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The Authoritarian Welfare State and the Historical Emergence of Old-Age Pensions around the World

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Angabe der beiden Gutachter
Prof. Dr. Herbert Obinger (Universität Bremen)
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To my parents Patricia and Bernd

and

To my partner Tobias

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List of Articles

Articles A and C are already published in peer-reviewed journals and therefore do not appear in this printed version. They can be accessed at the websites of the respective journals.

A) Grünewald, Aline (2020): The historical origins of old-age pension schemes: Mapping global patterns. (Online First: *Journal of International and Comparative Social Policy*)

B) Grünewald, Aline (2020): Power Consolidation with Welfare Designs. The Historical Origins of Old-Age Pensions in Nondemocratic Regimes around the World. (*Working Paper*)

C) Grünewald, Aline (2021): From Benefits and Beneficiaries. The Historical Origins of Old-Age Pensions From a Political Regime Perspective. (Online First: *Comparative Political Studies*)[1]

[1] Citation style in line with the "Kompendium" of Political Science, University of Bremen. https://www.uni-bremen.de/fileadmin/user_upload/fachbereiche/fb8/ipw/Downloads/Kompendium_Oktober_2019.pdf

Part I: Summary Report

1. Introduction

Social science research has strongly linked the emergence of the Western welfare state to the process of democratization. While poor relief measures such as the British Elizabethan Act of 1601 or welfare programs for civil servants and the military already existed for a long time, comprehensive welfare state programs were for the first time implemented at the end of the 19th century (Kuhnle/Sander 2010: 63). As a result of the social repercussions associated with urbanization and industrialization and the struggle for political and civil rights originating from the French and American Revolution, demands for social protection became more pressing and culminated in the emergence of the Western welfare state (Rimlinger 1971: 2–3). Whereas Flora and Alber note that social rights can be regarded as a direct "consequence of (or compensation for) the institutionalization of political rights" (Flora/Alber 1981: 21), the British sociologist Thomas Humphrey Marshall perceives "a modicum of economic welfare and security" (Marshall 1950: 10–11) as an integral part of the concept of citizenship and thus connects civil rights with the provision of welfare policies.

However, the direct link between democracy and the welfare state is strongly contested. Even though the majority of social security programs in Western countries were implemented under democratic rule, the same does not hold true for countries of the Global South (Mares/Carnes 2009: 97). Even in Western Europe, the pioneers of welfare states were monarchies, such as Bismarck's Germany or von Taaffe's Austria. Whether democratic regimes pioneered the implementation of welfare policies also depends on the kind of welfare program that has been considered (see e.g. Kangas 2012; Knutsen/Rasmussen 2018; Schmitt et al. 2015; Usui 1994). In addition to this criticism, many nondemocratic regimes made remarkable welfare efforts. In a speech in front of the United Nations in 2015, Alexander Lukashenko praised his welfare achievements by highlighting the worldwide lowest infant mortality rates of Belarus and the tremendous efforts that have been made in terms of gender equality (Lukashenko 2015). In contrast to Lukashenko, Rwanda's president Paul Kagame became to be known as a benevolent dictator who perceived welfare policies as an essential tool for healing and stabilizing his country after the civil war (Russell 2012: 13). Moreover, China attracted public attention in the past years. By announcing that civil servants are no longer exempted from paying social insurance contributions to the pension system, the Chinese government initiated a process of equalization in the welfare sector that is even unknown to many democratic welfare states, where civil servant privileges still persist (Wildau 2015). As these examples illustrate, the link between the political regime type and the provision or quality of welfare policies is not straightforward.

With the exception of some nondemocratic interludes at the emergence of the first welfare programs, Western welfare states are fully-fledged democracies. Hence, theorizing about nondemocratic welfare policies was not a pressing issue in comparative welfare state research. As a consequence, studies on the historical origins of nondemocratic welfare states in Western countries were mainly located in the field of historical research (see e.g. Beck 1995; Rimlinger 1971). However, understanding nondemocratic welfare policies becomes all the more necessary, especially when focusing on countries of the Global South. The existing studies in this domain have mainly analyzed social spending data or welfare outcomes, such as infant mortality rates. Even though the majority of these studies find evidence for a democracy-advantage (see e.g. Avelino et al. 2005; Baqir 2002; Brown/Hunter 1999, 2004), the results are strongly contingent upon the temporal and regional context that has been studied (Nelson 2007). Moreover, as social spending data always reflect the social needs and economic capacities of a country (Siegel 2007: 51), it can only give us a rough impression of welfare state commitments. Hence, data on welfare generosity levels and coverage rates become all the more necessary to derive a comprehensive understanding of welfare policies from a political regime perspective.

In sum, the existing research on the welfare-regime nexus suffers from the following shortcomings: First, given the strong focus on Western welfare states, theorizing about nondemocratic welfare policies is still in its infancy in comparative welfare state research, especially regarding the historical origins. While the emergence of the Western welfare state is closely linked to the process of democratization, this does not hold true for many countries of the Global South. As policy decisions mostly induce "further movement into the same direction" (Pierson 2000: 252), we can learn a lot about political regime differences if we take a closer look at the emergence of welfare programs and the original intentions of policy-makers. Second, as current research on the welfare-regime nexus has mainly focused on social spending data, data on different dimensions of welfare programs, such as on generosity levels, coverage rates or welfare designs, become all the more necessary to expand our knowledge about nondemocratic welfare policies.

Given these shortcomings, my cumulative dissertation analyzes the global and historical emergence of old-age pension schemes from a political regime perspective by paying particular attention to nondemocratic regimes. Old-age pensions serve as a useful starting point for studying political regime differences because of two reasons. First, they are the most widerspread social security programs around the world and therefore are also quite prominent in nondemocratic regimes (Schmitt et al. 2015). Second, compared to other welfare programs such as maternity programs, they can be more easily targeted on specific groups that are essential for regime survival and thus are best suited to serve as a political tool for nondemocratic leaders (Knutsen/Rasmussen 2018). However, as global and historical data on the specific dimensions of old-age pension programs, such as pension designs, eligibility criteria, pension coverage rates or benefit generosity levels, are largely missing, the first goal of my cumulative dissertation is dedicated to the creation of a new dataset.

Article A introduces the novel PENLEG (Pension Legislation around the World, 1880-2010) dataset (PENLEG 2021) as well as new approaches for estimating legal pension coverage rates and benefit generosity levels. Moreover, the article maps global pension patterns and provides case-based evidence to highlight the most salient factors that have triggered specific pension trajectories around the world. In so doing, new insights into the global emergence of old-age pension schemes are provided and further venues for research on the specific determinants of old-age pension programs are presented. Moreover, this article serves as a useful starting point to derive a thorough understanding of pension developments in different world regions and to help placing hypotheses on the effects of the political regime type in the context of competing explanatory factors.

Based on these insights, articles B and C of the cumulative dissertation take a closer look at how the political regime type has affected the first old-age pension schemes more specifically. While the existing literature has only analyzed whether democratic or nondemocratic regimes have pioneered the implementation of old-age pension schemes (see e.g. Kangas 2012; Knutsen/Rasmussen 2018; Schmitt et al. 2015; Usui 1994), we still do not know whether democratic and nondemocratic regimes preferred different pension designs. For this reason, article B depicts pension design preferences from a political regime perspective, provides new arguments about pension design preferences of nondemocratic regimes and tests these hypotheses empirically.

Article C finally focuses on legal pension coverage rates and pension generosity levels of the first pension programs in democratic and nondemocratic regimes. While studies on pension coverage rates from a political regime perspective are quite rare (Knutsen/Rasmussen 2018; Schmitt 2019), studies on pension generosity levels are completely missing due to data limitations. As policy-makers are often confronted with trade-offs when designing welfare programs for the first time, article C argues that different dimensions of old-age pension programs are interrelated and therefore have to be analyzed in relation to each other. The

descriptive and quantitative findings show that democratic and nondemocratic regimes had significantly different priorities and thus put either stronger emphasis on higher pension coverage rates or higher pension benefit generosity levels. In sum, this dissertation underlines the importance of studying different dimensions of welfare programs to derive a comprehensive understanding of welfare policies from a political regime perspective.
The remainder of the summary report is dedicated to the revision of the current literature on a) welfare policies from a political regime perspective and on b) the historical emergence of old-age pensions. In so doing, the shortcomings of the existing literature that have inspired the research questions of my cumulative dissertation are discussed in more detail. Second, the data and the methodological approach are presented before the main findings, contributions and limitations of each article are summarized separately.

2. Literature review: Political regime types and welfare policies

The literature on welfare policies from a political regime perspective has mainly focused on differences between democratic and nondemocratic regimes. In recent years, however, the scientific focus has moved towards a closer analysis of the institutional variety of nondemocratic regimes and their effects on social policies. In the subsequent two sections, the core findings of each research strand are highlighted and their weaknesses are critically assessed.

2.1 Welfare policies in democratic and nondemocratic regimes

The existing literature on welfare policies in democratic and nondemocratic regimes can be subdivided into three major strands. The first strand asks whether democratic or nondemocratic regimes have pioneered the implementation of welfare programs. These studies pay particular attention to the core dimensions of welfare states, such as to old-age pension programs, unemployment or work injury protection schemes as well as to family or health policies (Kangas 2012; Knutsen/Rasmussen 2018; Schmitt et al. 2015; Usui 1994). Whereas global and quantitative studies corroborate that democratic regimes pioneered the implementation of sickness, work injury and unemployment programs, the political regime type had no effect on the implementation of old-age pension schemes (Knutsen/Rasmussen 2018; Schmitt et al. 2015). Independent from the welfare program that has been considered, Kangas' study on Africa, by contrast, finds no political regime type effects at all (Kangas 2012: 89).

With the promulgation of the World Development Goals in 2001, the scientific focus has shifted towards Conditional Cash Transfer programs (CCTs) and social pensions which are dedicated to alleviate poverty in countries of the Global South. Given their non-contributory mode of financing and their focus on marginalized social and economic groups, the literature finds strong evidence that democratic regimes fostered the implementation of these welfare programs (see e.g. Böger/Leisering 2018; Brooks 2015; Dodlova et al. 2016; Rudolph 2016). In sum, these studies have put a strong emphasis on the *policy-making process* by analyzing whether democratic regimes have pioneered the implementation of different welfare programs.

The second and most dominant research strand takes a closer look at social security, health or education spending from a political regime perspective. Even though the existing studies differ strongly regarding their sample size, periodization, regional focus or the political regime indicator that has been chosen (Nelson 2007: 80), they find strong evidence that democracies spend more on welfare policies (Avelino et al. 2005; Baqir 2002; Brown/Hunter 1999, 2004). However, there also exist studies which cannot find any political regime differences at all (see e.g. Mulligan et al. 2002) or which highlight a more nuanced pattern. The study of Kaufman and Segura-Ubiergo on social security spending in Latin America, for instance, shows that "[n]either popularly based governments nor democracies consistently spend more or less than conservative governments or autocratic regimes" (Kaufman/Segura-Ubiergo 2001: 554). In contrast to social security spending, democracy had a positive effect on health and education spending (Kaufman/Segura-Ubiergo 2001: 555). With his study on Africa, Stasavage further reveals that democracy was significantly and positively correlated with education spending (Stasavage 2005: 351) and primary education spending (Stasavage 2005: 352). However, he cannot find any political regime differences for university spending (Stasavage 2005: 353). Last but not least, the existing literature has highlighted the positive long-term effects of democracy by empowering marginalized groups of society and giving them a say in welfare policies (Nelson 2007: 88). As Huber et al. show for 18 Latin American countries, democracy has positively affected social security, health and education spending in the long run (Huber et al. 2008: 431).

The last strand of literature has focused on welfare outcomes from a political regime perspective. This research strand asks whether the quality of welfare policies and their effects on citizens' well-being is better in democratic than in nondemocratic regimes. In contrast to the second research strand, which finds strong evidence for a democracy-advantage, the findings on welfare outcomes from a political regime perspective are more mixed. Whereas Navia and Zweifel (2003: 97–98), Lake and Baum (2001: 615–16) or McGuire (2013: 64) show that infant mortality rates are significantly higher in democratic regimes, Ross cannot find any effects of the political regime type (Ross 2006: 868). Moreover, Gerring et al. highlight that democracy only has a positive effect on the reduction of infant mortality rates in the long run (Gerring et al. 2012: 14). Finally, the effects of the political regime type have also been analyzed in relation to economic development. With his study on primary school enrollment rates, Brown highlights that poor democracies perform significantly better than nondemocratic regimes (Brown 1999: 694). Keefer, by contrast, shows that school enrollment rates in poor democracies strongly resemble the ones of poor autocracies (Keefer 2006).

