	0.496***	0.408***	0.468***
	(0.049)	(0.042)	(0.039)	(0.039)	(0.042)	(0.039)
Inflation	-0.056***	-0.035**	-0.015	-0.023	-0.035**	-0.025
	(0.015)	(0.016)	(0.013)	(0.014)	(0.017)	(0.016)
Government size	-0.063	-0.074	-0.053	-0.029	-0.045	-0.015
	(0.057)	(0.059)	(0.062)	(0.049)	(0.052)	(0.047)
Political corruption	0.001	-0.002	0.001	0.009		
	(0.011)	(0.012)	(0.013)	(0.013)		
Secondary education	0.084**	0.014				
	(0.038)	(0.032)				
Gini coefficient		-0.254***	-0.219**		-0.222***	
		(0.075)	(0.089)		(0.076)	
Globalisation			0.094	0.226**		
			(0.070)	(0.102)		
GDP per capita					0.009	0.032***
					(0.012)	(0.012)
Observations	401	387	404	419	403	418
Countries	84	84	84	84	84	84
Period FE	Yes	Yes	Yes	Yes	Yes	Yes
AR (1) test	0.091	0.087	0.017	0.005	0.036	0.008
Hansen test (p-value)	0.152	0.335	0.353	0.140	0.157	0.023
Instruments	73	87	87	73	73	59

Note: This table reports the results of a set of panel regressions aimed at empirically identifying the determinants of interpersonal safety and trust as one dimension of social cohesion. The dependent variable is measured every 5 years and explanatory variables enter as 5-year non-overlapping averages. Estimation is done using system GMM, with the second and third lags used as instruments for variables in first differences. The set of explanatory variables includes the lag of interpersonal safety and trust, inflation, government consumption expenditure as a share of GDP, V-Dem's index of political corruption, secondary school enrolment rate, the Gini coefficient, KOF's globalisation index, and GDP per capita. The dependent variable and all explanatory variables, except for inflation, which contains negative and zero values, are used in their logarithmic forms. For inflation, we apply the inverse hyperbolic sine transformation $(\mathrm{asinh}(x) = \ln(x + \sqrt{x^2 + 1}))$ used in, for example, Arcand et al. (2015). The bottom panel of the table reports the standard system GMM specification tests. All specifications include period fixed effects. Robust (Windmeijer) standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Source: Author

As I begin the discussion of the estimated coefficients, as expected, the previous level of interpersonal safety and trust (in short, trust) is the most important predictor of the current trust level. In quantitative terms, a 10% increase in current level of trust leads to about 5.1% increase in trust levels after five years. This confirms the sticky nature of social cohesion and implies that it takes years for the existing level of social cohesion (whether high or low) to change significantly (Nunn & Wantchekon, 2011; Dragolov et al., 2016; Uslaner, 2002, 2019).

Results also show that rising inflation rates are detrimental for interpersonal safety and trust. Regarding impact magnitude, a 10% rise in the level of inflation (in comparison with the existing level) is associated with a 0.56% decline in the degree of interpersonal safety and trust in a country. While this effect may seem economically small at first glance, it is remarkable when one considers that social cohesion is a very persistent phenomenon that is mainly determined by long-term historical, cultural and geographic factors. This result can be explained by the fact that rising prices can lead to considerable dissatisfaction in society, as it affects different parts of society differently. In particular, inflation disproportionately harms the poor, borrowers and people who do not own real assets, such as land and houses, or indexed financial assets (Agénor, 2004). Moreover, high inflation is often an important syndrome of broader macroeconomic instability (Rodrik, 2004), which in turn could strain the social fabric of society.

The results for the impact on trust of education, as measured by secondary education enrolment rate, show that education significantly promotes interpersonal safety and trust as one dimension of social cohesion. This result is consistent with much of the existing literature on education and social cohesion (e.g., Heyneman, 2005; Easterly et al., 2006; Dragolov et al., 2016, 2018). In economic terms, the estimated coefficients imply that a 10% increase in rate of secondary school enrolment increases the level of trust by 0.84%.

The other significant determinant of interpersonal safety and trust is income inequality. In particular, a 10% increase in the Gini coefficient leads to a 2.5% decrease in the level of trust. Thus, the effect is not only statistically significant, but also economically large. This result corroborates much of the theoretical and empirical literature on the negative effect of inequality on various dimensions of social cohesion (Rothstein & Uslaner, 2005; Olivera, 2015; Goubin, 2018; Dragolov, 2016, 2018). In particular, it has been argued that while equality breeds a shared sense of purpose, inequality leads people to believe that they do not have much in common with others who are not like them (Rothstein & Uslaner, 2005; Langer et al., 2017; Uslaner, 2019). The result is also consistent with the empirical evidence on the detrimental effect of inequality on social trust (e.g., Rothstein & Uslaner, 2005) and political trust (e.g., Zmerli & Castillo, 2015).

Table 3 also shows that globalisation has a significantly positive impact on interpersonal safety and trust, although the effect is significant in Specification (4), but not in Specification (3). This change in statistical significance can be explained by noting two points related to the fact that the Gini coefficient is included in Specification (3) but not in Specification (4). First, as the log of the Gini coefficient and the log of the globalisation index are highly correlated, with a correlation coefficient of -0.58, in our estimation in Specification (3) it is difficult to disentangle the separate effects of the two variables. Second, inequality could be one channel through which globalisation affects social cohesion in general and trust in particular. Hence, the positive and significant impact of globalisation on interpersonal safety and trust observed in Specification (4) is remarkable. The estimated coefficients imply that a 10 percent increase in the degree of globalisation of a country leads to a 2.3% increase in the level of trust in the country. These results are in contrast to the view that globalisation erodes the social fabric of a society (e.g., Fischer (2012), but are consistent with recent evidence by Verhoeven and Ritzen (2022), who find that globalisation has increased trust in northern and western Europe.

In a similar manner to the effect of globalisation on trust, the effect of GDP per capita on trust also depends on whether the Gini coefficient is included in the specification (Specification (5))

or not (Specification (6)). Given that log GDP per capita and the log of the Gini coefficient are correlated with a correlation coefficient of -0.62, it is not unexpected that the estimated effect of GDP per capita on trust in not statistically significant in Specification (5). From Specification (6), we see that a 10% increase in GDP per capita raises interpersonal safety and trust by 0.32%. This result is consistent with the expectation that increasing economic well-being promotes social cohesion (e.g., Vergolini, 2011; Dragolov et al., 2016, 2018).

Contrary to my expectation, however, government spending as a share of GDP and corruption do not show a statistically significant impact on interpersonal safety and trust. This should not necessarily imply, however, that these factors are not relevant to interpersonal safety and trust. What we can say instead is that after controlling for a number of potential determinants, especially the lagged level of trust and income inequality, the effects of these variables on interpersonal safety and trust are not statistically significant in our data.

