Extended Abstract:

Making resilience useful for the social sciences and for policy-making: A theoretical framework and empirical analysis on the multi-dimensional, multi-level, and interacting determinants of individuals' resilience

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Abstract

Due to structural change and connected threats of recurrent and difficult-to-address crises, both inducing severe disturbances to societies and eventually to their citizens, policy-makers and scientists alike have widely acknowledged the importance of strengthening individuals' resilience. Previous social science literature using the concept was however criticized for ambivalent conceptualization and limited use for policy-driven change. We aim at changing this by, first, identifying the determinants of an individual's resilience through a theoretical framework which, second, conceptualizes resilience in terms of empirically testable life-course capitals, which help the individual to maintain desired outcomes by meeting changed resource needs and reduced access when facing disturbances. Third, we argue that life-course capitals are multi-dimensional and multi-level – including not only an individual's economic and human capital, but also her social capital and received support from public institutions ("institutional capital") – and that determinants interact as substitutes. Our empirical analysis employs multi-level models on longitudinal individual level data on 21,521 individual from 22 European countries during the COVID-19 pandemic – a major shock for various life-course capitals – and country level data measuring individuals institutional capital. We find that, as hypothesized, all life-course capital variables – lower economic arrears, housing insecurity, education, social inclusion, public social expenditure, and government effectiveness – are positively associated with an individual's resilience. In addition, there seems to be a tendency to substitution, particularly between economic capital and public spending but also between the latter and government effectiveness. Human and social capital, instead, seem to act complementary.

1 Introduction

Resilience has become a buzzword for politicians, policy-makers and commentators alike after recent crises, above all the Great Recession and the COVID-19 pandemic, have illustrated the vulnerability of industrialized countries. Structural transitions such as technological change, the transformation of the labor market, globalization, and climate change have induced challenges such as labor displacement, increasing inequality and decreasing socio-economic mobility, declining fertility and ageing societies, institutional integration and reform, and political polarization. But besides imposing disturbances to societies and their citizens, these structural transitions and their implications also impose new threats of crises which are in addition increasingly difficult to be dealt with. Rising interconnectedness of societies and their economic systems, for instance, not only increases the vulnerability to cascading crises such as recessions and pandemics (e.g. Jackson, 2019), but also makes these crises increasingly transboundary in terms of geographical, cultural, infrastructural, administrative, and policy boundaries (Christensen et al., 2016; Goldin and Mariathasan, 2014; Ansell et al., 2010) and turbulent or "wicked", i.e. coming from increasingly volatile, uncertain, complex, and ambiguous contexts, thus difficult or impossible to solve (Eppel and Rhodes, 2018; Head and Alford, 2015; Bennett and Lemoine, 2014).

Given these trends, scholars and practitioners alike have called for a shift from prevention and anticipation alone toward enhanced societal resilience (Duit, 2016; Tierney, 2014; Stark, 2014; Aldrich, 2012; Wildavsky, 1988). And, in fact, strengthening resilience of its member states, institutions, and citizens has become a firm priority of the European agenda. Due to the COVID-19 pandemic and its economic consequences, in February 2021 the European Commission established the Recovery and Resilience Facility (RRF) with over 700 billion Euros making up around 90% of the European Union's (EU) recovery plan NextGenerationEU and around five times the ordinary annual budget of the EU. The goal is to help member states to implement ambitious reforms and investments aimed to make their economies and societies more resilient.[1] In addition, since 2021 the European Commission monitors the resilience of the EU member states through resilience dashboards aimed at capturing vulnerabilities to and capacities to cope with crises and structural transitions (European Commission, 2023, 2021).

Likewise, resilience also enjoyed increasing scientific interest over the last decades. Resilience is a well-established concept in the fields of engineering, physics, ecology, and psychology. But recently especially in the *social* sciences attention has shifted and the problem of social resilience and its urgency has become widely and increasingly recognized (Lazega et al., 2022). In the same vein, we argue that resilience is a concept of major potential for the social sciences. Individuals' behavior and societal behavioral trends are certainly shaped by the structural change of recent decades and recent crises. But the large heterogeneity in behavioral trends during the COVID-19 pandemic across countries and different groups within society

[1] For details see: https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en.

(e.g. Plach et al., 2023; Aassve et al., 2021; Toffolutti et al., 2022, on fertility and mental-well-being during the pandemic) has illustrated that some citizens and societies seem better able to maintain desired outcomes than others. Resilience, thus, can be crucial to explain various key behavioral trends in times characterized by increasing disturbances through structural change and crises and to understand how to counteract by supporting vulnerable citizens during disturbance.