2.2 Welfare policies in nondemocratic regimes

While the aforementioned research has basically focused on the dichotomy between democratic and nondemocratic regimes, the "institutional turn in comparative authoritarianism" (Pepinsky 2014: 631) has fostered an ongoing research on the institutional variety of nondemocratic regimes and their effects on welfare policies. The majority of studies treat institutions in nondemocratic regimes, such as legislatures or parties, as "constraints that shape human interaction" (North 1990: 3) and thus as exogenous factors. As constraints, institutions serve two functions. First, they can solve conflicts emerging within elite structures by applying institutionalized rules of conflict solution. Second, institutions can tie the hands of nondemocratic leaders and in so doing foster popular support (Pepinsky 2014: 633).

As Riker has noted, institutions are also the result of strategic elite bargaining and therefore endogenous (Riker 1980: 432, 434). Current research, such as Miller's study on the effects of electoral authoritarian regimes on different welfare outcomes, has started to use instrumental variables to account for the endogeneity of institutions when estimating their effects on welfare outcomes (Miller 2015: 20–21).

Independent of the aforementioned debate, it is still contested how the institutional variety of nondemocratic regimes affects different welfare policies. Desai et al. (2009) have argued that social rights can easily substitute for missing political rights. They expect that closed autocracies invest more in welfare policies than liberalized autocracies (Desai et al. 2009: 97). However, a successful elite cooptation via institutions may also render the provision of welfare policies less important (Wright/Escribà-Folch 2012). Flora and Alber, in turn, expect that liberalized autocracies have stronger public pressures and thus should end up with more welfare benefits (Flora/Alber 1981: 47).

In line with the literature on democratic and nondemocratic regime differences in welfare policies, this research strand has mainly analyzed data on social spending and welfare outcomes. There is strong evidence that an increased competitiveness in nondemocratic regimes also translates into improved human development outcomes (Carbone 2012; Cassani/Carbone 2016; Cassani 2017; Miller 2015). Moreover, as Kailitz et al. (2017) have shown with an x-centered variable design, infant mortality rates differ strongly in different nondemocratic regime subtypes. Especially in monarchies, communist regimes and electoral autocracies, infant mortality rates are lower compared to the average rates of all nondemocratic regimes (Kailitz et al. 2017). While Lindert corroborates that female suffrage extension had a positive effect on health and pension spending in Western Europe (Lindert 1994: 18), Gandhi cannot find any evidence that nondemocratic regimes with legislatures and political parties spent significantly more on social security (Gandhi 2008: 136).

2.3 Limitations of the existing literature

While the existing literature on social policies from a political regime perspective has started to shed more light on the welfare-regime nexus, many findings are still not conclusive and therefore require for more research. On the one hand, the existing research could be further improved as soon as more data on the dependent variable becomes available. By taking a closer look at global and historical samples, the robustness of existing findings could be validated. Additionally, it would be possible to identify the reasons for the mixed findings of smaller samples. Moreover, as data projects on nondemocratic regime subtypes only cover the post-World War II period (Geddes et al. 2014; Kailitz 2013; Svolik 2012), we are still missing data on the institutional variety of nondemocratic regimes and their effects on welfare developments in earlier decades. In sum, the existing research would benefit from improved data availability with regard to the dependent and independent variables.

Second, data on welfare spending and welfare outcomes as such suffer from several shortcomings. As social needs and economic capacities also affect how much countries invest in social policies, it is not possible to infer that an increase in social spending automatically results in improved welfare generosity (Siegel 2007: 51). To address this shortcoming, researchers have started to calculate welfare-to-needs ratios to approach generosity levels. In their book on the development and crisis of welfare states, Huber and Stephens, for instance, calculate pension spending “as a percentage of GDP divided by the proportion of the population over 65 years of age” (Huber/Stephens 2001: 52). Even though such indicators are an improvement, they still cannot fully account for the real extent of welfare generosity. To address this shortcoming, the Social Citizenship Indicator Project (SCIP) has coded data on replacements rates for five welfare programs based on the rights stipulated in existing laws (Korpi/Palme 2008). However, this project is restricted to 18 Western countries with uninterrupted periods of democracy and therefore is not suited for research on political regime differences.

The existing studies on welfare outcomes suffer from similar empirical shortcomings. Even though infant mortality rates are a suitable indicator of welfare outcomes, as they can easily be improved with appropriate policies, this is not forcibly true for other indicators such as adult mortality rates (McGuire 2013: 55). While individual risk behavior strongly affects adult mortality rates, inferences about the effects of the political regime type can be misleading. Moreover, as Hanson's study on infant mortality and school enrollment rates shows, democracy and state capacity "serve as partial substitutes" (Hanson 2015: 304). Even though the welfare performance of a weak democracy can be compensated with an efficient bureaucracy, Hanson also shows that a further improvement of the democratic quality can still exert an additional and positive effect on welfare outcomes (Hanson 2015: 322). Thus, accounting for state capacity becomes all the more necessary for this strand of research.

In addition to the aforementioned criticism on welfare state indicators, I argue that the existing literature also suffers from theoretical limitations. Even though much attention has been paid to the institutional variety of nondemocratic regimes and their effects on welfare policies, the same attention has not been devoted to the institutional variety of welfare program designs from a political regime perspective. Existing studies have only analyzed whether democratic or nondemocratic regimes have pioneered the implementation of different welfare programs (Kangas 2012; Knutsen/Rasmussen 2018; Schmitt et al. 2015; Usui 1994) or specific welfare designs (Böger/Leisering 2018; Cutler/Johnson 2004; Dodlova et al. 2016; Rudolph 2016). However, we still do not know whether democratic or nondemocratic regimes have opted for significantly different welfare designs when accounting for the whole variety of welfare designs. As the choice of a specific welfare design also affects coverage rates, eligibility criteria and modes of financing, knowing more about welfare design preferences from a political regime perspective can fundamentally improve our understanding of social policy-making in democratic and nondemocratic regimes. Second, and related to the previous criticism, I argue that the current research has largely missed to account for trade-offs with which policy-makers are confronted when implementing their first welfare programs. As policy-makers always face restrictions in terms of financial, administrative and social resources, they have to set priorities, such as deciding whether they put more emphasis on higher coverage rates or higher benefit generosity levels. Hence, studies that account for the multidimensionality of welfare programs from a political regime perspective become all the more necessary to ask whether democratic and nondemocratic regimes had different priorities with regard to different dimensions of welfare programs. Due to data limitations, existing studies have only focused on coverage rates so far (Knutsen/Rasmussen 2018; Schmitt 2019) and thus can tell us only part of the political regime story. In sum, these research gaps lead to the following questions that will be answered in the cumulative dissertation:

- Which welfare designs do nondemocratic regimes prefer most?

- Do democratic and nondemocratic regimes have different priorities with regard to the coverage and generosity of their welfare programs?

Even though the creation of a new welfare program can foster path dependencies (Pierson 2000), socio-economic and political changes also demand for constant adaptations of existing welfare commitments. Focusing on the historical origins of welfare programs, therefore, serves as a useful starting point for analyzing the welfare-regime nexus, as the first welfare decisions express the original intentions of policy-makers best. Moreover, only when implementing a welfare program for the first time, policy-makers have to make decisions about all dimensions of welfare programs simultaneously, such as on eligibility criteria or benefit generosity levels. Reforms, by contrast, mostly focus on improving a single dimension of a welfare program. Hence, priority setting of democratic and nondemocratic leaders can only be understood when focusing on the emergence of a new welfare program.

Given the global importance of old-age pensions, which are the most widespread welfare programs around the world (Schmitt et al. 2015), my cumulative dissertation will subsequently focus on its historical emergence from a political regime perspective. The following chapter reviews the existing literature on the historical origins of old-age protection schemes and highlights the theoretical and empirical limitations of this strand of research. Finally, the concrete research questions of this cumulative dissertation are summarized.

3. Literature review: Old-age pensions from a historical perspective

Studies on the historical origins of old-age pension programs are quite extensive and have basically analyzed the specific developments of single countries or regions (Flora/Alber 1981; Mesa-Lago 1978; Orloff 1993; Poteraj 2008; Rimlinger 1971; Williamson/Pampel 1991, 1993). In addition, many quantitative studies have highlighted significant factors that have contributed to the implementation of old-age pension programs around the world (Kangas 2012; Knutsen/Rasmussen 2018; Schmitt 2015; Schmitt et al. 2015; Usui 1994). In contrast, only Cutler and Johnson's (2004) empirical analysis on Western Europe has taken a closer look at different pension designs. In sum, both qualitative and quantitative studies have strongly contributed to our understanding of old-age pensions and their historical origins in different countries and regions around the world.[2]

3.1 Limitations of the existing literature

The existing studies, however, suffer from several shortcomings. Even though many qualitative studies provide information about the occupational groups that were covered first or the exact amount of pension benefits, quantitative and comparable indicators on the aforementioned dimensions are largely missing for comparative research.

Empirical efforts of the past years have mainly focused on creating legal pension coverage indicators (see e.g. Mares 2005; Knutsen/Rasmussen 2018). However, as these indicators are highly aggregated, individual groups of beneficiaries cannot be identified. Moreover, these legal pension coverage indicators do not consider that policy-makers often restrict pension benefits to specific occupational subgroups, such as commercial workers in the export sector. Instead, they only code whether an occupational group as such (in this case commercial workers) was covered. Given these limitations, more sophisticated indicators are required to properly estimate legal pension coverage rates.

Last but not least, the variety of pension designs and their associated differences in calculating pension benefits have precluded the creation of pension replacement indicators so far. Additionally, more specific data on pension designs, modes of financing and eligibility criteria of the first old-age pension schemes around the world is missing as well. Thus, the first goal of my dissertation is creating a novel dataset on the historical origins of old-age pension schemes.

[2] As a comprehensive literature review is already part of article A, the literature review of the summary report is shorter to avoid repetitions.

Based on this dataset (PENLEG, 2021), the aforementioned research questions on political regime differences in general, and nondemocratic regimes in particular, can be answered. Furthermore, the PENLEG dataset is suited to close existing research gaps on the historical emergence of old-age pension programs around the world. Even though existing studies map global pensions patterns, they use data on recent pension developments and mostly focus on broader dimensions of old-age pension programs (see e.g. Dixon 2000; Mahon et al. 2015; Mulligan/Sala-i-Marti 2004). By mapping pension patterns of the historical origins of old-age protection schemes we can learn more about path dependencies, the original intentions of policy-makers as well as on financial, social or administrative restrictions. For this reason, my first article depicts five central dimensions of the first old-age pension programs and highlights the most important factors that have shaped these pension trajectories.

3.2 Research questions of the cumulative dissertation

The previous discussions on the existing literature on welfare policies from a political regime perspective and the historical origins of old-age pension schemes have uncovered theoretical and empirical limitations. By creating a novel dataset on the historical origins of old-age pension schemes, this cumulative dissertation contributes to closing existing data gaps. Moreover, this dataset serves as the basis for answering my research questions on political regime differences and for mapping global pension patterns. In the following, the concrete research questions of the three articles of my cumulative dissertation are summarized:

- Which patterns of the first old-age pension schemes around the world can be found and which factors can explain different pension trajectories? (Article A)

- Which pension designs did nondemocratic regimes prefer most when implementing their first old-age pension programs? (Article B)

- Did democratic and nondemocratic regimes have different priorities with regard to the coverage and generosity of their first old-age pension programs? (Article C)

The following two chapters describe the data and methodological approaches that have been used for answering the research questions before the contributions and limitations of each article of the cumulative dissertation are critically assessed.

4. Data

With regard to the dependent variable, the cumulative dissertation focuses exclusively on the novel PENLEG dataset (Pension Legislation around the World, 1880-2010) (PENLEG 2021). For the main independent variable, the political regime type, the dichotomous BMR indicator (Boix et al. 2012) as well as the continuous Polity IV indicator (Marshall et al. 2018) and the continuous Polyarchy variable (Coppedge et al. 2019) have been used. As these indicators are available for the entire observation period of my dataset, they are best suited for answering my research questions. As the concept of democracy can be defined and operationalized in different ways, empirical findings can vary strongly depending on the political regime indicator that has been chosen (see e.g. Bogaards 2010; Bollen/Jackman 1989; Cheibub et al. 2010). To test for the robustness of my empirical findings, I therefore decided to use different democracy indicators.