The results of the specification tests documented at the bottom of Table 3 confirm the validity of the instruments. As the AR (1) test implies that the second lag cannot be used as an instrument for the lagged dependent variable, I use the third and fourth lags to instrument it and second and third lags to instrument the other variables (Roodman, 2009a). The over-identification test also shows no evidence of invalid instruments at the 95% confidence level. Thus, the results from the dynamic panel data are fairly reliable and support the view that initial levels of trust, inflation, education, income inequality, globalisation and GDP per capita are important macro-level determinants of the trust dimension of social cohesion.

4.2   Civic activism

In Table 4, social cohesion is proxied by the degree of civic activism in a country. As discussed in the previous section, *civic activism* in the ISD dataset refers to "the social norms, organisations, and practices which facilitate greater citizen involvement in public policies and decisions" (ISD, 2022). In particular, it is important to keep in mind that despite the theoretical differences between the measure of civic activism I use in this study and the concept of cooperation for the common good as a building block of social cohesion (e.g., Leininger et al., 2021), there is much overlap between the two concepts when it comes to actually measuring them.

Table 4: Determinants of civic activism

	(1)	(2)	(3)	(4)	(5)	(6)
Lag civic	0.564***	0.528***	0.521***	0.539***	0.519***	0.590***
	(0.060)	(0.067)	(0.048)	(0.046)	(0.048)	(0.031)
Inflation	-0.027***	-0.017**	-0.011*	-0.017**	-0.007	-0.013
	(0.009)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)
Government size	0.021	0.029	-0.000	0.018	-0.005	0.003
	(0.042)	(0.032)	(0.020)	(0.019)	(0.023)	(0.034)
Political corruption	0.006	0.004	0.002	0.008		
	(0.009)	(0.009)	(0.008)	(0.007)		
Secondary education	0.038*	0.033*				
	(0.022)	(0.018)				
Gini coefficient		-0.044	-0.097**		-0.062*	
		(0.035)	(0.042)		(0.032)	
Globalisation			0.072*	0.112***		
			(0.041)	(0.041)		
GDP per capita					0.014**	0.007
					(0.007)	(0.005)
Observations	457	427	456	487	452	483
Countries	92	89	91	92	91	92
Period FE	Yes	Yes	Yes	Yes	Yes	Yes
AR (1) test	0.155	0.203	0.052	0.028	0.131	0.056
Hansen test (p-value)	0.153	0.370	0.462	0.143	0.221	0.048
Instruments	73	87	87	73	73	59

Note: This table reports the results of a set of panel regressions aimed at empirically identifying the determinants of civic activism as one dimension of social cohesion. Estimation is done using system GMM, with the second and third lags used as instruments. For further notes, see Table 3.

Source: Author

Results documented in Table 4 are qualitatively similar to those documented in Table 3, in terms of both the sign and statistical significance of the coefficients. For example, civic activism is a highly persistent phenomenon as prior levels of civic activism significantly determine current levels of civic activism in a country. This is consistent with the results documented in Table 3 (trust) and with the general view that both social cohesion and social capital are phenomena that change slowly (Nunn & Wantchekon, 2011; Uslaner, 2002, 2019).

As in Table 3, inflation negatively affects civic activism, with a 10% increase leading to a 0.27% decrease in the level of civic activism. Moreover, secondary education is positively associated with a country's level of civic activism. In economic terms, the estimated coefficients imply that a 10 percent increase in rate of secondary school enrolment increases the level of trust by just

0.38%. The Gini coefficient is also negatively related with civic activism, although the effect magnitude is weaker than in Table 3: a 10% increase in the Gini coefficient decreases civic activism by 0.97%.

As in Table 3, globalisation has a positive effect on civic activism. Specifically, a 10% increase in the KOF's globalisation index is associated with a 1.1% increase in the level of civic activism in a country. Although I am not aware of any study on the impact of globalisation on civic activism, these results are in contrast to the view that globalisation erodes the social fabric of a society (e.g., Fischer, 2012), but are consistent with recent evidence by Verhoeven & Ritzen (2022), who find that globalisation has increased trust in institutions in northern and western Europe.

Furthermore, as in Table 3, economic development shows a positive impact on civic activism, but in Specification (5) only. In Specification (6), where the Gini coefficient is excluded, GDP per capita does not show a significant effect on civic activism and the Hansen test does not support the validity of the instruments used in that regression, rendering the results reported in Specification (6) unreliable. The positive impact of GDP per capita on civic activism (Specification (5)) is consistent with much of the existing theoretical and empirical evidence on the role of economic prosperity in promoting social cohesion in a country (e.g. Vergolini, 2011; Dragolov et al., 2016, 2018). In particular, a country's success in economic development and poverty reduction could be an important motivating factor for broader citizen participation to achieve the common good. As in Table 3, government size and corruption do not show a significant impact on the degree of civic activism in a country.

In summary, the results in Table 4 underscore the important roles of inflation, education, income inequality, globalisation and GDP per capita in affecting civic activism, while the effects of government consumption and corruption lack statistical significance. Finally, except for Specification (6), the specification tests documented at the end of Table 4 confirm the validity of the instruments used and thus the results.

4.3 Participation in clubs and associations

The index *participation in clubs and associations* in the ISD data measures "the level of participation in voluntary activities conducted amongst individuals in the same locale, such as a village or neighbourhood" (ISD, 2022). To operationalise this concept, the ISD measures the extent of involvement in neighbourhood and associational life by looking at data on membership in local volunteer groups, time spent with relatives and in local clubs, attendance at community meetings, and involvement in development associations. Accordingly, this indicator largely resembles the "horizontal cooperation" component of social cohesion mentioned by (Leininger et al., 2021). A drawback of this measure, however, is that its operationalisation includes not only memberships that promote the common good, but also membership in any communal activity including religious organisations and political parties.

System GMM estimation results on the determinants of participation in clubs and associations are presented in Table 5. As in Tables 3 and 4, the lagged value of participation in clubs and associations is the most important determinant of current participation levels. Moreover, GDP per capita positively and significantly affects individuals' degree of participation in clubs and associations. Contrary to the results documented in Tables 3 and 4, however, secondary school enrolment rate has a significantly negative impact on participation in clubs and associations. One potential way of explaining this unexpected result could be the fact that more educated people tend to be spatially more mobile as they have to search larger areas to find a suitable job (Ham, Mulder, & Hooimeijer, 2001). The more mobile individuals are, the less likely they are to be connected to their local community and the less likely they are to participate in local clubs and associations.

Table 5: Determinants of participation in clubs and associations

	(1)	(2)	(3)	(4)	(5)	(6)
Lag club	0.366***	0.396***	0.427***	0.390***	0.493***	0.460***
	(0.042)	(0.053)	(0.053)	(0.050)	(0.066)	(0.048)
Inflation	0.009	0.006	0.005	0.005	0.002	-0.005
	(0.015)	(0.015)	(0.012)	(0.009)	(0.011)	(0.010)
Government size	-0.135**	-0.133***	-0.164***	-0.161***	-0.142***	-0.142***
	(0.058)	(0.049)	(0.041)	(0.044)	(0.037)	(0.036)
Political corruption	-0.076***	-0.062***	-0.063***	-0.071***		
	(0.017)	(0.021)	(0.023)	(0.025)		
Secondary education	-0.099**	-0.072*				
	(0.047)	(0.039)				
Gini coefficient		0.005	0.042		0.022	
		(0.081)	(0.077)		(0.062)	
Globalisation			0.014	-0.065		
			(0.133)	(0.141)		
GDP per capita					0.064***	0.054***
					(0.018)	(0.016)
Observations	291	282	297	306	295	304
Countries	70	70	70	70	70	70
Period FE	Yes	Yes	Yes	Yes	Yes	Yes
AR (1) test	0.560	0.573	0.720	0.681	0.617	0.567
Hansen test (p-value)	0.745	0.948	0.963	0.698	0.745	0.292
Instruments	84	100	100	84	84	68

Note: This table reports the results of a set of panel regressions aimed at empirically identifying the determinants of participation in clubs and associations as one dimension of social cohesion. Estimation is done using system GMM with the first and second lags used as instrument. For further notes, see Table 3.