There are however also critiques around the ambivalence and doubts on the usefulness of the concept for the social sciences (Olsson et al., 2015; Brand and Jax, 2007; Boyden and Cooper, 2007). We aim to address them and contribute to the literature in the following ways. First, employing the concept of individual resilience in the social sciences requires to develop a solid theoretical framework which is "useful" by enabling an empirical assessment on the individual level and delivering policy insights which can actually lead to policy-driven change. The fundamental question which thus needs to be addressed and on which we will focus in this article is: what are the determinants which make an individual resilient?

Second, to be "useful" this theoretical framework has to conceptualize the determinants of resilience in a "tangible" way. Drawing on earlier attempts theorizing resilience in terms of "capitals" or "assets" or "capacities", providing resources to achieve well-being (e.g. Mu, 2021; d'Errico et al., 2018; European Commission Joint Research Centre., 2017; Alinovi et al., 2010; Norris et al., 2008), we will conceptualize resilience on the individual level (rather than on the aggregate social system level) and in terms of an individual's life-course capitals (rather than e.g. focusing on intra-psychic functionings). Only in this way, determinants are empirically testable on the individual level *and* gained insights are eventually employable for policymaking aimed at strengthening resilience through designing policies to improve these determinants (see Mu, 2021; Olsson et al., 2015; Boyden and Cooper, 2007).

Third, individuals' behavioral responses during times of crises and change are complex to explain. We argue that not only various individual-level factors but also the meso- and macro-level social and institutional contexts which individuals are embedded in are driving individuals' responses. But governments – especially across welfare regimes (Esping-Andersen, 1990) – have different approaches to governance and welfare support, and thus how to strengthen their citizens' resilience (Joseph, 2021). An individual's resilience, for instance, can be expected to benefit from direct welfare support in monetary form and in benefits – typical for the Nordic welfare state – and from a more liberal and flexible market, e.g. by shortening job transitions – more in line with the Anglo-Saxon welfare regime. In addition, one might expect that various sources of resilience can act as substitutes for others. For instance, during disturbances an individual's received support from social network or public institutions might partly make up for the lack of own income, wealth, education, or knowledge and thus be particularly important for already disadvantaged individuals or in precarious crises affecting multiple dimensions. Even promising attempts to conceptualize resilience fall short in considering all the potentially relevant dimensions on all analytical levels; accounting for potential interactions between such determinants within and across analytical

levels; unifying the multiple analytical levels on which these determinants operate in a framework which ultimately enables to analyze resilience on the individual level where crises and change materialize and the behavioral response happens; and clearly and convincingly testing such a framework empirically with longitudinal individual level (and country level) data. Our theoretical and empirical analysis will address these points and consider this multi-dimensional, multi-level, and interacting nature of an individual's resilience, thus allowing to investigate the *relative* importance of various potential determinants and their interaction effects, which can eventually help governments to implement policies which most effectively target the various determinants and for those who need it most.

2 Theoretical framework

In particular, our theoretical framework conceptualizes an individual's resilience as the ability to maintain desired *outcomes* by accessing *resources* and adapting resource access through various *life-course capitals* in order to meet changing resource needs and reduced resource access (through some life-course capitals) when facing *disturbances*. ***Disturbances*** for an individual can come not only from society-level crises (the COVID-19 pandemic being the most recent example) but also from society-level and long-lasting structural change (e.g. technological change and globalization). Both eventually can materialize on the individual level either as sudden crises (e.g. job loss) or as longer-lasting increased uncertainty and economic and social difficulties and demands.

Resources in various forms (e.g. money, time, information, mental support) can be accessed through different forms of ***life-course capitals*** including not only the individual's economic and human capital, but also their social capital and the welfare support and services from public institutions (broadly drawing on Bourdieu, 1986, but integrating the dimension of what we will term institutional capital). In times of crises or change, resource access can be lost and resource needs can change (e.g. lost income due to unemployment which needs to be compensated; information on new job opportunities; skill-adaption; mental support). The endowment in terms of different life-course capitals to access resources and the adaption in terms of how changing resource needs are met by life-course capitals – including the adaption of life-course capitals themselves – will thus be determinants for an individual's resilience (e.g. own economic assets to be used as income compensation or for additional education and skill-adaption; social network to access information on job opportunities and mental support; or public institutions to access unemployment support).