The Polyarchy variable (v2x_polyarchy) of the Varieties of Democracy (V-Dem) project (Coppedge et al. 2019) is based on Dahl's Polyarchy concept. As Dahl assumes that real world polities can never comply with the requirements of an ideal democracy, he defines existing democracies as polyarchies (Dahl 1956; 1971; 1998). In so doing, he specifies eight criteria that must be fulfilled during and before the voting period as well as after the voting period and during the inter-election period, to speak of a polyarchy (Dahl 1956: 84). While in later works Dahl has condensed these criteria to six (Dahl 1998: 85), the V-Dem project has finally specified five dimensions to measure polyarchies. These are defined as "A. Elected Officials, B. Free, Fair and Frequent Elections, C. Associational Autonomy, D. Inclusive Citizenship, E. Freedom of Expression" (Teorell et al. 2016: 5). Even though the BMR indicator (Boix et al. 2012) focuses on the two central dimensions of contestation and participation underlying Dahl's polyarchy concept as well, the dataset only defines three criteria that must be fulfilled to qualify as a democracy. These comprise (1) the right to vote for the majority of male adults (participation component) as well as (2) free and fair legislative elections (contestation component) and (3) a directly or indirectly elected executive responsible to the legislature or the voters (contestation component) (Boix et al. 2012: 8). In contrast to the Polyarchy variable, the BMR indicator does not account for civil liberties and therefore provides a more minimalist definition of democracy than the V-Dem project (Boix et al. 2012: 5). The most commonly used Polity IV indicator, by contrast, focuses on three dimensions that are constitutive for democracies, comprising (1) the institutions and procedures that are necessary to express citizens' preferences, (2) institutionalized mechanisms that constrain the executive as well as

(3) civil liberties (Marshall et al. 2018: 14). Despite noticing that the existence and guarantee of civil liberties are essential features of democracy, the Polity IV indicator, however, does not measure this component and therefore differs from the V-Dem project. Finally, and in contrast to the V-Dem and BMR project, the Polity IV indicator does not comprise a minimal suffrage criterion (Boix et al. 2012: 2). Especially with regard to earlier decades of my sample, the exclusion of a minimal suffrage criterion may affect the findings on political regime type effects. In sum, using different democracy indicators is a suitable way to control for the robustness of my findings.

For further control variables on socio-economic factors, geography, or colonial legacies, the Gapminder project (Gapminder 2018), the V-Dem project (Coppedge et al. 2019), the United Nations Geoscheme (UN 2019) as well as the National Material Capabilities Dataset of the Correlates of War Project (Singer 1988) and the Colonial History Data (Hensel et al. 2007) have been used. Given the long time span the PENLEG dataset focuses on, it was not possible to control for more fine-grained variables as such data was not available. Moreover, controlling for specific socio-economic or historical factors often only makes sense for certain world regions or periods of time, which further restricts the choice of appropriate confounding factors.

5. Methodology

For answering the research questions of my dissertation, a combination of descriptive statistics and regression analyses were used.

Article A, which introduces the PENLEG dataset and maps global pension patterns, exclusively relies on descriptive statistics and additionally highlights case-based evidence that is representative for a broader range of countries to explain different pension trajectories.

For article B, which answers the question whether nondemocratic regimes preferred different pension designs than democracies when implementing their first old-age pension programs, logistic regressions were used. Given the small sample size of the PENLEG dataset (comprising maximally 124 observations) which fosters biased logit coefficients (King/Zeng 2001: 138) and the problem of quasi-separation (Heinze/Schemper 2002), standard maximum likelihood estimate procedures were not suited. Therefore, a penalized logistic regression design was used, applying Firth's penalized logistic regression approach (Firth 1993).

For article C, which focuses on the priorities of democratic and nondemocratic regimes with regard to pension coverage rates and benefit generosity levels, OLS regressions were applied to test for significant political regime differences. As provident funds and mandatory individual account systems pay pension benefits as a lump sum at the end of a working career, a comparable pension replacement indicator cannot be established for these pension designs. However, the systematic exclusion of these pension designs from the regression may foster a selection bias. To account for this problem, a Heckman selection model was calculated in advance to test whether the exclusion of these pension designs results in biased estimates. As no evidence for a selection bias could be found, simple OLS regressions were applied.

6. Contributions of the articles to the cumulative dissertation

This chapter discusses the contributions, empirical strategies and limitations of each article of the cumulative dissertation separately and in more detail.

6.1 Contributions of article A

Grünewald, Aline (2020): The historical origins of old-age pension schemes: Mapping global patterns. (Online First: *Journal of International and Comparative Social Policy*)

6.1.1 Outline

Existing research on the historical origins of old-age pension schemes around the world is confined to regional and case studies. Due to data limitations, global and historical studies on different dimensions of old-age pension schemes are largely missing. To address this shortcoming, article A introduces the novel PENLEG dataset (Pension Legislation around the World, 1880-2010) (PENLEG 2021), which provides data on six pension dimensions of the first old-age pension programs that have been implemented around the world. These dimensions comprise 1) pension introduction dates; 2) pension designs; 3) modes of pension financing; 4) eligibility criteria; 5) pension coverage rates; and 6) benefit generosity levels. In addition, the article maps data on five old-age pension dimensions to highlight global pension patterns. For understanding the specific pension trajectories, the article refers to case-based evidence. In sum, it can be shown that economic development strategies, colonial legacies, the Soviet model of social security and economic and administrative reasons have strongly affected the emergence and the specific design of old-age pension schemes.

6.1.2 Previous research

Descriptive studies on old-age pensions from a global perspective have already depicted various patterns of pension developments related to different dimensions of old-age pension schemes (Dixon 2000; Mahon et al. 2015; Mulligan/Sala-i-Martin 2004). However, these studies suffer from several shortcomings. Even though they describe or map global pension patterns, these studies are based on current pension data and therefore do not capture the historical features of the first old-age pension programs around the world. While Dixon's study uses data of the United States Social Security Administration (USSSA) that has been depicted in its "Social Security throughout the World" report of 1995 (Dixon 2000: 41), Mulligan and Sala-i-Martin's study sticks to this USSSA edition as well and additionally uses the USSSA report of 1997. Moreover, their study sums up existing findings of their previous research to highlight global patterns (Mulligan/Sala-i-Martin 2004: 20). In contrast to these studies, Mahon et al. (2015) have basically consulted current pension laws provided by the ILO's NATLEX project as well as the "Social Security throughout the World" reports from 2009 and 2010. Moreover, they use information "from the Mutual Information System on Social Protection of the EU and the Council of Europe" (Mahon et al. 2015: 195). While all studies map data on different pension dimensions from a global perspective, Mulligan and Sala-i-Martin (2004) additionally connect existing theories to global observations. In so doing, they focus on positive theories which are dedicated to explain how goods and resources are allocated and subdivide them into a political versus efficiency strand (Mulligan/Sala-i-Martin 2004: 2).

In addition to the missing historical focus, the aforementioned studies have several empirical limitations, especially concerning their indicators on pension benefits and legal pension coverage rates. While Mahon et al. (2015) provide an indicator on minimum pensions in US Dollars adjusted to purchasing power parity (Mahon et al. 2015: 196, 200-201) as well as an indicator on pension benefits in relation to monthly GNI per capita (Mahon et al. 2015: 202), Dixon only describes existing eligibility criteria (Dixon 2000: 45-47). Moreover, he provides an overview on how frequently different modes of cash entitlements, such as flat-rate pensions or lump sum pensions, occurred around the world (Dixon 2000: 48-49). With the exception of some country examples (see e.g. Dixon 2000: 48), his study, however, does not provide data on benefit generosity as such. A similar problem concerns the study of Mulligan and Sala-i-Martin (2004). Instead of providing a pension replacement indicator, they map data on pension spending in relation to different reference points, such as GDP per capita or the national labor income. Moreover, they provide data on the income of the elderly in relation to the nonelderly to express their wealth in old age (Mulligan/Sala-i-Martin 2004: 7). However, the aforementioned indicators are only calculated for 11 OECD countries and thus cannot tell us anything about benefit generosity on a global scale. While the indicator of Mahon et al. (2015) is most encompassing and comparable, as it relates benefits to purchasing power parity, we are still missing a proper pension replacement indicator reflecting existing legislation, especially for the historical origins of old-age pension schemes.

A second problem concerns the data on pension coverage rates that has been used in these studies. While Mulligan and Sala-i-Martin (2004) do not provide such information at all, Dixon only describes coverage requirements and highlights how frequently specific occupational groups, such as farm employees or the self-employed, were mentioned in all pension laws (Dixon 2000: 44). However, neither a comprehensive legal nor effective pension coverage indicator is provided. In contrast to Dixon, Mahon et al. (2015) compare the effective coverage rates of high-, middle- and low-income countries with different pension designs with each other, using current ILO data (Mahon et al. 2015: 202). Comprehensive legal pension coverage indicators that can be disaggregated to identify the covered groups are still missing. However, knowing more about the first pension beneficiaries can foster our understanding of the political and economic motivations that were decisive for the implementation of old-age pension programs. Thus, more sophisticated indicators on pension generosity levels and legal pension coverage rates become all the more necessary, especially with regard to the historical origins of old-age pension schemes.

Even though Mares (2005) as well as Knutsen and Rasmussen (2018) have started to provide legal pension coverage indicators, they are highly aggregated so that individual groups of beneficiaries cannot be identified. Moreover, these indicators do not consider that a pension program may only cover a specific segment of an occupational group but not the entire occupation as such.

Last but not least, with the exception of Mulligan and Sala-i-Martin's study (2004), Dixon (2000) and Mahon et al. (2015) only describe and map global patterns, but do not pay attention to the factors that have fostered specific pension developments. Mulligan and Sala-i-Martin, by contrast, highlight that policy decisions on old-age pensions often reflected efficiency reasons but were also shaped by political incentives. In sum, the authors argue that both theoretical strands are suitable to explain different old-age pension trajectories (Mulligan/Sala-i-Martin 2004: 28). Even though their study refers to findings of the existing welfare state literature and relates them to different old-age pension dimensions, this has not been done in a systematic way but is rather added in an ad-hoc manner.

Finally, the methodological debate on what constitutes a first old-age pension scheme is still not fully settled, as most studies refer to the "Social Security throughout the World reports" of the United States Social Security Administration (USSSA) which uses imprecise criteria to define a first old-age pension scheme (Grünewald/Seelkopf 2016: 114-115; Knutsen/Rasmussen 2018: 671). In sum, the existing research has the following limitations. First, descriptive studies on the first old-age protection schemes around the world mapping different dimensions of old-age pension programs are missing, as existing studies have only focused on recent pension trajectories. Second, historical pension replacement rate indicators have not been defined so far. The same holds true for legal pension coverage indicators that can be disaggregated and that account for vertical coverage, too. Third, it is still not understood how factors that have fostered the historical emergence of old-age pension schemes have also shaped other features of old-age pensions, such as their pension designs or eligibility criteria.

6.1.3 Empirical strategy

This article uses descriptive statistics to map historical patterns of old-age pension schemes, focusing on the following five pension dimensions: pension designs, modes of pension financing, retirement ages, legal pension coverage rates and benefit generosity levels. In addition, the article reviews the existing literature on the determinants that have fostered the implementation of old-age pension schemes or specific pension designs. The descriptive statistics are finally interpreted in the light of the existing welfare state literature by elucidating case-based evidence that is representative for a broader range of countries. In sum, the article mixes descriptive statistics with case study evidence.

6.1.4 Contributions

Article A contributes to the existing literature in four substantial ways. First of all, the article introduces a novel dataset entitled PENLEG (Pension Legislation around the World, 1880-2010) (PENLEG, 2021), which provides historical data on six dimensions of old-age pensions for all countries around the world that have been independent while implementing their first old-age pension schemes. These dimensions comprise 1) pension introduction dates, 2) pension designs, 3) modes of pension financing, 4) eligibility criteria, 5) pension coverage rates and 6) benefit generosity levels. In contrast to the existing SPaW project (Rasmussen 2016), the PENLEG dataset offers more specific data on pension designs (not captured in the SPaW project), their mode of financing (see e.g. exact amount of pension contributions) and eligibility criteria (see gendered perspective). Second, the PENLEG dataset also contributes to the methodological debate on how to define a first old-age pension program and how to estimate legal pension coverage rates. In so doing, the PENLEG dataset defines two criteria that must be fulfilled to speak of a first old-age pension program. Moreover, it provides a legal pension coverage indicator that accounts for horizontal coverage (Which occupational groups are covered?) and vertical coverage (To which extent are these occupational groups covered?) and which can be disaggregated to identify the covered groups. The existing legal pension coverage indicators, by contrast, are highly aggregated and only focus on horizontal coverage (Mares 2005; Rasmussen 2016). Third, the PENLEG dataset provides the first historical pension replacement rate indicator.