Source: Author

Another unexpected result is the significantly negative effect of the ratio of government consumption to GDP on the degree of participation in clubs and associations. This ratio tends to increase as economies develop (Wagner's law) and reflects substantial spending on social security, social protection and infrastructure, factors that often work in the direction of stronger social cohesion. As such, I expected that the larger this ratio, the better the degree of cohesion in a country. The negative effect of government size on participation in clubs and associations could therefore be viewed either as a distinct feature of this specific component of social cohesion, or attributed to the very broad measurement of this dimension, which includes participation in religious organisations as well as time spent with relatives.

Unlike in Table 3 and 4, but consistent with my expectations, the effect of corruption on club participation is significantly negative and a 10% increase in corruption levels is associated with a 0.76% increase in participation in clubs and associations. This can be explained by the fact that corruption can make the majority of the population feel that the nation-building process is unfairly biased against their interests (Heyneman, 2004) and thus decrease the motivation of citizens to participate in clubs and associations.

Estimated effects of inflation, income inequality and globalisation on participation in clubs and associations are not statistically significant. Finally, the specification tests documented at the bottom of Table 5 confirm the validity of the instruments used for the GMM estimation.

4.4   Intergroup cohesion

The ISD index *inter-group cohesion* measures "the extent or absence of routinised conflict between ethnic, religious, or other social identity groups" (Foa & Tanner, 2012). Thus, while participation in clubs and associations measures cohesion within narrower local units, intergroup cohesion provides information on whether or not intra-group cohesion is accompanied by cohesion between different social groups. ISD's measure of intergroup cohesion is based on data on inter-group disparities, perceptions of being discriminated against, and feelings of distrust against members of other groups. As such, this index seems to be largely consistent with the inclusive identity dimension of social cohesion (Leininger et al., 2021).

Table 6 documents results on the determinants of the inter-group cohesion dimension of social cohesion. As in the previous tables, lagged social cohesion remains the most important determinant of current social cohesion: a 10 % increase in the degree of intergroup cohesion in this year is associated with a 3.0 % increase in intergroup cohesion after five years. Moreover, globalisation and GDP per capita continue to exert their significantly positive impact on social cohesion also when the latter is measured by intergroup cohesion.

In contrast to the results documented in the previous tables, but in line with the theoretical predictions discussed in Section 2, government size has a significant positive effect on intergroup cohesion. Noting that government size tends to increase as economies develop (Wagner's law) and implies substantial spending on social security, social protection and infrastructure, increasing government size is expected to be positively related with intergroup cohesion. In terms of effect magnitude, a 10% increase in the size of the government leads to a 0.57% increase in intergroup cohesion. This result, together with the positive effects of globalisation and GDP per capita on intergroup cohesion, implies that a prosperous economy, with the corresponding financial resources to fund infrastructure and social protection programmes, seems to be crucial for achieving intergroup cohesion.

Therefore, although estimated effects for some of the variables remain statistically insignificant, Table 6 underscores the important role of government consumption expenditure, globalisation and GDP per capita in fostering intergroup cohesion. Moreover, the specification tests support the validity of the instruments used for the GMM estimation.

Table 6: Determinants of intergroup cohesion

	(1)	(2)	(3)	(4)	(5)	(6)
Lag intergroup cohesion	0.301***	0.297***	0.332***	0.336***	0.298***	0.315***
	(0.089)	(0.102)	(0.079)	(0.072)	(0.075)	(0.073)
Inflation	-0.007	-0.005	0.003	-0.001	-0.005	-0.004
	(0.007)	(0.008)	(0.007)	(0.006)	(0.009)	(0.007)
Government size	0.057*	0.065*	0.074***	0.062***	0.033	0.035*
	(0.032)	(0.035)	(0.025)	(0.022)	(0.027)	(0.021)
Political corruption	-0.010	-0.006	0.006	0.009		
	(0.008)	(0.009)	(0.012)	(0.009)		
Secondary education	0.017	0.015				
	(0.019)	(0.019)				
Gini coefficient		-0.027	-0.007		-0.066	
		(0.058)	(0.057)		(0.045)	
Globalisation			0.094*	0.124**		
			(0.053)	(0.061)		
GDP per capita					0.011	0.018**
					(0.008)	(0.008)
Observations	410	388	415	438	414	437
Number of panel	89	88	88	89	88	89
Period FE	Yes	Yes	Yes	Yes	Yes	Yes
AR (1) test	0.559	0.577	0.757	0.751	0.759	0.738
Hansen test (p-value)	0.242	0.677	0.578	0.157	0.324	0.074
Instruments	84	100	100	84	84	68

Note: This table reports the results of a set of panel regressions aimed at empirically identifying the determinants of intergroup cohesion as one dimension of social cohesion. Estimation is done using system GMM, with the first and second lags used as instrument. For further notes, see Table 3.

Source: Author

Inclusion of minorities

As the last measure of social cohesion, Table 7 presents system GMM results on the determinants of social cohesion measured by *inclusion of minorities*. As discussed in the previous subsection, this indicator measures how minority groups, such as indigenous peoples, migrants, refugees, or lower-caste groups, are discriminated against in a society, for example, in the distribution of jobs, benefits, and other social and economic resources (ISD, 2022). Therefore, similar to intergroup cohesion, this indicator also corresponds to the inclusive identity dimension of social cohesion discussed in Leininger et al. (2021).

Table 7: Determinants of inclusion of minorities

	(1)	(2)	(3)	(4)	(5)	(6)
Lag inclusion	0.263***	0.242***	0.240***	0.258***	0.249***	0.280***
	(0.045)	(0.052)	(0.043)	(0.037)	(0.043)	(0.038)
Inflation	-0.009	-0.010	-0.006	-0.007	-0.012*	-0.014**
	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Government size	0.026	0.022	0.001	0.011	0.015	0.010
	(0.029)	(0.025)	(0.016)	(0.015)	(0.018)	(0.020)
Political corruption	-0.014**	-0.010	-0.005	-0.011*		
	(0.006)	(0.007)	(0.007)	(0.006)		
Secondary education	0.042*	0.045*				
	(0.025)	(0.023)				
Gini coefficient		-0.039	-0.072*		-0.077**	
		(0.048)	(0.043)		(0.037)	
Globalisation			0.141***	0.139***		
			(0.050)	(0.043)		
GDP per capita					0.022***	0.030***
					(0.008)	(0.005)
Observations	309	299	308	319	307	318
Number of panel	72	72	72	72	72	72
Period FE	Yes	Yes	Yes	Yes	Yes	Yes
AR (1) test	0.177	0.236	0.222	0.167	0.254	0.183
Hansen test (p-value)	0.793	0.968	0.965	0.721	0.610	0.289
Instruments	84	100	100	84	84	68

Note: This table reports the results of a set of panel regressions aimed at empirically identifying the determinants of inclusion of minorities as one dimension of social cohesion. Estimation is done using system GMM with the first and second lags used as instrument. For further notes, see Table 3.