Outcomes, desired to be (at least partly) maintained (or even increased) under disturbances, can of course be manifold. For instance, this can include the realization of an individual's fertility ideals (Aassve and Plach *forthcoming*) or the achievement of an individual's ambitions in terms of education, career, income, and social mobility. Therefore, the concept of resilience has the major potential to help explaining

key societal challenges such as low fertility and ageing societies, ballooning inequality, and deteriorating social and economic mobility, all, at least partly, the result of structural change and exacerbated through crises (e.g. Plach et al., 2023; Aassve et al., 2021, 2020, on the COVID-19 pandemic's exacerbation of previous fertility declines in many high-income countries).

3 Data and Methods

For empirically analyzing this theoretical framework, our empirical setting comprises citizens across the European Union over the course of the COVID-19 pandemic. The pandemic has been a major societal shock associated with enormous individual level disturbances. It therefore represents a suitable setting to explore how individuals' resilience moderated the mapping of disturbances into behavioral outcomes. Importantly, however, the pandemic not only was a health emergency but the connected policy responses also caused a disruption to individuals' economic life through forgone income, job losses, and uncertainty and their social lives through being cut off from social support networks. In order to alleviate such disruption health-related and economic support policies were also implemented. Individuals have, however, been affected differently by the pandemic, in parts because countries have reacted differently in terms of policy-design and implementation, and the implications and policy responses varied considerably over pandemic waves (see e.g. Plach et al., 2023). In addition to the uneven distribution of life-course capitals across individuals in usual times, the pandemic has therefore caused major variation in economic, social, and institutional factors not only between countries and between individuals but also within individuals over time. This shock thus also represents an ideal setting to investigate if and how variations in these potential determinants were in fact associated with variations in individuals' resilience. A first suggestion that, besides potential economic, social, and institutional determinants, resilience, too, varies enormously across countries, citizens, and time comes from studies on diverse outcomes during the pandemic pointing at large heterogeneity between societal groups and between countries in how the disruption materialized in behavior (e.g. Plach et al., 2023; Toffolutti et al., 2022, on how COVID-19 policies were connected to, respectively, fertility across welfare regimes and mental well-being across societal groups).

To leverage the variation between countries, between individuals, and within individuals over time we employ panel data on 21,521 individuals (for a total of 52,049 observations) in 22 countries from the Living, Working, COVID-19 (LWC) survey collected by Eurofound in five survey waves throughout the COVID-19 pandemic (Eurofound, 2022; Eurofound-ETF, 2022). The survey is unique as it includes a measure of individual resilience in a context of a major crisis, and does so longitudinally and comparatively across a large set of countries. In accordance with the psychology literature, resilience is measured by an index comprising two items – the capacity to get back to normal after a crisis and to deal with problems –

included in e.g. the validated and widely recognized CD-RISC scales (Kuiper et al., 2019; Campbell-Sills and Stein, 2007; Vaishnavi et al., 2007; Connor and Davidson, 2003).

Besides this resilience measure, the LWC survey also includes several measures for individuals' life-course capitals: financial arrears and housing insecurity reflecting economic capital; educational level and health reflecting human capital; and social inclusion reflecting social capital. To measure institutional capital, we complement our data set with country-year-level data on public social expenditure per head at constant purchasing power parity (OECD, 2022) and government effectiveness – an index around the quality of public and civil service and of policy formulation and implementation and the commitment to such policies (Kaufmann and Kraay, 2023; Kaufmann et al., 2011). We use these two variables because public support, we argue, mostly reflects how citizens' resilience might benefit *through* public institutions, while government effectiveness is more directed towards the resilience *of* public institutions themselves, potentially a crucial factor for how much citizens' resilience really benefits from the funds spent on welfare support. Our empirical model includes these six measures of life-course capitals and their interaction terms, while accounting for individual random-effects, control variables for age and gender, and country-group fixed-effects – where groups reflect welfare regimes – itself revealing important insights into country-group-differences in resilience.

4 Results *(preliminary and in short)*

In a descriptive analysis, considering the five survey waves across the pandemic, we find that resilience tended to decrease across the pandemic. The trend in resilience was only partly matched by the trend in the seven potential determinants, and best by health, social capital, public social expenditure, and government effectiveness. What stands out particularly is the large public spending to address the pandemic fallout in the first pandemic year, and less so in the second, which judging on resilience seems to have worked partially.