Finally, the article maps global pension patterns of the first old-age pension schemes around the world, focusing on their pension designs, modes of financing, retirement age as well as legal pension coverage rates and benefit generosity levels. Existing studies have only mapped global pension patterns for current pension systems (Dixon 2000; Mahon et al. 2015; Mulligan/Sala-i-Martin 2004). Moreover, the article reviews the existing literature on the determinants of old-age pension adoptions and their specific designs and interprets the descriptive findings in the light of the existing literature. For this purpose, case-based evidence is highlighted. The study reveals that factors that were decisive for the implementation of old-age pensions have also affected other dimensions of these programs, such as retirement ages or modes of pension financing. It can be shown that policy-makers especially paid attention to economic, social and administrative capacities of their countries when designing different dimensions of old-age pension programs. Additionally, political motivations associated with enhancing regime legitimacy or fostering nation-building after decolonization were decisive. Last but not least, the study shows that the Soviet model of social security served as a role model for many communist and socialist countries around the world. Moreover, the French colonial legacy had a huge impact on the definition of the first pension beneficiaries in newly independent states.

6.1.5 Limitations

The article, however, has also some empirical and theoretical limitations. While the PENLEG dataset relies on pension laws for coding different dimensions of old-age pension schemes, we still do not know anything about the effective coverage rates of the first pension systems. As informal labor market structures or missing state capacity can inhibit the protection of the elderly, effective pension coverage rates are often lower compared to codified rights. Second, the PENLEG dataset does not capture a coverage indicator for means-tested pension programs. Existing approaches, thus far, have combined a summary indicator with a ranking scale to estimate legal pension coverage rates (Mares 2005; Rasmussen 2016). While the summary indicator counts how many occupational groups of a predefined list are covered, the ranking scale assigns predefined values to pension designs whose pension coverage rates cannot be estimated with the aforementioned approach. Assigning predefined values to pension designs, such as means-tested programs, however, is problematic. On the one hand, no variance in means-tested pension coverage rates can be documented. On the other hand, existing research has still not agreed on whether means-tested pension programs can cover broader or narrower segments of the population (Esping-Andersen, 1990; Korpi/Palme, 2008; Scruggs et al., 2017). Thus, assigning a fixed coverage rate can be misleading. Given this problem, the PENLEG dataset does not provide a legal pension coverage indicator for means-tested pension programs. However, data projects which define criteria to estimate variance in legal pension coverage rates of means-tested pension programs become all the more necessary. Such criteria should comprise the variety of income tests or residence requirements underlying means-tested pension programs and finally should assess their capacity to cover broader or narrower groups of beneficiaries qualitatively.

Last but not least, the article is also limited in a theoretical way. Even though focusing on case-based evidence is a suitable way to highlight important factors that have shaped specific pension developments, inferences about the explanatory power of the identified factors in relation to competing explanations cannot be made. Empirical studies controlling for different confounding factors simultaneously become all the more necessary to account for the importance of specific explanatory factors in comparison to alternative explanations. Moreover, as the article shows that colonial legacies and the Soviet model of social security have strongly affected pension systems around the world, we still do not know anything about the causes. Policy transfer studies and in-depth case studies can complement these descriptive findings by disentangling the causal mechanism that have resulted in the emulation of Soviet or colonial welfare approaches.

6.2 Contributions of article B

Grünewald, Aline (2020): Power Consolidation with Welfare Designs. The Historical Origins of Old-Age Pensions in Nondemocratic Regimes around the World. *(Working Paper)*

6.2.1 Outline

Do democratic and nondemocratic regimes prefer different old-age pension designs? Article B answers this question by analyzing the historical origins of old-age pension schemes in all independent countries around the world. In this article, I argue that not only the *kind* of welfare programs but also its *design* is associated with different utilities for democratic and nondemocratic regimes, resulting in different welfare preferences. I assume that nondemocratic regimes prefer social insurance designs when implementing old-age pensions for the first time. Second, I expect that closed autocracies are as likely as electoral authoritarian regimes to opt for social insurance designs. As article B shows, nondemocratic regimes were more likely than democracies to implement old-age pensions with a a social insurance design compared to other pension designs. This effect, however, became less robust in the postcolonial period. Especially the French colonial legacy has affected the choice of social insurance designs in later years. Finally, the article finds no significant differences between closed autocracies and electoral authoritarian regimes regarding preferences for social insurance designs.

6.2.2 Previous research

Quantitative studies on the historical origins of old-age pension schemes from a political regime perspective have focused on the question whether democratic or nondemocratic regimes have pioneered the implementation of old-age pension schemes. Based on event history models (Kangas 2012; Usui 1994) or binary time-series cross-sectional regressions (Knutsen/Rasmussen, 2018; Schmitt et al. 2015), they find no evidence for political regime differences. In addition to these studies, a smaller strand of research has focused on specific pension designs. Cutler and Johnson show that nondemocratic regimes in Western Europe implemented social insurance designs significantly earlier than their democratic counterparts (Cutler/Johnson 2004: 108). This political regime difference, however, disappears when controlling for more confounding factors (Cutler/Johnson 2004: 110). The recent spread of social pensions in countries of the Global South, in turn, was spearheaded by democratic regimes (Böger/Leisering 2018; Rudolph 2016). What is, however, missing in the extant literature is an article that takes the whole variety of different pension designs into account and asks whether democratic and nondemocratic regimes preferred different pension designs when implementing their first old-age pension programs.

6.2.3 Empirical strategy

For answering this research question, article B uses descriptive statistics and logistic regressions. In so doing, the article maps pension design preferences from a political regime perspective and additionally applies logistic regressions to test whether nondemocratic regimes were more likely to opt for social insurance designs. As current research has shown, running logistic regressions with small sample sizes can have detrimental effects on the validity of coefficients, standard errors and the model fit. Especially Wald tests can be more prone to type II errors (Hauck/Donner 1977). Additionally, complete or quasi-complete separation are much more likely to occur in small samples, defined as instances in which a confounding factor perfectly predicts the outcome variable, resulting in infinite estimates (Heinze/Schemper 2002: 2409). In such cases, maximum likelihood estimates cannot be estimated. In the models of article B, especially the inclusion of the French colonial legacy dummy variable resulted in quasi-separation, as all former French colonies have opted for a social insurance design after independence. To address the problem associated with small sample size in general and separation in particular, a penalized logistic regression design was applied, using Firth's estimation strategy (Firth 1993). As Heinze and Schemper show, this method can counter the problem of separation efficiently by yielding finite estimates (Heinze/Schemper 2002: 2411).

6.2.4 Contributions

The article makes three major contributions to the existing literature. Based on the novel PENLEG dataset, article B maps pension design preferences from a political regime perspective for the first time by accounting for the whole variety of pension designs. Second, the article makes a new theoretical argument by stating that not only the kind of welfare program but especially the design can help nondemocratic regimes to bind citizens to the state. As Cutler and Johnson have already noted, the social contributions associated with social insurance schemes can help to bind workers to the state, as "they give workers more sense that 'the State has their money', and thus an interest in the State's survival" (Cutler/Johnson 2004: 92). I extend their argument by stating that this taxing mechanism is not only advantageous with regard to workers but also with regard to employers. As many nondemocratic regimes protect important industries with import restrictions or other measures (see e.g. Mares/Carnes 2009), social insurance schemes are a suitable means to gain oversight and control of the economic sector. Moreover, by collecting social insurance contributions, the state returns a reward for previously granted economic privileges. Unlike other contributory financed pension systems, such as provident funds, social insurance contributions are used to pay for current beneficiaries and therefore entail a solidarity mechanism, too. This can further inhibit conspiracies. Given the mentioned advantages, I expect social insurance schemes to be a suitable tool to bind citizens to a nondemocratic regime. Second, I expect closed autocracies to be as likely as electoral authoritarian regimes to opt for social insurance designs, as this pension design is advantageous for both regime types. In closed autocracies, the introduction of social insurance designs can compensate for missing political rights, whereas in electoral authoritarian regimes it can mitigate the negative effects associated with e.g. unfair elections by showing a regime's willingness to commit to citizens' preferences.

Third, the article assesses these hypotheses empirically, showing that nondemocratic regimes were more likely than democracies to opt for a social insurance design. Additionally, the article finds no significant differences between closed autocracies and electoral authoritarian regimes with regard to social insurance preferences. However, the article also shows that pension design preferences are not independent of time. Especially after decolonization colonial legacies were much more decisive for pension design preferences than the political regime type, which largely loses its explanatory power in restricted samples that focus on the postcolonial period. As many newly independent states were not fully-fledged democracies after decolonization but often had persisting ties with their former colonial powers, it is not surprising that they followed the social policy models and propositions of their former colonizers.

In sum, my findings have several implications for future research. First, the choice of a specific pension design automatically affects other dimensions of old-age pension schemes, such as their mode of financing or their coverage rates. Hence, it becomes of utmost importance to consider the pension design choice when analyzing these dimensions, too. Second, while many studies often arrive at different conclusions about the effects of the political regime type on social spending (see e.g. Nelson 2007), this study further reveals that the historical context also exerts a huge impact on the significance of political regime effects. Given these findings, future studies should pay more attention to the period they analyze and where appropriate include further control variables that express the peculiarities of the respective historical context.

6.2.5 Limitations

Article B mainly suffers from empirical limitations. As the dataset maximally comprises 124 observations spreading over more than 100 years, this article faced several restrictions regarding the amount and choice of confounding factors that could be used. First, given the small sample size and the lopsided dependent variable (98 observations with social insurance schemes versus 26 observations with another pension design), it was only possible to control for a limited number of confounding factors in order to obtain unbiased estimates (Babyak 2004; Long 1997; Peduzzi et al. 1995). Second, as the sample covers a time span of more than 100 years, it was not possible to control for other important factors, such as the effects of communism, state capacity or different nondemocratic regime subtypes. Such data was either not available for the entire observation period or suffered from empirical limitations. Empirical limitations were especially pronounced when focusing on the existing communism variables. Even though La Porta et al. provide an indicator on communist legacy, this variable only accounts for whether a country had a communist past before the 1990s (La Porta et al. 1999: 238). Hence, this indicator is only suitable for retrospective studies that focus on past experiences. For article B, however, an annual indicator on communist rule would have been required. Even though the V-Dem project provides a new indicator on the ideology of governments, this indicator is not suited for my study. Based on expert surveys, the V-Dem project offers five ideological categories defined as 0) nationalist 1) socialist or communist, 2) restorative or conservative, 3) separatist or autonomist or 4) religious (Coppedge et al. 2019: 206). Country experts are then asked to tick all those categories, which according to their perception, represent the ideology of the respective government in year X best. Finally, an average value for each component is calculated. In so doing, the communist variable can tell us how dominant this ideology is compared to others. However, it does not measure the importance of the ideology for the political system as such. In my sample, both Norway (1936) and Cuba (1963) show the same value on the communist variable of the V-Dem project. However, Cuba relied almost exclusively on this ideology to legitimize its regime, whereas in Norway this ideology was only important to a small extent as the V-Dem variable "Ideology" (v2exl_legitideol) shows. Unfortunately, these two indicators cannot be combined so that the information on communist ideology is not meaningful if we cannot simultaneously account for their importance for a regime's legitimacy. Finally, the Kailitz dataset also provides an indicator on communist ideocracies. It considers whether a regime is legitimized "by a utopian and totalitarian ideology that is defined as the common interest of the governing and the governed"

(Kailitz 2013: 4). However, this variable is only available for the period from 1946 to 2010 and thus can only capture about two thirds of my observations (68.64%), leaving many important communist pioneers aside. Hence, more data on the independent variables become all the more necessary to consider more specific indicators that can affect the choice of social insurance designs, too.