Source: Author

Results documented in Table 7 are largely similar to most of the main results documented in the previous four tables, except for participation in clubs and associations (Table 5). This is consistent with the fact that inclusion of minorities has a particularly high level of correlation with other dimensions of social cohesion (except for participation in clubs and associations), as documented in Table 1. To mention some of the results, lagged level of inclusion is still the most important determinants of social cohesion, also when the latter is measured by inclusion of minorities. Moreover, education, globalisation, and GDP per capita have a significantly positive effect on the degree of inclusion of minorities in a society, while corruption and income inequality have a significantly negative effect. However, estimated coefficients for inflation and government size are not statistically significant. Finally, the specification tests documented at the bottom of Table 7 confirm the validity of the instruments used for the GMM estimation.

4.5 Summary of results

From the results documented in Tables 3 to 7, the following main patterns emerge:

1. Social cohesion is a persistent phenomenon: the previous level of social cohesion is the most important determinant of the current level of social cohesion.

2. Inflation has a generally negative impact on social cohesion, although the impact is found to be statistically significant for trust and civic activism only.

3. Education has a positive impact on all dimensions of social cohesion considered, except for participation in clubs and associations.

4. GDP per capita has a consistently positive effect on the various dimensions of social cohesion.

5. Income inequality has a robustly negative effect on different dimensions of social cohesion.

6. Globalisation has been shown to have a generally positive impact on the various dimensions of social cohesion considered.

7. The impact of government consumption on social cohesion depends strongly on the type of indicator considered: insignificant for trust, civic activism, and inclusion; negative for participation in clubs and associations; and positive for intergroup cohesion.

8. Although corruption generally has a negative effect on social cohesion, the effect is statistically significant for participation in clubs and associations and inclusion of minorities only.

5 Conclusion

In this paper, I investigated the macro-level determinants of social cohesion using an unbalanced panel of up to 92 economies worldwide for the period 1990 to 2020. Although the Indices of Social Development (ISD, 2022) were originally developed to measure social development, I have argued that five of the six indices, i.e. trust, civic activism, participation in clubs and associations, inclusion of minorities, and intergroup cohesion, have considerable overlap with the various dimensions and indicators of social cohesion known in the literature. Except for participation in clubs and associations, which also has the lowest number of observations, all other ISD indices that I use to measure social cohesion are significantly and positively correlated with each other. As potential macro-level determinants of social cohesion, I considered inflation, government size, control, secondary school enrolment rate as a measure of educational achievement, Solt's (2020) Gini coefficient as a measure of income inequality, KOF's index of globalisation (Gygli et al., 2019) and GDP per capita. As an estimation strategy, I employed the system GMM estimator for dynamic panel data. This estimator removes unobserved country-specific effects by means of the first differencing transformation, and addresses remaining endogeneity concerns using internal instruments.

My results confirm that social cohesion is a highly sticky phenomenon, with current levels largely determined by past levels. Still, several macro-level variables have been found to determine the level of social cohesion. On the one hand, the levels of education, government size, globalisation and economic development in general have significant and positive effects on social cohesion. On the other hand, inflation and income inequality have a significantly negative effect on social cohesion. It is also noteworthy that while the statistical significance of the estimated effects of macro-level variables on social cohesion may differ across dimensions, the signs of the effects

are often similar, except for participation in clubs and associations. A distinctive feature of the results on determinants of participation in clubs and associations is that education and government size show a significantly negative impact.

The results of this study have several policy implications. First, inflation, despite being one of the least considered macroeconomic determinants of social cohesion in the literature, has been found to be a significantly negative determinant of social cohesion in two of the five social cohesion indicators considered. Given the very high inflation rates currently seen around the world, due in part to the war in Ukraine and supply chain disruptions caused by Covid-19 restrictions, it is important that policy-makers work to curb inflation rates and compensate vulnerable populations who suffer disproportionately from inflation.

Second, my findings also support repeated calls for attention to the education sector as a means of strengthening social cohesion (Easterly et al. 2006; European Commission, 2016). Third, by empirically demonstrating the significant role of corruption in undermining social cohesion, this paper underscores the multifaceted benefits of corruption control, including promoting economic growth (e.g., Mo, 2001), stimulating firm growth (e.g. Tran, Walle & Herwartz, 2020), and reducing macroeconomic volatility (e.g. Struthmann, Walle & Herwartz, 2022). Fourth, my results reinforce existing evidence that income inequality harms social cohesion. As income inequality has been increasing worldwide in the past few decades (e.g. Chancel et al., 2022), policy-makers should try to reduce it, not least because it harms the cohesion of a society.

Fifth, unlike the popular belief that globalisation is eroding social cohesion (e.g. Schiefer & Van der Noll, 2017) and earlier evidence on the negative effect of globalisation on trust in institutions, my results, on the contrary, show a consistently positive effect of globalisation on diverse dimensions of social cohesion. My results reinforce an emerging body of evidence that globalisation is at least irrelevant for social cohesion (e.g., Dragolov et al., 2016; 2018) and at best a positive contributor to social cohesion (Verhoeven & Ritzen (2022). Therefore, my results suggest policy actions that enable globalisation and the accompanying economic growth and increase in government expenditure in social welfare.

Sixth, my results on the positive impact of GDP per capita on social cohesion also highlight the important role of economic well-being in promoting social cohesion. Therefore, my findings also imply that global efforts to achieve the Sustainable Development Goals (SDGs) should be strengthened as a means of promoting social cohesion.

Finally, the scope of this paper does not allow me to examine transmission mechanisms through which each factor affects social cohesion. Future studies (cross-national or country-specific) that focus on a single factor will therefore make a significant contribution to our understanding of the mechanisms by which each key determinant is associated with social cohesion.

References

Acemoglu, D. (2012). Introduction to economic growth. *Journal of Economic Theory, 147*(2), 545–550.

Addison, T., & Baliamoune-Lutz, M. (2020). Does aid stimulate foreign direct investment? The role of social cohesion. *Economics Bulletin, 40*(3), 2289–2296.

Agénor, P.-R. (2004). Macroeconomic adjustment and the poor: Analytical issues and cross-country evidence. *Journal of Economic Surveys*, *18*(3), 351–408.

Alesina, A., & Perotti, R. (1994). The political economy of growth: A critical survey of the recent literature. *The World Bank Economic Review, 8*(3), 351–371.