When descriptively considering different country-groups, reflecting welfare regimes, we find variation of resilience across these welfare regime sorting from lowest to highest as Baltic countries, Eastern Europe, Southern Europe, Anglo-Saxon countries, Northern Europe, Western Europe, and Central Europe. This variation tended to be matched by the variation in the seven life-course capital variables. In addition, exceptions to the trend are often counterbalanced. For instance, citizens in Southern Europe – on average scoring medium-low on resilience – might partially counterbalance their high arrears, low housing security, low education, and the low effectiveness of their governments with rather high health, social inclusion, and the governments social expenditure. Citizens in the Anglo-Saxon countries – on average scoring close to the mean in resilience – report high housing security, education, and health and benefit from high government effectiveness but report low social inclusion and face low public social expenditure. The

three welfare regimes with citizens scoring highest on resilience – Northern, Western, and Central Europe – rather consistently score high on life-course capital variables, with partial exceptions of education in Central Europe, health in Northern Europe, and social inclusion in Western Europe.

In our main analysis employing a multilevel, mixed effects regression model we find that in line with our expectations all seven life-course capital variables are positively associated with an individual's resilience. This result is consistent across all our regression models, i.e. when only including micro and meso level factors (for which we have data on individual level), when step wise adding the two macro level factors (which we measure on country level), and when introducing interaction terms. In terms of economic capital, both economic liquidity and insecurity is relevant for an individual's resilience. Social inclusion seems to be the relatively most important determinants. This is especially true given that social inclusion only partially measures social capital at one extreme end. As for institutional capital, an individual's resilience seems to be positively connected to both the amount of public social spending and the government's effectiveness in allocating these funds appropriately.

In terms of hypothesised substitution between the different determinants, we indeed find negative coefficients on the interaction terms, however only in few cases statistically significant. Public social expenditure seems to particularly benefit individuals in economic difficulties, i.e. with high arrears and housing insecurity. In addition, government effectiveness is particularly relevant for citizens' resilience when social expenditure is low, which points to an increasing importance to how funds are spent in situations of less extensive welfare spending. Somewhat surprisingly, social inclusion is relatively most highly associated with resilience for those with tertiary education, which might point at an intellectual, psychological factor of social capital most relevant for those with highest education.

Figure 1: Means (Population Weighted) of Potential Determinants and Resilience by Wave