6.3 Contributions of article C

Grünewald, Aline (2021): From Benefits and Beneficiaries: The Historical Origins of Old-Age Pensions From a Political Regime Perspective (Online First: *Comparative Political Studies*)

6.3.1 Outline

Policy-makers are often confronted with trade-offs when designing welfare programs for the first time. This article asks whether democratic and nondemocratic regimes had significantly different priorities with regard to the pension coverage rates and benefit generosity levels of their first pension programs. The study shows that democratic regimes prioritized pension coverage rates, which were significantly higher in democratic regimes. In contrast to democracies, nondemocratic regimes put more emphasis on benefit generosity levels, which were significantly higher than in democracies. Additionally, the study provides descriptive statistics on old-age pension designs and disaggregated pension coverage rates from a political regime perspective to further disentangle the mechanisms that were conducive for different pension coverage rates and benefit generosity levels in democratic and nondemocratic regimes.

6.3.2 Previous research

Thus far, there only exist two studies which take a closer look at pension coverage rates from a political regime perspective (Knutsen/Rasmussen 2018; Schmitt 2019). Knutsen and Rasmussen's global and longitudinal study on old-age pensions shows that legal pension coverage rates were significantly higher in democratic than in nondemocratic regimes during the period from 1880 to 2010 (Knutsen/Rasmussen 2018: 679). In contrast to Knutsen and Rasmussen, Schmitt finds no evidence for political regime differences when analyzing today's effective pension coverage rates in countries of the Global South (Schmitt 2019). However, she shows that effective coverage rates of contributory financed pension schemes were higher in nondemocratic regimes, whereas the reverse pattern can be found for non-contributory financed pension schemes (Schmitt 2019: 11). In contrast to coverage rates, pension replacement rates have not been studied from a political regime perspective so far due to missing data. Given this shortcoming and the missing focus on the historical origins of old-age pension schemes from a global and comparative perspective, article C analyzes political regime differences in legal pension coverage rates and pension replacements rates of the first old-age pension programs around the world, using the novel PENLEG dataset. In so doing, the article aims to uncover whether democratic and nondemocratic regimes had different pension priorities and thus put either more emphasis on high pension coverage rates or high pension replacement rates.

6.3.3 Empirical strategy

Article C uses OLS regressions to test for significant political regime differences in legal pension coverage rates and benefit generosity levels. As earlier levels of the independent variables can affect the values of the dependent variable, all independent variables were lagged by one year (t_{-1}). Moreover, models with e.g. average values of the independent variables (t_0, t_{-1}, t_{-2}) were estimated to test for the robustness of the results. As the PENLEG dataset does not provide coverage rates for means-tested pension programs, robustness checks with predefined coverage rates were estimated, too. For coding coverage rates of means-tested pension programs, the coding procedure of Rasmussen was applied (2016). A similar problem concerns pension replacement rates. While provident funds and mandatory individual account systems provide pension benefits as a lump sum at the end of a working career, it is not possible to create a comparable pension replacement rate indicator for these pension designs. However, as the systematic exclusion of these pension designs may foster biased estimates, Heckman selection models were estimated in advance. As Mill's lambda shows, the exclusion of these pension designs does not bias the results, so that simple OLS regressions can be applied. In addition to these OLS regressions, article C presents descriptive findings on pension design preferences and disaggregated pension coverage rates from a political regime perspective to shed further light on the mechanisms that foster political regime differences in pension coverage rates and pension replacement rates.

6.3.4 Contributions

Article C contributes to the existing literature in three substantial ways. First, the article argues that old-age pensions are multidimensional programs. When implementing their first old-age pension programs, policy-makers have to make policy decisions about several pension dimensions simultaneously and in so doing are forced to set priorities. Focusing on the two most central dimensions of old-age pension programs, legal pension coverage rates and pension replacement rates, I expect that democratic and nondemocratic regimes had significantly different priorities. As democracies depend on a much broader support base than nondemocratic regimes (Bueno de Mesquita et al. 1999), I assume that democratic regimes put more emphasis on legal pension coverage rates, which should end up in significantly higher pension coverage rates (Hypothesis 1). With regard to pension generosity levels, I expect the reverse pattern (Hypothesis 2). To bind citizens effectively to the state, welfare benefits in nondemocratic regimes must be generous. Moreover, given the expectedly lower number of people that nondemocratic regimes protect, realizing higher benefits should be less costly as well.

Second, article C tests these hypotheses empirically and finds strong evidence for the stated hypotheses. Finally, the article provides descriptive statistics on pension design preferences and disaggregated legal pension coverage rates from a political regime perspective. While both democratic and nondemocratic regimes put a strong emphasis on the protection of industrial and commercial workers, democracies protected marginalized economic groups, such as temporary or seasonal workers, to a much stronger extent. By disaggregating legal pension coverage rates, this article provides descriptive evidence for the implicit assumption underlying the selectorate theory that nondemocratic regimes mainly cover the most important segments of society when implementing a new welfare program (Bueno de Mesquita et al. 1999).

In sum, this article highlights the importance of studying different welfare program dimensions in relation to each other to derive a comprehensive understanding of political regime differences in welfare policies and thus provides the first global and comparative study that focuses on political regime differences in pension coverage rates and benefit generosity levels simultaneously. Additionally, by mapping descriptive findings on further pension dimensions, more about the mechanisms that affect pension coverage rates and benefit generosity levels in democratic and nondemocratic regimes can be learned.

6.3.5 Limitations

Even though the findings on the effects of the political regime type are strongly significant, also when testing for alternative democracy indicators, controlling for democratic and nondemocratic subtypes, such as parliamentarian and presidential democracies or monarchies and one-party regimes, would be a fruitful complement. Moreover, as this study was restricted to the historical origins of old-age pensions around the world, longitudinal studies become all the more necessary to test whether the identified pension priorities persist over time. Last but not least, this research should be extended to study other welfare programs, such as sickness or unemployment protection schemes. In so doing, it could be tested whether the identified patterns can be generalized or only apply to old-age pensions.

6.4 Conclusion

To conclude the summary report, I highlight the implications of my cumulative dissertation for future research. By creating a novel dataset on the historical origins of old-age pension schemes, it was possible to map global and historical pension patterns for the first time, especially with regard to more nuanced pension dimensions, such as disaggregated pension coverage rates or modes of pension financing. The identified patterns and the case study evidence have highlighted promising venues for future research. On the one hand, article A has shown that external factors, such as the colonial or Soviet legacy, had a strong imprint on the design of different pension dimensions. However, we still do not know anything about the causes that have fostered this emulation processes. Especially policy transfer studies or in-depth case studies would be suited to shed more light on the policy-making process in the respective countries and in so doing add alternative explanatory factors. Future research could also take a closer look at the long-term effects of inherited old-age policies. It could be asked in how far emulated policies reflected the social and economic realities of the given countries and which implications a possible mismatch had for the future development of old-age protection schemes. Moreover, we still do not know under which conditions colonial or Soviet effects could persist or which kind of critical junctures triggered new developments in the pension sector. It can be expected that especially countries that strongly depended on development aid or structural adjustment programs also modified their welfare systems in line with the preferences of their financiers. Finally, article A has also highlighted the effect of different economic development models, such as import-substitution industrialization, on old-age pension development. Relating to this, the strategic motivations to control economic elites when implementing old-age pensions for the first time were highlighted as well. While the existing research on the historical emergence of old-age pension schemes has mostly focused on the effects of labor movements (see e.g. Wilensky 1974; Schmidt 2005), understanding the impact of different economic development models from a global perspective as well as the bargaining with economic elites would be a fruitful complement to my research.

With articles B and C, this cumulative dissertation has contributed to the existing literature on welfare policies from a political regime perspective by emphasizing the multidimensionality of pension programs. The current research has mainly disaggregated political regime types more closely to derive a better understanding of which political regime components or subtypes were associated with more or better welfare policies. The independent variable as such, however, was strongly neglected, as most studies on the welfare regime-nexus mainly used spending or welfare outcome data. By focusing on a single welfare program, this cumulative dissertation has depicted and empirically assessed different dimensions of old-age pension schemes from a political regime perspective. In so doing, this project has shown that democratic and nondemocratic regimes had significantly different pension design preferences. As the choice of a specific pension design automatically affects other pension dimensions, such as coverage rates or modes of financing, understanding welfare design preferences from a political regime perspective becomes all the more necessary to derive a better understanding of political regime differences in these dimensions. Additionally, article C has found evidence for different pension priorities related to coverage rates and benefit generosity levels. While democracies had significantly higher pension coverage rates than nondemocratic regimes, the reverse pattern could be found for pension generosity levels. This finding shows that restricting studies to single dimensions of welfare programs, such as coverage rates, can tell us only part of the political regime story. Hence, future research could benefit from a closer attention to the variety of welfare designs and welfare dimensions from a political regime perspective. As my cumulative dissertation has paid particular attention to democratic and nondemocratic regimes, it would be a fruitful complement to combine studies on the variety of welfare designs and the multidimensionality of welfare dimensions with the existing research on the institutional variety of democratic and nondemocratic regimes and their effects on welfare policies. In order to generalize my findings on pension designs, coverage rates, and generosity levels, other welfare programs must be analyzed as well. However, it can be expected that the identified regime patterns on pension coverage and benefit generosity rates do not forcibly hold true for welfare programs such as unemployment protection schemes or sickness programs. As sickness programs cannot be easily targeted on groups that are essential for regime survival, and as unemployment protection schemes focus on groups that currently do not contribute to the national income, it can be expected that nondemocratic regimes are more reluctant to offer generous benefits. Moreover, longitudinal studies become all the more necessary to corroborate whether the findings of my cumulative dissertation persist over time. Finally, as article C has for the first time depicted the groups of pension beneficiaries from a political regime perspective, it would be important to analyze why and under which conditions nondemocratic regimes also covered more marginalized groups, such as domestic and family workers, that at first sight do not seem to be important for regime survival. The same holds true for the coverage of employers and the self-employed, which in general are not expected to belong to the first groups of beneficiaries. Knowing more about such preferences could be an important contribution to refine existing theories like the selectorate theory (Bueno de Mesquita et al. 1999).

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Part II: Articles of the cumulative dissertation

1. Article B

Power Consolidation with Welfare Designs
The Historical Origins of Old-Age Pensions in Nondemocratic Regimes around the World

Abstract

Old-age pensions are the most widespread social security programs around the world that in many countries account for a huge part of the national budget. Based on the novel PENLEG dataset (Pension Legislation around the World, 1880-2010), this paper answers the question whether the political regime type has affected the choice of a specific pension design when implementing old-age pensions for the first time. The global study shows that nondemocratic regimes were more likely to implement social insurance schemes than other pension designs, as these programs are best suited to bind citizens to the state and to target benefits on important subgroups. This effect, however, has become less robust since the 1960s, with colonial legacies dominating pension design preferences. Finally, the study cannot find evidence for electoral authoritarian regimes being more likely to implement social insurance schemes than closed autocracies.

1. Introduction

With 191 countries and territories providing protection for the aged, old-age pensions are the most widespread social security programs around the world that in many countries account for a huge part of the national budget (ILO 2014: 267; Lloyd-Sherlock 2000: 108). Whereas in Great Britain and the USA old-age pensions for civil servants and the armed forces already existed in the 17th century (Lewin 2003), modern pensions covering broader segments of the population were first implemented at the end of the 19th century, starting with Bismarck's Germany. Pioneering social security in an attempt to counter uprising rebellions in response to the anti-socialist laws of 1878, Otto von Bismarck perceived old-age pensions as an ideal tool to enhance loyalty and to bind workers to the monarchic state (Schmidt 2005: 28). Similar motivations also guided the democratic government of East Timor when implementing its first old-age protection scheme in 2006. As the governing party had failed to live up with its promises stated during the independence movement in 2002, ongoing riots and violence have shattered the country ever since. By providing non-contributory financed old-age pension programs the government aimed at stopping social unrest and consolidating its power (Bongestabs 2016: 1).