Arcand, J.L., Berkes, E., & Panisza, U. (2015). Too much finance? *Journal of Economic Growth, 20*(2), 105–148.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies, 58*(2), 277–297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29–51.

Balasubramanian, P., Burchi, F., & Malerba, D. (2023). Does economic growth reduce multidimensional poverty? Evidence from low-and middle-income countries. *World Development, 161,* 106119.

Baltagi, B.H., Demetriades, P.O., & Law, S.H. (2009). Financial development and openness: Evidence from panel data. *Journal of Development Economics, 89*(2), 285–296.

Becker, S.O., Boeckh, K., Hainz, C., & Woessmann, L. (2016). The empire is dead, long live the empire! Long-run persistence of trust and corruption in the bureaucracy. *The Economic Journal*, *126*(590), 40–74.

Bertelsmann Stiftung. (n.d.) Social cohesion radar. Retrieved from: https://www.bertelsmann-stiftung.de/en/our-projects/germany-and-asia/social-cohesion-asia

Bertelsmann Stiftung. (Ed.). (2017). *What holds Asian societies together? Insights from the Social Cohesion Radar*. Gütersloh: Verlag Bertelsmann Stiftung.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143.

Brewer, K.B., Oh, H., & Sharma, S. (2014). "Crowding in" or "crowding out"? An examination of the impact of the welfare state on generalised social trust. *International Journal of Social Welfare, 23*(1), 61–68.

Buttrick, N.R. & Oishi, S. (2017). The psychological consequences of income inequality. *Social and Personality Psychology Compass, 11*(3), e12304.

Capshaw, N.C. (2005). The social cohesion role of the public sector. *Peabody Journal of Education*, *80*(4), 53–77.

Chan, J., To, H.-P., & Chan, E. (2006). Reconsidering social cohesion: Developing a definition and analytical framework for empirical research. *Social Indicators Research, 75*(2), 273–302.

Chancel, L., Piketty, T., Saez, E., Zucman, G., et al. (2022). *World Inequality Report 2022*, World Inequality Lab.

Clark, W. C. (2000). Environmental globalisation. In J. S. Nye & J. D. Donahue (Eds.), *Governance in a globalizing world* (pp. 86–108). Brookings Institution Press.

Dollar, D., & Kraay, A. (2002). Growth is good for the poor. *Journal of Economic Growth, 7*(3), 195–225.

Dragolov, G., Ignácz, Z.S., Lorenz, J., Delhey, J., Boehnke, K., & Unzicker, K. (2016). Macro-level causes and effects of social cohesion. In *Social cohesion in the Western world* (pp. 59–77). Springer.

Dragolov, G., Koch, M., & Larsen, M. (2018). Macro-level determinants and consequences of social cohesion in Asia. In Bertelsmann Stiftung (Ed.), *What holds Asian societies together? Insights from the Social Cohesion Radar* (pp. 97–136). Gütersloh: Verlag Bertelsmann Stiftung

Dreher, A. (2006). Does globalisation affect growth? Evidence from a new index of globalisation. *Applied Economics*, *38*(10), 1091–1110.

Dreher, A., Gaston, N., & Martens, W.J.M. (2010). *Measuring globalisation: Gauging its consequences*. New York, NY: Springer.

Easterlin, R. A. (2015). Happiness and economic growth – the evidence. In W. Glatzer, L. Camfield, V. Møller, & M. Rojas (Eds.), *Global handbook of quality of life* (pp. 283–299). Dordrecht: Springer.

Easterly, W., Ritzen, J., & Woolcock, M. (2006). Social cohesion, institutions, and growth. *Economics and Politics*, *18*(2), 103–120.

European Council. (2016). Communication from the Commission to the Council and to the European Parliament. Efficiency and equity in European education and training systems (SEC(2006) 1096). Retrieved from
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52006DC0481&from=EN

Fischer, J.A.V. (2012). *Globalisation and political trust* (MPRA Paper No. 36327). Munich: University Library of Munich, Germany.

Foa, R., & Tanner, J. (2012). *Methodology of the indices of social development* (ISD Working Paper Series 2012-04). The Hague: International Institute of Social Studies (ISS), Erasmus University Rotterdam.

Gijsberts M (2002). The legitimation of income inequality in state-socialist and market societies. *Acta sociologica, 45*, 269–285.

Gilley, B. (2006). The determinants of state legitimacy: Results for 72 countries. *International Political Science Review, 27*(1), 47–71.

Green, A., & Janmaat, J.G. (2011). *Regimes of social cohesion: Societies and the crisis of globalisation*. Basingstoke, UK; New York, NY: Palgrave Macmillan.

Green, A., & Preston, J. (2001). Education and social cohesion: Recentering the debate. *Peabody Journal of Education*, *76*(3–4), 247–284.

Green, A., Preston, J., & Janmaat, J.G. (2007). *Education, equality and social cohesion: A comparative analysis*. Basingstoke, UK; New York: Palgrave Macmillan.

Goubin, S. (2018). Is inequality a latent construct? An assessment of economic inequality indicators and their relation with social cohesion in Europe. *Social Indicators Research, 136*(1), 21–40.

Gygli, S. Haelg, F., Potrafke, N., & Sturm, J-E. (2019): The KOF Globalisation Index – Revisited, *Review of International Organizations, 14*(3), 543–574.

Ham, M. van, Mulder, C.H., & Hooimeijer, P. (2001). Spatial flexibility in job mobility: Macrolevel opportunities and microlevel restrictions. *Environment and Planning A: Economy and Space, 33*(5), 921–940.

Helliwell, J.F., & Putnam, R.D. (2007). Education and social capital. *Eastern Economic Journal, 33*(1), 1–19.

Heyneman, S. P. (2000). From the party/state to multiethnic democracy: Education and social cohesion in Europe and Central Asia. *Educational Evaluation and Policy Analysis, 22*(2), 173–191.

Heyneman, S. P. (2004). Education and corruption. *International Journal of Educational Development*, *24*(6), 637–648.

Heyneman, S. P. (2005). Student background and student achievement: What is the right question? *American Journal of Education, 112*(1), 1–9.

Irmen, A., & Kuehnel, J. (2009). Productive government expenditure and economic growth. *Journal of Economic Surveys, 23*(4), 692–733.

ISD. (2022). *Indices of Social Development.* Retrieved from https://isd.iss.nl

King, E., Samii, C., & Snilstveit, B. (2010). Interventions to promote social cohesion in sub-Saharan Africa. *Journal of Development Effectiveness, 2*(3), 336–370.

Landau, D. (1983). Government expenditure and economic growth: a cross-country study. *Southern Economic Journal,* 783–792.

Langer, A., Stewart, F., Smedts, K., & Demarest, L. (2017). Conceptualising and measuring social cohesion in Africa: Towards a perceptions-based index. *Social Indicators Research*, *131*(1), 321–343.

Leininger, J., Burchi, F., Fiedler, C., Mross, K., Nowack, D., von Schiller, A. . . .Ziaja, S. (2021). *Social cohesion: A new definition and a proposal for its measurement in Africa* (Discussion Paper 31/2021). Bonn: German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE). https://doi.org/10.23661/dp31.2021.v1.1

Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics, 46*(1), 31–77.