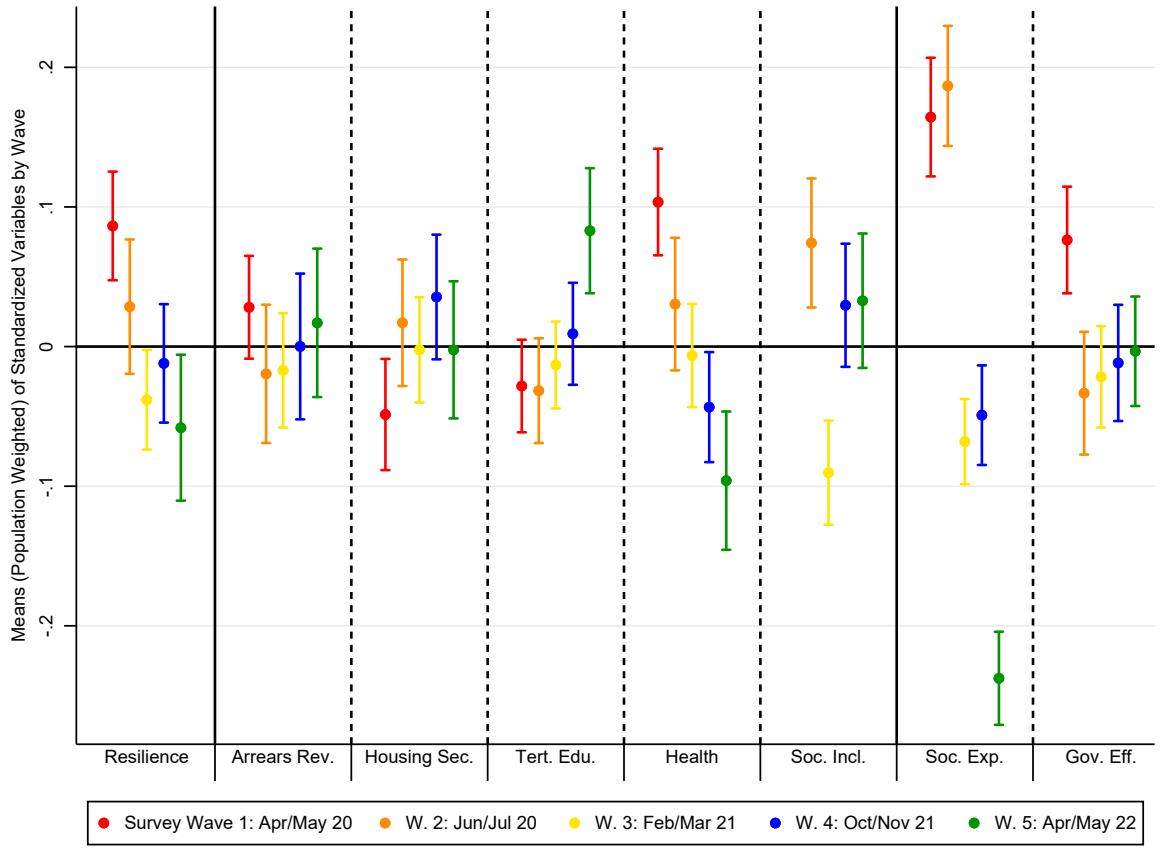

Figure 2: Means (Population Weighted) of Potential Determinants and Resilience by Country-Groups

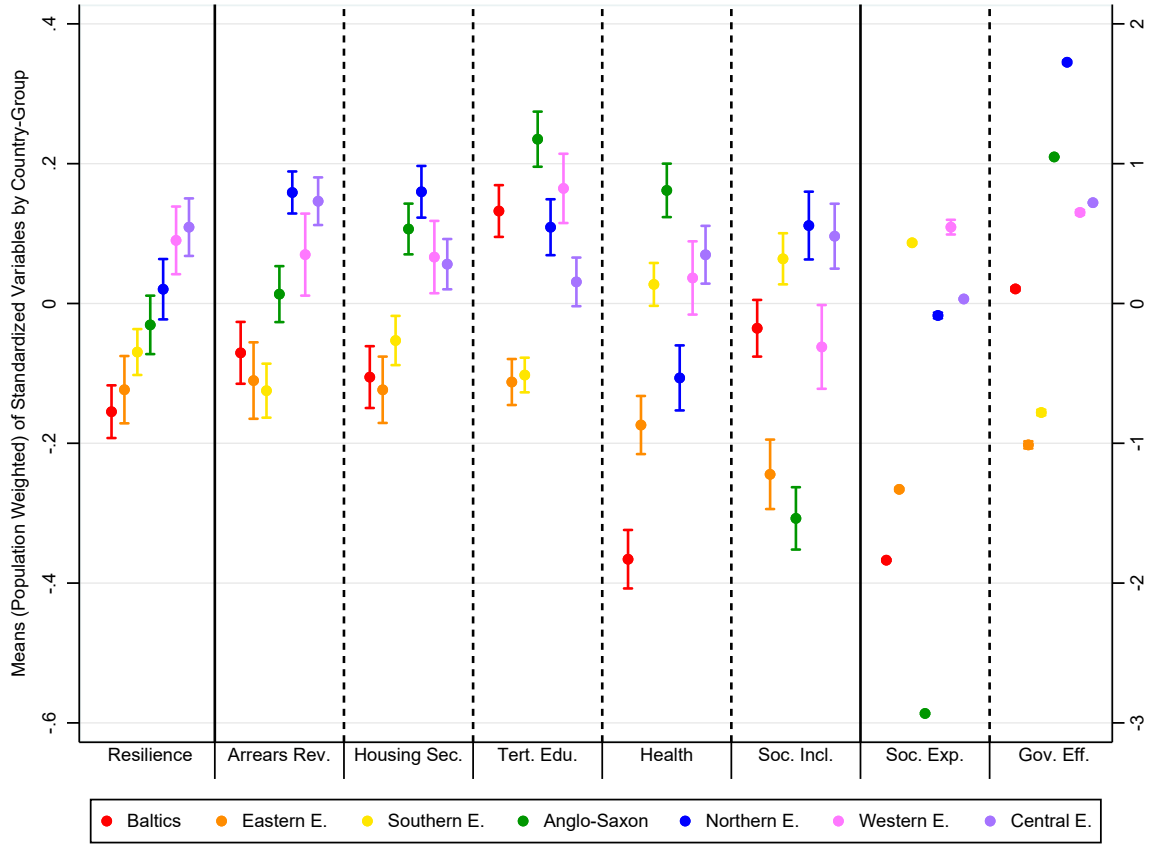

Table 1: Multilevel Mixed Effects Estimation of Potential Determinants for Individual Resilience.