Despite the global spread of old-age pensions in both democratic and nondemocratic regimes, historical research on welfare state formation has only recently started to disentangle political regime differences more closely. The existing literature, however, has only answered the question whether democratic or nondemocratic regimes have pioneered the implementation of old-age pension schemes. Whereas Mares and Carnes' descriptive study shows that in developing countries many more authoritarian regimes implemented old-age pensions first, this finding does not apply to Western welfare states (Mares/Carnes 2009: 97). Quantitative studies, by contrast, cannot find any political regime differences (Kangas 2012; Knutsen/Rasmussen 2018; Schmitt et al. 2015; Usui 1994). Moreover, Cutler and Johnson find evidence for nondemocratic regimes pioneering the implementation of old-age pension schemes with a social insurance design in Western Europe. This finding, however, only stays robust if no other confounding factors are included in the regression (Cutler/Johnson 2004: 111). The recent spread of non-contributory financed old-age pension schemes in the Global South, by contrast, was largely driven by democratic regimes (Rudolph 2016: 35).

Even though these studies have started to shed more light on the *policy-making process* from a political regime perspective by highlighting the chances of democratic and nondemocratic regimes to implement (specific) old-age pension designs *first*, they are silent about *policy preferences as such*. However, it can be asked whether democratic and nondemocratic regimes had significantly different pension design preferences when implementing old-age pensions for the first time. As the implementation of an old-age pension program creates a precedent by structuring statutory, financial and bureaucratic resources, the choice of a specific pension design has a fundamental effect on redistribution and the future leeway of pension reforms (Hicks et al. 1995: 331). Thus, analyzing the historical origins of old-age pension designs serves as a useful starting point to expand our knowledge about nondemocratic welfare policies, which so far have been quite neglected in current welfare state research (Kuhnle/Sander 2010: 78).

By answering the aforementioned research question, this article contributes to the existing literature in three substantial ways. First, the article introduces a novel dataset on the historical origins of old-age pension schemes entitled "PENLEG - Pension Legislation around the World, 1880-2010" (PENLEG 2021). In contrast to existing data projects, this dataset makes a new definition of what constitutes a first old-age pension program and additionally provides information on the specific pension design that has been chosen. Second, this study maps pension design preferences from a political regime perspective for the first time by accounting for the whole variety of different pension designs. Finally, a new theoretical argument about pension design preferences in nondemocratic regimes is presented and empirically assessed. It can be shown that nondemocratic regimes strongly preferred social insurance designs when implementing old-age pensions for the first time. However, this effect has become less robust since the 1960s, with colonial legacies dominating pension design preferences. Moreover, no significant differences between closed authoritarian regimes and electoral autocracies can be found with regard to social insurance design preferences. The remainder of the article is structured as follows: After a short literature review and the presentation of the theoretical arguments, the novel PENLEG dataset is introduced. Subsequently, pension design preferences are graphically depicted from a political regime perspective before penalized logistic regressions are used to test for significant political regime differences. The study closes with a critical discussion of the findings and suggestions for further research.

2. Literature review and theory

The welfare state literature has closely linked the development of the modern welfare state to the process of democratization (Flora/Alber 1981; Rimlinger 1971; Wilensky 1974). It has been argued that the extension of the franchise shifts the income level of the median voter towards lower ends which in turn raises demands for more redistribution (Meltzer/Richard 1981: 921). With regard to the Western world, recent studies have found a strong link between franchise extension and the expansion of the welfare state (Aidt et al. 2006; Lindert 1994). Moreover, many studies show that democracies spend more on health, education and social services (Brown 1999; Brown/Hunter 2004; Przeworski 2000; Stasavage 2005) and even perform better with regard to various social policy outcomes, such as infant mortality rates (Besley/Kudamatsu 2007; Gerring et al. 2012), educational attainment (Halperin et al. 2008) or human development (Brown 2004; Beer 2009). Despite ample evidence for a democracy-advantage, there also exist critical studies which cannot find any positive link between democracy and public spending patterns (Kaufman/Segura-Ubiergo 2001; Mulligan et al. 2004) or welfare outcomes (Ross 2006). Historical case studies further reveal that many nondemocratic regimes also pioneered the introduction of welfare programs around the world (Carnes/Mares 2007: 97; Esping-Andersen 1990: 15; Skocpol/Orloff 1986: 234-235). But why should nondemocratic regimes implement welfare programs at all? And which kinds of welfare programs and welfares designs do they prefer most?

2.1 Welfare provision and political regime survival

As the case of Rwanda's "benevolent dictator" (Russell 2012: 13) Paul Kagame shows, nondemocratic leaders can feel ideologically committed to protect their citizens from social grievances. The political regime literature, however, treats the provision of welfare policies in nondemocratic regimes mainly as a means to ensure regime survival. While both democratic and nondemocratic regimes have an intrinsic motivation to stay in office, nondemocratic leaders, however, run a high risk of assassination when being defeated (Geddes et al. 2014: 312). Countering rebellions arising from society as well as striving for cooperation to circumvent internal regime threats becomes of utmost importance to ensure regime survival (Gandhi 2010: 74). To do so, nondemocratic leaders can rely on tools like repression or cooptation (Haber 2006). Even though repression can suitably counter immediate threats, a mere repressive strategy can result in the dilemma of the dictator in the long run. As political subjects fear punishment, they start hiding their real preferences which in turn increases the uncertainty of a nondemocratic leader (Wintrobe 1998: 25). In a situation of mutual distrust, providing additional benefits like public goods becomes all the more necessary to enhance loyalty and to mitigate uncertainty (Wintrobe 1998: 31). According to Bueno de Mesquita et al. (1999), the amount of public goods being offered should directly reflect the size of important population segments a dictator has to please. With an increase in people directly selecting the political leader (selectorate) and an increase in the size of the winning coalition consisting of "those members of the selectorate whose support is essential to keep the incumbent leadership in office" (Bueno de Mesquita et al. 1999: 148), loyalty buying via private rents turns too costly. Hence, democratic regimes with a broad selectorate and winning coalition are expected to invest more in public than in private goods.

Even though regime threats can be countered with economic transfers, nondemocratic leaders still suffer from a credible commitment problem, as they are not tied to a (reliable) election tool and therefore can skip or reduce welfare benefits arbitrarily without suffering electoral defeat (Acemoglu/Johnson 2005; Breton/Wintrobe 1982; North/Weingast 1989). Moreover, offering economic transfers to potential rivals can aggravate the dilemma of the dictator, as the invested means could also be used to organize rebellions, but at least make opponents more powerful (Magaloni/Kricheli 2010: 126). Many authors, therefore, have argued that the installation of legislatures and parties vested with at least minimal powers can reduce credible commitment problems, as they provide an additional control mechanism which renders deviations from promised policies more costly (Gandhi 2008; Magaloni/Kricheli 2010; Wright 2008). Moreover, these political institutions can serve as a means to control oppositional powers and to increase their coordination costs, which can lower the risk of regime breakdowns (Geddes 1999; Lust-Okar 2007; Magaloni 2006). Especially one-party regimes have shown to achieve both functions simultaneously. As a result of their bargaining capacity, they can reduce internal regime threats and additionally mobilize citizen support, which helps to bind critical masses to the regime (Magaloni/Kricheli 2010: 124-125). In addition to enhancing the credibility of welfare commitments, nondemocratic regimes with political institutions have larger selectorates and winning coalitions. In line with the arguments of Bueno de Mesquita et al. (1999), this should additionally foster the willingness to implement welfare policies due to the mentioned advantages associated with public goods compared to private rents.

Even though these theoretical assumptions have inspired a vast strand of empirical research that focuses on welfare provision in nondemocratic regimes, this literature does not account for preferences related to welfare programs and welfare designs. In the following, I argue that not only political institutions can enhance the credibility of welfare commitments but also the *kind* and especially the *design* of welfare programs as such. Hence, I expect that nondemocratic leaders prefer those welfare programs and designs that can enhance their regime survival best.

As Knutsen and Rasmussen have shown, old-age pension schemes have several advantages for nondemocratic leaders compared to other welfare programs. In contrast to, for example, maternity benefits, old-age pensions can be more easily targeted on social groups that are essential for regime survival (Knutsen/Rasmussen 2018: 664). Moreover, offering old-age pensions can enhance the credibility of a stated commitment, as it extends “the shadow of the future” (Fearon 1998: 270), signaling a regime’s willingness to care for its supporters even in the long run. Given these advantages, Knutsen and Rasmussen show that nondemocratic regimes are as likely as democracies to implement old-age pensions first (Knutsen/Rasmussen 2018: 676).

Despite the advantages associated with old-age pensions, I extend their argument by stating that pensions alone cannot fully enhance credibility but that an appropriate *welfare design* is required as well. I expect that pension systems can be designed in a way that increases the costs for nondemocratic leaders to arbitrarily withdraw from their stated welfare commitment. Whereas non-contributory pension schemes are financed via indirect taxes, social insurance schemes demand for social contributions from employers and employees. In so doing, social insurance schemes generate the feeling that the state administers their money (Cutler/Johnson 2004: 92) which I expect to be associated with a mutual trust building process. With regard to the dictator, skipping or reducing social insurance schemes arbitrarily would be politically more costly than withdrawing from a non-contributory financed pension commitment. It can be expected that people would oppose a regime's deviation from a social insurance commitment more strongly, as this would be perceived as a confiscation of their money. How protest can even sweep to regions that are unknown for open protest movements can be exemplified with the case of Turkmenistan. With president Saparmurat Niyazov, called the "Father of All Turkmen", having reduced pension benefits by one third in 2006, protest movements occurred for the first time in front of the government building openly opposing cutback politics (RFE/RL 2006). With regard to employers and employees it can further be expected that social insurance schemes enhance their regime support, as otherwise their contributions would be wasted.

In addition to this mutual trust binding function, I argue that social insurance schemes are more beneficial for nondemocratic leaders, as their direct taxing mechanism can serve as a means to control the economic sector. While many nondemocratic regimes protect important industries with trade barriers or restrictions to competition, they also run the risk that economic power may convert to political power (Mares/Carnes 2009: 98). As such, social contributions can be a useful means to control and bind companies to the state while also retaining some of the previously invested money in those industries. As the case of Brazil shows, the introduction of social insurance schemes basically served two strategic goals. First, President Vargas applied social insurance schemes intentionally as a means to weaken the political power of oligarchic landlords while lifting the importance of the booming industrial and commercial sector. With benefits targeted on urban industrial areas, he "followed a politics of "co-optation" in which he sought to incorporate groups with a demonstrable power potential into a centrally controlled administrative structure" (Malloy 1977: 198). In so doing, he moved the state in a dominant position, with regime leaders steering social insurance institutions. At the same time, he kept occupational groups from creating their own welfare programs (Hunter 2014: 19). In addition to depoliticizing workers with welfare programs and limiting the power of agrarian elites, social insurance schemes served as an additional and parallel taxing mechanism whose budget was independent from regional pressures. As Vargas had already started to create a parallel bureaucratic structure with new institutions directly linked to the executive, social insurance institutions were a useful means to gain oversight and control of the different industrial branches and to incorporate them into the state structure. Via social contributions Vargas was also able to benefit from the increasing revenues of these industries which he protected with different privileges and thus was able to sustain his parallel bureaucratic structures (Flores-Macías 2019: 126-127). In sum, Vargas perceived social insurance institutions as a useful means to foster the ongoing industrialization in Brazil "by translating class struggle into state-sponsored conciliation" (Wolfe 1994: 78). At the same time, he recognized the huge power potential associated with a social insurance administration that could be used as "a level in the national political game" (Malloy 1977: 199).

In addition to these advantages, social insurance schemes can also enhance social cohesion, as they construct an intergenerational contract which further contributes to the binding function. This function, however, does not apply to provident funds, from which people only retain the capitalized amount of money they have previously invested. Moreover, unlike universal or means-tested programs, social insurance schemes are best suited to target pension benefits on specific occupational groups that are essential for regime survival. Even though democratic regimes can benefit from social insurance schemes in a similar vein, as this pension design is also able to contain demands for more benefits, I argue that the returns to invest in social insurance schemes are much higher for nondemocratic regimes, which leads me to the following hypothesis:

Hypothesis 1: Nondemocratic regimes are more likely than democracies to opt for old-age pensions with a social insurance design compared to other pension designs.