Levine, R., & Renelt, D. (1992). A sensitivity analysis of cross-country growth regressions. *The American Economic Review*, 942-963.

Linde, J., & Erlingsson, G.Ó. (2013). The eroding effect of corruption on system support in Sweden. *Governance, 26*(4), 585–603.

Mankiw, N.G. (2020). *Principles of macroeconomics*. Cengage Learning.

Mickelson, R. A., & Nkomo, M. (2012). Integrated schooling, life course outcomes, and social cohesion in multiethnic democratic societies. *Review of Research in Education, 36*(1), 197–238.

Mo, P.H. (2001). Corruption and economic growth. *Journal of Comparative Economics, 29*(1), 66–79.

Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica*, *49*(6), 1417.

Nunn, N., & Wantchekon, L. (2011). The slave trade and the origins of mistrust in Africa. *American Economic Review, 101*(7), 3221–3252.

OECD (Organisation for Economic Co-operation and Development). (2011). *Perspectives on global development 2012: Social cohesion in a shifting world*. Paris: OECD Publishing.

Olivera, J. (2015). Changes in inequality and generalized trust in Europe. *Social Indicators Research*, 124(1), 21–41.

Potrafke, N. (2015). The evidence on globalisation. *The World Economy, 38*(3), 509–552.

Richey, S. (2010). The impact of corruption on social trust. *American Politics Research, 38*(4), 676–690.

Ritzer, G., & Dean, P. (2015). *Globalization: A basic text*. John Wiley & Sons.

Rodrik, D. (2004). Development strategies for the twenty-first century. In A. Kohsaka (Ed.), *New development strategies: Beyond the Washington consensus* (pp. 13–38). Palgrave Macmillan.

Roodman, D. (2009a). A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics, 71*(1), 135–158.

Roodman, D. (2009b). How to do xtabond2: An introduction to difference and system GMM in Stata, *Stata Journal, 9*(1), 86–136.

Rothstein, B., & Uslaner, E.M. (2005). All for all: Equality, corruption, and social trust. *World Politics, 58*(1), 41–72.

Sacks, D.W., Stevenson, B., & Wolfers, J. (2010). *Subjective well-being, income, economic development and growth* (No. w16441). National Bureau of Economic Research.

Schiefer, D., & Van der Noll, J. (2017). The essentials of social cohesion: A literature review. *Social Indicators Research, 132*(2), 579–603.

Solt, F. (2020). Measuring income inequality across countries and over time: The standardized world income inequality database. *Social Science Quarterly, 101*(3), 1183–1199. SWIID Version 9.3.

Soltvedt, T. (2022). 101 countries witness rise in civil unrest in last quarter. *Verisk Maplecroft*, 1 September 2022. Retrieved from https://www.maplecroft.com/insights/analysis/101-countries-witness-rise-in-civil-unrest-in-last-quarter-worst-yet-to-come-as-socioeconomic-pressures-build/

Sommer, C. (2019). *Social cohesion and economic development: Unpacking the relationship* (Briefing Paper 16/2019). Bonn: German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE). https://doi.org/10.23661/bp16.2019

Spolaore, E., & Wacziarg, R. (2013). How deep are the roots of economic development? *Journal of Economic Literature, 51*(2), 325–369.

Stewart, F. (Ed.). (2008). *Horizontal inequalities and conflict: Understanding group violence in multiethnic societies*. London: Palgrave.

Struthmann, P., Walle, Y.M., & Herwartz, H., (2022). Corruption control, financial development and growth volatility: Cross-country evidence. *Journal of Money, Credit and Banking* (forthcoming).

Todaro, M.P., & Smith, S.C. (2020). *Economic development*. London: Pearson UK.

Touraine, A. (2000). *Can we live together? Equality and difference*. Stanford University Press.

Tran, V.T., Walle, Y. M., & Herwartz, H. (2020). The impact of local financial development on firm growth in Vietnam: Does the level of corruption matter? *European Journal of Political Economy, 62,* 101858.

United Nations. (2015). *The Millennium Development Goals report*. New York: United Nations.

Uslaner, E.M. (2019). *The historical roots of well-being and social cohesion* (UNDP Human Development Report background paper 1-2019). New York: United Nations.

Vergolini, L. (2011). Social cohesion in Europe: How do the different dimensions of inequality affect social cohesion? *International Journal of Comparative Sociology, 52*(3), 197–214.

Verhoeven, L., and Ritzen, J. (2022). *Globalisation increased trust in northern and western Europe between 2002 and 2018* (MERIT Working Papers No. 2022-005). United Nations University – Maastricht Economic and Social Research Institute on Innovation and Technology (MERIT).

Vrolijk, K. (2022). *How does globalization affect social cohesion?* http://dx.doi.org/10.2139/ssrn.4096851

Walkenhorst, P., & Unzicker, K. (2018). Introduction: What holds Asian societies together? In Bertelsmann Stiftung (Ed.), *What holds Asian societies together? Insights from the social cohesion radar* (pp. 13–28). Gütersloh: Verlag Bertelsmann Stiftung.

Wagner, A. (1890). *Finanzwissenchaft*. Leipzig: Winter, C. F.

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics, 126*(1), 25–51.

World Bank. (2012). *World Development Report 2013: Jobs*. Washington, DC: Author.

Wu, S.Y., Tang, J.H., & Lin, E.S. (2010). The impact of government expenditure on economic growth: How sensitive to the level of development? *Journal of Policy Modeling, 32*(6), 804–817.

Yang, H., & Zhao, D. (2015). Performance legitimacy, state autonomy and China's economic miracle. *Journal of Contemporary China, 24*(91), 64–82.

Yang, J., Dong, C., & Chen, Y. (2021). Government's economic performance fosters trust in government in China: Assessing the moderating effect of respect for authority. *Social Indicators Research, 154*(2), 545–558.

Zergawu, Y.Z., Walle, Y.M., & Giménez-Gómez, J.M. (2020). The joint impact of infrastructure and institutions on economic growth. *Journal of Institutional Economics, 16*(4), 481–502.

Zmerli, S., & Castillo, J.C. (2015). Income inequality, distributive fairness and political trust in Latin America. *Social Science Research, 52*, 179–192.