	Resilience Index				
	(1)	(2)	(3)	(4)	(5)
Lower Arrears	0.0612***	0.0610***	0.0604***	0.0693***	0.102***
	(0.0118)	(0.0118)	(0.0118)	(0.0158)	(0.0246)
Housing Security	0.0584***	0.0582***	0.0579***	0.0810***	0.0818***
	(0.00983)	(0.00983)	(0.00984)	(0.0127)	(0.0243)
Tertiary Educ.	0.113***	0.113***	0.114***	0.114***	0.150***
	(0.0157)	(0.0157)	(0.0157)	(0.0154)	(0.0403)
Social Incusion	0.277***	0.277***	0.276***	0.258***	0.269***
	(0.0116)	(0.0116)	(0.0116)	(0.0156)	(0.0275)
Social Expenditure		0.0309*	0.0448***	0.0467**	0.133***
		(0.0164)	(0.0174)	(0.0213)	(0.0406)
Gov. Effectiveness			0.133***		0.147***
			(0.0331)		(0.0392)
Lower Arrears#Housing Security				-0.00920	-0.00863
				(0.00906)	(0.00908)
Lower Arrears#Tertiary Educ.				-0.0148	-0.0138
				(0.0201)	(0.0199)
Lower Arrears#Social Inclusion				-0.00674	-0.00615
				(0.0104)	(0.0104)
Lower Arrears#Social Expenditure				-0.0259**	-0.0248**
				(0.0104)	(0.0101)
Lower Arrears#Gov. Effectiveness					-0.0341
					(0.0210)
Housing Security#Tertiary Educ.				-0.0155	-0.0145
				(0.0175)	(0.0175)
Housing Security#Social Inclusion				-0.00668	-0.00684
				(0.00908)	(0.00913)
Housing Security#Social Expenditure				-0.0412***	-0.0403***
				(0.0100)	(0.0100)
Housing Security#Gov. Effectiveness					-0.00226
					(0.0193)
Tertiary Educ.#Social Inclusion				0.0521***	0.0523***
				(0.0195)	(0.0195)
Tertiary Educ.#Social Expenditure				-0.0170	-0.0127
				(0.0168)	(0.0167)
Tertiary Educ.#Gov. Effectiveness					-0.0331
					(0.0335)
Social Inclusion#Social Expenditure				-0.00872	-0.00815
				(0.0117)	(0.0116)
Social Inclusion#Gov. Effectiveness					-0.0113
					(0.0219)
Social Expenditure#Gov. Effectiveness					-0.0695**
					(0.0278)
Age	0.0705***	0.0716***	0.0720***	0.0699***	0.0706***
	(0.00625)	(0.00621)	(0.00620)	(0.00618)	(0.00618)
Female	-0.0812***	-0.0809***	-0.0808***	-0.0826***	-0.0832***
	(0.0130)	(0.0130)	(0.0130)	(0.0130)	(0.0130)
Individual REs	Yes	Yes	Yes	Yes	Yes
Country-Group FEs: *Ref. Southern Europe*					
Eastern Europe	0.0873***	0.128***	0.151***	0.144***	0.210***
	(0.0185)	(0.0287)	(0.0298)	(0.0286)	(0.0368)
Baltic and Balkans	0.00301	0.0517	0.0236	0.0624*	0.0553
	(0.0228)	(0.0345)	(0.0344)	(0.0341)	(0.0363)
Anglo-Saxon (Ireland)	0.154***	0.230***	0.163***	0.237***	0.147***
	(0.0245)	(0.0472)	(0.0478)	(0.0471)	(0.0475)
Central Europe	0.139***	0.139***	0.0446	0.138***	0.0938***
	(0.0218)	(0.0218)	(0.0320)	(0.0217)	(0.0354)
Western Europe	0.161***	0.159***	0.0736**	0.155***	0.0950***
	(0.0227)	(0.0227)	(0.0326)	(0.0226)	(0.0376)
Northern Europe	0.0789***	0.0815***	-0.0673	0.0823***	0.00611
	(0.0238)	(0.0238)	(0.0441)	(0.0239)	(0.0495)
Mean Resilience	3.417	3.417	3.417	3.417	3.417
Std. Dev. Resilience	0.923	0.923	0.923	0.923	0.923
Number of individuals	21,521	21,521	21,521	21,521	21,521
Observations	52,049	52,049	52,049	52,049	52,049

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