However, in contrast to democracies, nondemocratic regimes are institutionally much more diverse (Geddes et al. 2014; Kailitz 2013; Svolik 2012). As the existing literature has argued, only certain features of nondemocratic rule are conducive for the development of welfare policies. Especially electoral authoritarian regimes have shown to outperform other types of nondemocratic rule with regard to the provision of welfare policies (see e.g. Cassani 2017; Cassani/Carbone 2016; Miller 2015). As electoral authoritarian regimes "establish the entire set of formally representative institutions that characterize liberal democracy" (Schedler 2013: 6), elections cannot be perceived as mere facades even though they violate the "principles of freedom and fairness" (Schedler 2013: 3) to a large extent. Hence, political leaders in these regimes have to turn much more responsive and to invest in public goods like welfare policies (Miller 2015: 8; Morse 2012: 166). In line with these findings, Desai et al. have argued that social rights can easily compensate for missing political rights and therefore should be more common in countries that violate political rights to a large extent (Desai et al. 2009: 106). In their study on the emergence of the Western welfare state, Flora and Alber (1981) make a similar but more nuanced argument. They expect that only constitutional-dualistic monarchies with extended suffrage invest in contributory financed welfare programs. By contrast, they associate constitutional-dualistic monarchies with limited suffrage with poor relief measures and a more paternalistic behavior that should not end up in an institutionalized welfare structure (Flora/Alber 1981: 47). Compared to Desai et al.'s (2009) general argument, they would only expect electoral authoritarian regimes to invest in old-age pensions with a social insurance design.

In the following, I argue that social insurance schemes are beneficial for both closed autocracies and electoral authoritarian regimes. Whereas the former can basically substitute political rights with social rights and thus cushion demands for political rights, the later can balance the detrimental effects associated with unfair elections while showing its willingness to commit to citizens' preferences. The binding function of social insurance schemes can fasten the ties between citizens and the regime and thus limit demands for (more) political rights. This leads me to my second hypothesis:

Hypothesis 2: Electoral authoritarian regimes are as likely as closed autocracies to opt for old-age pensions with a social insurance design compared to other pension designs.

3. The PENLEG dataset

In order to test these hypotheses empirically, an original dataset was constructed entitled "PENLEG - Pension Legislation around the World, 1880-2010" (PENLEG 2021) which entails detailed data on the first old-age pension designs of all independent countries around the world. Existing studies, so far, have basically coded pension introduction years alongside the "Social Security throughout the World" reports of the United States Social Security Administration (USSSA 2019). However, this data source suffers from several shortcomings. First, it does not apply a consistent criterion for defining a first old-age pension program and thus mixes introduction years for pension programs that only cover minor social groups, such as military servants, with pension systems that focus on broader segments of the population. Moreover, the tri-annual USSSA reports are quite inconsistent when coding the first old-age pension programs and pension designs, varying strongly across different reports. Last but not least, the USSSA reports often only provide a single category for old-age, disability and widow pensions and thus make no distinction between countries that have barely introduced one of the mentioned pension programs (Grünewald/Seelkopf 2016; Knutsen/Rasmussen 2018).

To address these shortcomings, the PENLEG dataset provides clear-cut criteria for defining the first old-age pension schemes and mainly derives information about all pension features from original laws. In so doing, the data quality can be extremely enhanced. Moreover, the PENLEG dataset captures many more pensions dimensions than the USSSA reports.

For identifying a first old-age pension program, two criteria must be fulfilled: First, a pension law must at least cover one major occupational group beyond the public sector. As major occupational groups, the following ten jobs and sectors are defined: 1) agriculture, 2) manufacturing and extractive industry, 3) commerce and finance, 4) students and apprentices, 5) domestic and family workers, 6) home workers, 7) self-employed, 8) employers, 9) temporary and seasonal workers, as well as 10) foreign workers. Additionally, an eleventh category was provided accounting for whether 11) all citizens are covered. Even though authors like Mares (2005) or Rasmussen (2016) stick to a similar category scheme to define a first old-age pension program, the PENLEG dataset applies an extended and modified coding scheme based on insights from original pension laws. Whereas Mares simply defines agricultural workers, self-employed and small firm workers as major occupational groups (Mares 2005: 649), Rasmussen adds industrial workers, students, employers, temporary/casual workers and family/domestic workers (Rasmussen 2016). In contrast to Mares and Rasmussen, small firm workers were excluded as a major occupational group from the PENLEG dataset. Instead, firm size was coded as an additional factor that may restrict pension coverage rates. The category scheme of the PENLEG dataset additionally takes commercial workers, home workers and foreign workers into account, as these groups were quite frequently mentioned in many pension laws.

In addition to providing coherent criteria to define a first old-age pension program, the PENLEG dataset differs between four contributory financed and three non-contributory financed old-age pension designs which have been inspired by the United States Social Security Administration (USSSA 2019). In sum, the contributory financed pension programs capture 1) social insurance designs, 2) provident funds, 3) employer liability systems and 4) mandatory individual account systems, whereas the non-contributory financed pension designs refer to 5) non-contributory, universal, 6) non-contributory, means-tested and 7) non-contributory, pension-tested programs. As six countries have already implemented a two-pillar pension system, the PENLEG dataset also provides additional information on the design of the second pension pillar. For defining the status of independence, the definition of Gleditsch and Ward

(1999) was applied which refers to a historical definition of states and territories. This coding strategy is advantageous. Countries that have implemented their first pension system as part of a territorial setting that later split into two or more entities are only counted once in the dataset, so that the empirical results do not run the risk to be inflated. Member states of the Soviet Union that implemented their first pension system during Soviet times, for example, are thus excluded from the dataset.

4. Descriptive Statistics

While at the beginning of the 20th century only a few countries provided protection for the elderly, the implementation of old-age pension programs increased rapidly in the 1940s and experienced a boost after decolonization (PENLEG 2021). For many post-independent states making new welfare commitments was essential to adress racial welfare policies and to foster nation-building processes (Kpessa et al. 2011). Thereafter, the increase in old-age pension implementations has slowed down (PENLEG 2021).

Based on the dichotomous BMR indicator which defines countries as democracies if more than half of the adult men are allowed to vote, if free and fair elections do exist and if there is a direct election of the executive responsible to the legislature (Boix et al. 2012: 8), Figure 1 depicts political regime differences in old-age pension design preferences. Countries with a two-pillar pension scheme were counted twice to reflect the simultaneous choice for both pension designs. As Figure 1 reveals, nondemocratic regimes clearly pioneered the implementation of old-age pension programs (75 nondemocratic regimes versus 47 democratic regimes). This confirms Mares and Carnes' descriptive finding which shows that old-age pensions first emerged in nondemocratic regimes (Mares/Carnes 2009: 97). Second, the graphic highlights that both democratic and nondemocratic regimes preferred social insurance designs, but that social insurance schemes were even more dominant in nondemocratic regimes. While 48.94% of all democracies have implemented this pension design, 80% of all nondemocratic regimes have decided for a social insurance scheme. The importance of social insurance designs in nondemocratic regimes becomes even more apparent in contrast to other pension designs. As previous research has shown, only British rulers have implemented provident funds in their colonies, as these pension designs are cheap and do not require commitments to redistribution (Schmitt 2015: 335). Hence, it is not surprising that former British colonies also opted for this pension design. As the case of Zambia reveals, which two years after independence introduced its first old-age pension program, especially the ongoing ties with the United Kingdom as an important development partner have profoundly influenced the decision for a provident fund (Midgley/Piachaud 2011: 154).

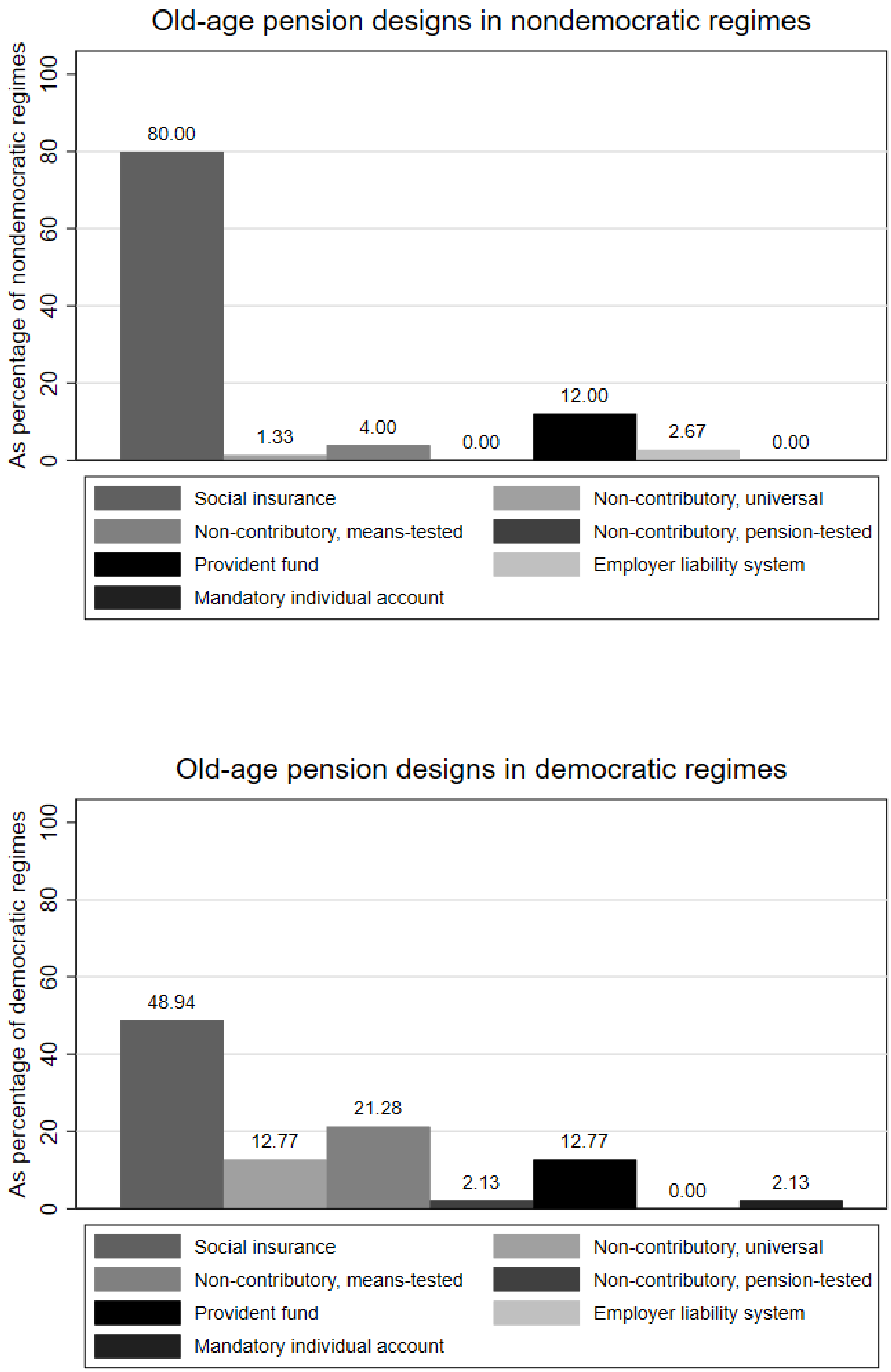

Figure 1: *Old-age pension designs from a political regime perspective, 1880-2010 (N nondemocratic regimes = 75; N democratic regimes = 47)*

Non-contributory financed pension schemes that are either universalistic or means-tested, in turn, were not quite prominent in nondemocratic regimes. Only Uruguay (1919), Egypt (1950) and Nepal (1994) have opted for a universal pension scheme. In Egypt, a universal pension program was primarily used as a means to foster its nation-building process. Like many countries during this period, Egypt was an agricultural society with plenty of instable and low-income jobs in this sector. Social insurance schemes would have been only capable to cover one third of this important constituency (Johnson 2004: 131-132). Thus, opting for a universal pension scheme was the best way to unify Egypt and to bind citizens to the new state.
Compared to nondemocratic regimes, democracies reveal much more variance when it comes to important old-age pension designs next to social insurance schemes. Especially prominent were non-contributory financed means-tested programs followed by provident funds and non-contributory universal pension schemes. Whereas the spread of provident funds was driven by the British colonial legacy as well, the higher provision of non-contributory financed pension schemes mainly reflects the greater willingness of democratic regimes to adapt to political demands and socio-economic conditions.
To conclude, the following findings can be summarized: First, we can determine that social insurance designs were most prominent in democratic and nondemocratic regimes, reflecting the different advantages associated with this pension design for both democratic and nondemocratic regimes. Additionally, the descriptive statistics show that in nondemocratic regimes social insurance schemes clearly supplant other forms of old-age protection. In contrast, democracies show much more variance with regard to old-age pension designs, with non-contributory financed pension schemes being important pension designs that have been chosen.
In sum, the descriptive findings provide preliminary evidence for the assumption that nondemocratic regimes are more likely to opt for old-age pension programs with a social insurance design. However, as the mentioned country examples show, pension design choices do not only reflect political regime differences. Other confounding factors such as colonial legacies, socio-economic factors or political goals associated with nation-building processes have also affected pension design choices tremendously.