Appendix

## Appendix A: Trends in social cohesion (selected countries)

Figure A 1: Trends in interpersonal safety and trust
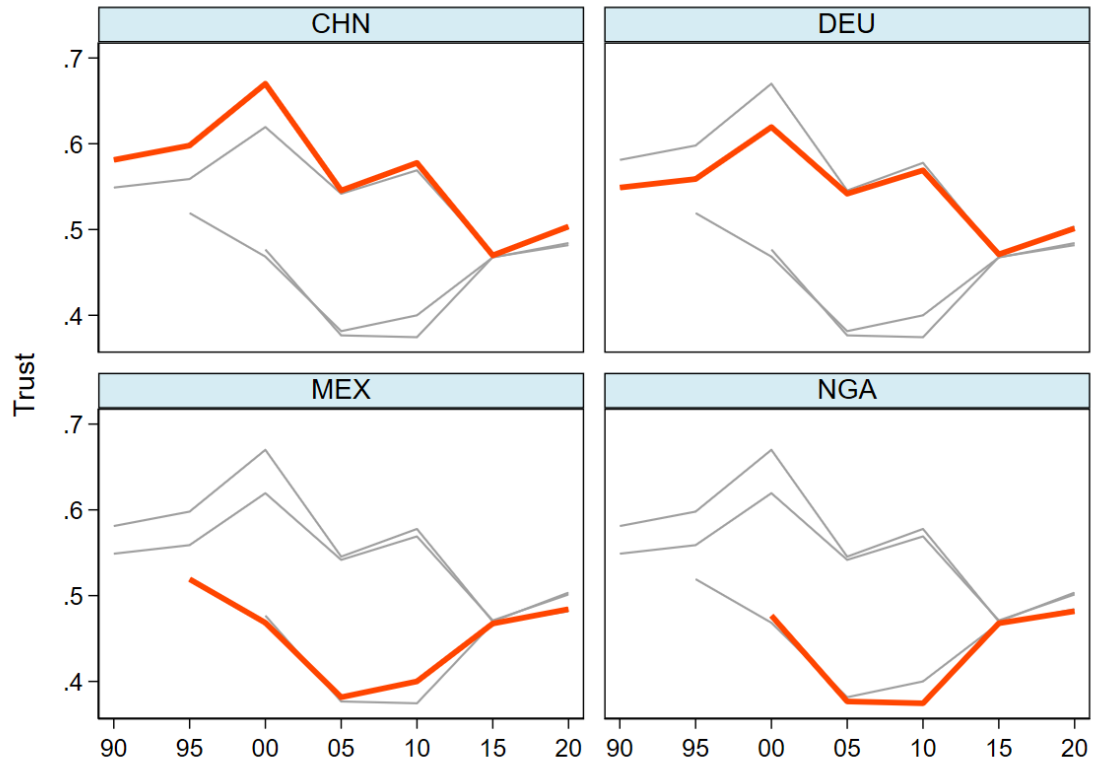
Note: CHN, DEU, MEX and NGA represent, respectively, China, Germany, Mexico and Nigeria. The bold red lines refer to the trends in the country in question, while the thin grey lines represent the development in the other three countries.
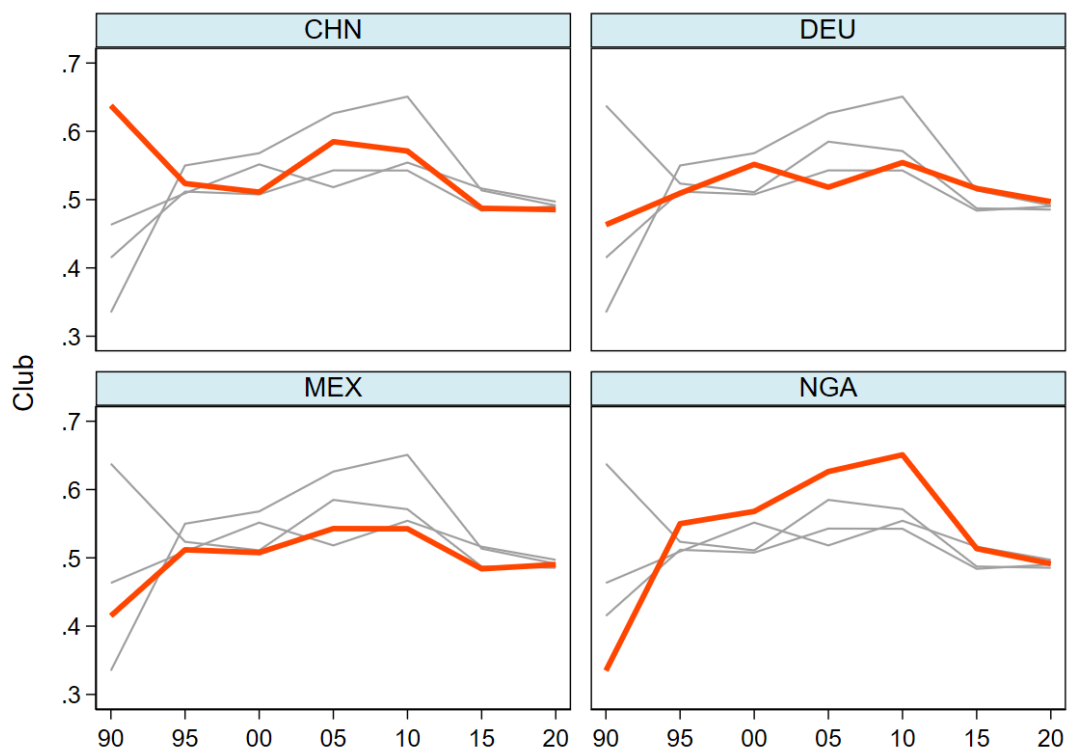
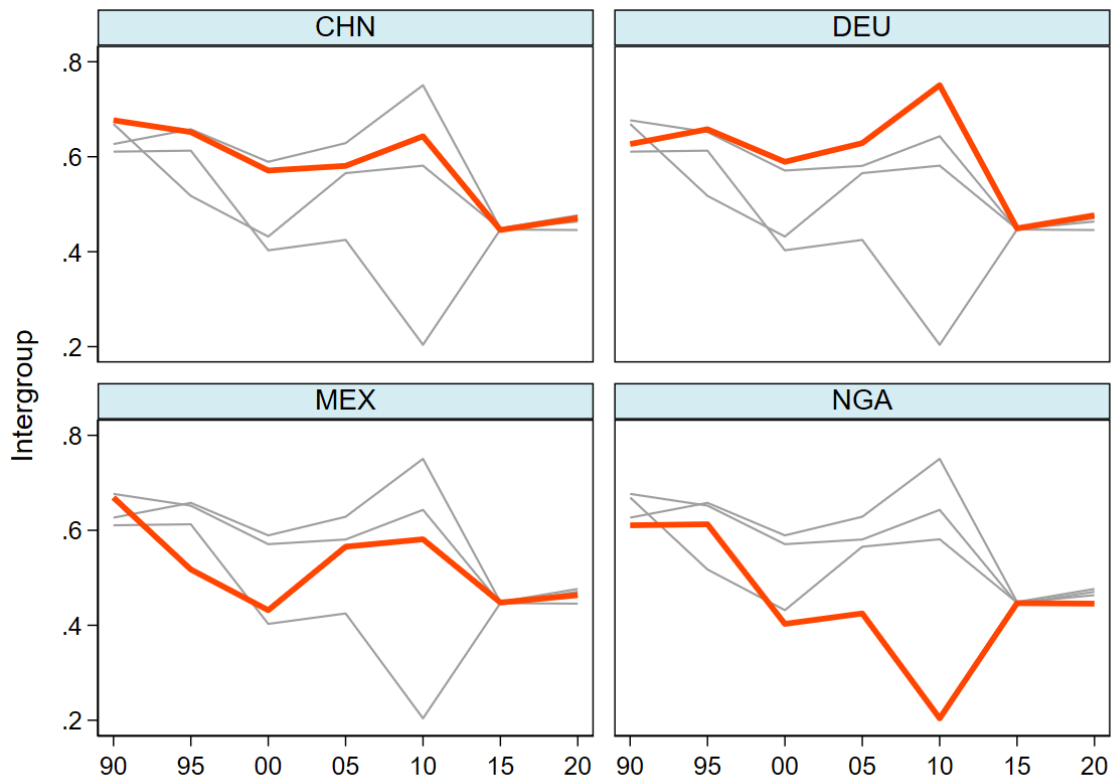Source: Author

Figure A2: Trends in civic activism
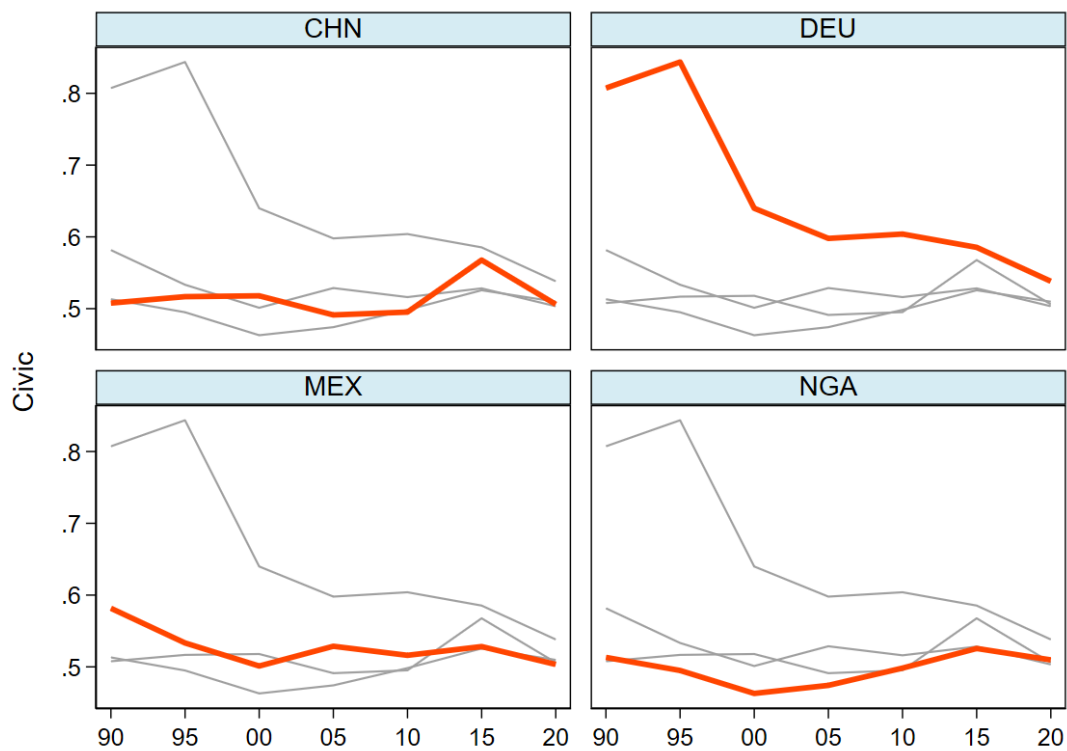
Figure A3: Trends in participation in clubs and associations

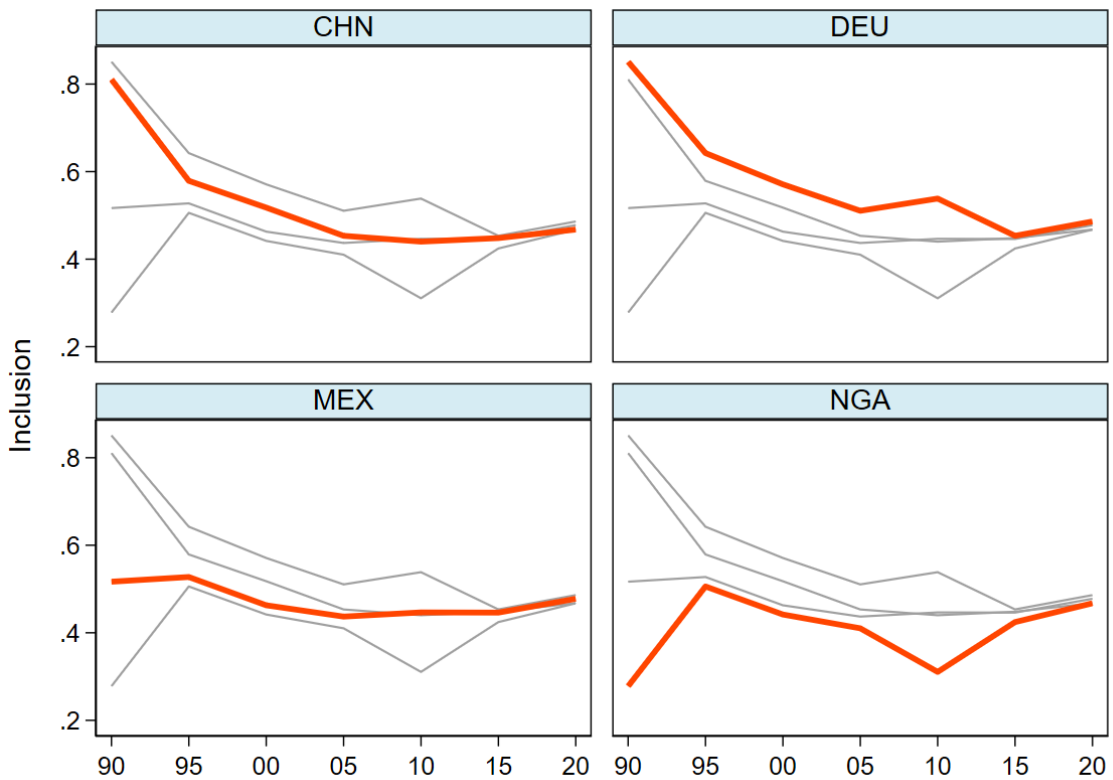**Figure A4: Trends in intergroup cohesion**

Source: Author

Figure A5: Trends in inclusion of minorities

Source: Author

Appendix B: List of countries covered by the study

Albania, Algeria, Armenia, Austria, Bangladesh, Barbados, Belarus, Belgium, Bhutan, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cameroon, Canada, Chad, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Eswatini, Fiji, Finland, France, Gabon, Georgia, Germany, Ghana, Greece, Guatemala, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Italy, Jamaica, Japan, Jordan, Kenya, Kuwait, Latvia, Lithuania, Luxembourg, Madagascar, Malaysia, Mali, Malta, Mauritius, Mexico, Mongolia, Morocco, Netherlands, New Zealand, Niger, Nigeria, Norway, Panama, Peru, Philippines, Poland, Portugal, Qatar, Rwanda, Senegal, Slovenia, South Africa, Spain, Sudan, Sweden, Switzerland, Tanzania, Thailand, Togo, Tunisia, Uganda, Ukraine, United Kingdom, United States, Uruguay, Vanuatu