5. Methodology

For testing my hypotheses empirically, a logistic regression design was applied. Existing studies on the historical origins of old-age pensions, thus far, have exclusively focused on the *timing* of the first pension adoptions and therefore referred to Binary Times-Series Cross-Section (BTSCS) regressions (see e.g. Knutsen/Rasmussen 2018; Schmitt 2015; Schmitt et al. 2015) or semi-parametric Cox models (see e.g. Cutler/Johnson 2004; Kangas 2012; Kim 2001; Usui 1994). However, these methods can only estimate whether a confounding factor increases or decreases the likelihood of implementing a pension system *earlier in time* and therefore are not suited for studying different welfare outcomes, such as pension design preferences.

Given this fact, a cross-sectional logistic regression design was applied. As the PENLEG dataset maximally comprises 124 observations, with fewer observations for some of the restricted models, running standard maximum likelihood estimate procedures with less than 100 observations can easily end up in biased estimates (Long 1997: 54). Moreover, small samples frequently suffer from quasi or complete separation, defined as situations in which a single determinant perfectly predicts the outcome variable (Heinze/Schemper 2002: 2409). As a result of perfect collinearity, standard maximum likelihood procedures generate infinite estimates or simply drop the problematic covariates. As an alternative, researchers have opted for exact logistic regression designs. Even though this method can deal with separation, categorical and continuous estimates are often degenerated as "the conditional distributions *[sic]* of sufficient statistics requires summing over discrete patterns of covariate values" (Zorn 2005: 162). Moreover, the estimation procedure is computationally very demanding. Given these shortcomings, Heinze and Schemper (2002: 2412) have proposed to apply a penalized logistic regression design following Firth's estimation strategy which will be applied.

As empirical results are often highly sensitive to the political regime indicator that has been chosen (see e.g. Bogaards 2010; Bollen/Jackman, 1989; Cheibub et al., 2010), the following analysis will always compare the results of three different political regime indicators with each other. For this purpose, the dichotomous Boix, Miller and Rosato (BMR) (Boix et al. 2012) indicator as well the continuous Polity IV indicator (Marshall et al. 2018) and the continuous Polyarchy variable (v2x_polyarchy) of the Varieties of Democracy Project (Coppedge et al. 2019) were chosen. For identifying closed autocracies and electoral authoritarian regimes, the "regimes of the world indicator" (variable: v2x_regime) of the Varieties of Democracy project (Coppedge et al. 2019) was used.

As political factors alone cannot fully explain the choice of a social insurance design, further confounding factors were considered. As studies on the timing of pension adoptions have mainly controlled for factors such as GDP per capita, population size, ethnic fractionalization, military personnel or diffusion mechanisms (Kangas 2012; Knutsen/Rasmussen 2018; Schmitt et al. 2015), not all of these factors are forcibly useful to explain the choice of a specific welfare design. Therefore, the following empirical analysis was restricted to four additional confounding factors.

Even though the effects of economic development are not straightforward when focusing on the entire range of old-age pension designs, current research has shown that especially provident funds were chosen in countries with less favorable economic conditions, as they are cheap to implement administratively (Midgley/Piachaud, 2011: 154). In Europe, economic growth was conducive for the implementation of social insurance schemes (Cutler/Johnson 2004). As welfare designs are associated with different economic costs, it can be expected that economic development also affects the choice of pension designs. Second, it can be assumed that ILO members are more likely to opt for social insurance designs. As the ILO has mainly focused on protecting workers in formal employment, it strongly promoted the spread of social insurance designs (Orenstein 2008: 211). Only in recent years, its focus has shifted towards non-contributory financed old-age pension schemes as a means to counter the problem of old-age poverty in the informal sector (ILO 2014). Last but not least, the British and French colonial legacies have been considered. While the "Code du travail" was established in French colonies in 1952 to define the rights and duties of workers, it also comprised many regulations on the provision of social security but excluded old-age protection (Cooper 1996: 363; Schmitt 2015: 334). After decolonization many former French colonies tried to catch up with welfare policies to enhance regime legitimacy and to promote state-building processes and thus were actively engaged with providing old-age protection, too. As Schmitt has already shown descriptively, former French colonies basically copied the French welfare model and thus opted exclusively for social insurance designs (Schmitt 2015: 373). In contrast to France, Great Britain pursued a policy of self-sufficiency. Especially with regard to welfare provision, the British preferred cheap solutions adapted to preexisting local conditions in their colonies (Schmitt 2015: 337). Unlike French colonies, it can be expected that former British colonies were less likely to implement social insurance designs. As the choice of social insurance designs might be affected by earlier levels of the independent variables, all independent variables but the colonial legacies were lagged by one year.[3]

6. Empirical results

As models 1 to 3 in Table 1 show, nondemocratic regimes were more likely to implement social insurance schemes than other pension designs, independent of the political regime indicator that

[3] Information about the data sources can be found in the appendix.

	Period: 1880-2010			Period: 1960-2010		
	Model 1 (BMR)	**Model 2** (Polity IV)	**Model 3** (Polyarchy)	**Model 4** (BMR)	**Model 5** (Polity IV)	**Model 6** (Polyarchy)
Democracy $_{t-1}$	-1.478 ***	-0.100 **	-6.447 ***	-1.113	-0.042	-3.887 **
	(0.478)	(0.039)	(1.699)	(0.682)	(0.054)	(1.976)
GDP per capita (log) $_{t-1}$	-0.034	0.036	0.450	0.162	0.282	0.279
	(0.290)	(0.324)	(0.340)	(0.342)	(0.364)	(0.378)
ILO membership $_{t-1}$	0.096	-0.052	-0.046	0.062	-0.067	-0.052
	(0.198)	(0.215)	(0.202)	(0.202)	(0.225)	(0.217)
British colonial legacy	-3.063 ***	-2.557 ***	-2.692 ***	-2.140 **	-1.479 *	-1.856 **
	(0.792)	(0.812)	(0.816)	(0.843)	(0.856)	(0.851)
French colonial legacy	1.992	2.050	2.427	2.156 **	2.836 *	2.369 **
	(1.300)	(1.482)	(1.558)	(1.021)	(1.518)	(1.080)
Constant	1.770	2.050	-0.376	-0.400	-1.672	-0.387
	(2.306)	(1.482)	(2.875)	(2.695)	(2.826)	(2.849)
Penalized log likelihood	*-48.694*	*-40.720*	*-40.543*	*-21.001*	*-13.976*	*-18.817*
Number of observations	*119*	*109*	*115*	*57*	*49*	*55*
Wald/Chi2	*12.39 *****	*20.85 ******	*26.58 ******	*12.94 *****	*11.07 **	*13.99 *****

Table 1: *The implementation of old-age pension schemes with a social insurance design.*
*p < .10. **p < .05. ***p < .01.

has been chosen. In contrast, no significant effects of GDP per capita or the ILO membership can be found. When focusing on the colonial legacy, only the British colonial rule had a significant effect, showing that former British colonies were less likely to opt for social insurance designs. This is in line with the previous discussion in the descriptive chapter, which has demonstrated that former British colonies strongly preferred provident funds due to the efficiency reasons associated with it. Even though the effect of the French colonial legacy heads into the expected direction, the variable is not significant. However, it can be assumed that this effect has simply leveled out when focusing on the entire observation period.

As the major wave of decolonization started in the 1960s, the models were subsequently restricted to the postcolonial period ranging from 1960 to 2010. The political regime type largely loses its explanatory power, as models 4 to 6 show. Only the Polyarchy model reports a significant and negative effect of democracy. In contrast, the French colonial legacy shows a significant and positive effect in all models. This finding corresponds with Schmitt's descriptive study, showing that former French colonies exclusively opted for social insurance designs when implementing old-age pension programs for the first time. To test for the robustness of my findings in the restricted and full model, alternative model specifications were applied. First, as Swaziland can be identified as an influential observation, this country was excluded from the regression. However, the main findings stay robust (see appendix Table 1.1). Only the BMR indicator in model 4 additionally turns significant, showing that democracies in the postcolonial period were still less likely to implement a social insurance design. While both the BMR and the Polyarchy democracy indicator are based on Dahl's polyarchy concept and thus code similar criteria for democracies, this finding is not surprising.

Last but not least, I controlled for other confounding factors, such as trade openness and military personnel. When focusing on the entire observation period, the effect of the political regime type persists.

Only in the restricted models, the effects of the political regime type turn less robust again (see appendix Tables 1.2 – 1.3). When restricting the model to the post-1945 period, instead of the post-1960 period, only the BMR model reports a significant and negative effect of democracy (see appendix Table 1.4).

Table 2 finally depicts the findings on hypothesis 2 by excluding all democratic and semi-democratic regimes from the sample. As expected, neither closed autocracies nor electoral authoritarian regimes were more likely to opt for social insurance designs.

	Model 1 (1880-2010)	Model 2 (1960-2010)
Electoral authoritarian regime$_{t-1}$	-0.932	-1.238
	(0.584)	(0.817)
GDP per capita (log) $_{t-1}$	-0.066	0.101
	(0.380)	(0.402)
ILO membership $_{t-1}$	0.034	-0.091
	(0.206)	(0.226)
British colonial legacy	-2.745 ***	-1.576
	(0.894)	(0.989)
French colonial legacy	2.352	3.228 **
	(1.484)	(1.569)
Constant	2.346	0.546
	(3.018)	(3.193)
Penalized log likelihood	-31.324	-13.532
Number of observations	94	47
Wald/Chi2	16.62 ***	10.53 *

Table 2: *The implementation of old-age pension schemes with a social insurance design in nondemocratic regimes.* *p < .10. **p < .05. ***p < .01.

However, the effect heads into a negative direction, indicating that closed autocracies prefer this pension design, which corresponds with the argument of Desai et al. (2009). As electoral authoritarian regimes allow for a limited extent of political competition, they have already an effective tool at their disposal to enhance regime survival. Thus, implementing social insurance designs to bind citizens to the state is not forcibly required. Like models 1 to 3 in Table 1, the British colonial legacy had a significant and negative effect on the choice of social insurance designs.

When restricting the model to the postcolonial period, the effect of electoral authoritarian regimes still does not turn significant. But again, the French colonial legacy is positively and significantly correlated with the choice of social insurance designs. When testing for alternative model specifications, the non-finding stays robust with the exception of two models. When controlling for military personnel, the effect of electoral authoritarian regimes turns negative and significant in the full model. The same holds true for the restricted model controlling for trade openness. As the findings are only significant at the 0.1 level of significance, and as data on military personnel and trade openness have more missing values, these findings, however, must be treated cautiously.

6. Conclusion

Despite the growing importance of old-age protection schemes around the world, research on the historical origins of welfare programs has only recently started to disentangle political regime differences more closely. Based on the novel PENLEG dataset, this article has shed more light on pension design preferences from a political regime perspective. It has shown that nondemocratic regimes strongly preferred social insurance designs, as these pension programs demand for regular social contributions and in so doing foster the ties between citizens and the state. In contrast to universal or means-tested pension programs, social insurance schemes can directly target pension benefits on those groups of people that are essential for regime survival. However, the study also shows that the findings are not independent of time. Since the 1960s, the French colonial legacy has mostly leveled out the effect of the political regime type. This finding may also foster our understanding of why studies on social spending and welfare outcome data often arrive at different conclusions about the effects of the political regime type, depending on the period they have analyzed (see e.g. overview article, Nelson 2007). As the effect of the political regime type is less robust in the postcolonial period, future research has to disaggregate political regime indicators more closely in order to determine which components trigger the only partly significant findings. Moreover, as the pension design choice automatically affects other dimensions of old-age pension programs as well, such as pension coverage rates or the modes of financing, accounting for different pension design preferences of democratic and nondemocratic regimes becomes of utmost importance when analyzing these dimensions. While this study was restricted to old-age pensions, future studies should analyze whether preferences for social insurance schemes also exist with regard to other welfare programs. By collecting information on welfare design preferences for all kinds of welfare programs, it could be tested whether political regime differences in welfare designs exist as such, irrespective of the chosen welfare program. Such an extended sample size would additionally allow to test for more confounding factors. Moreover, the dataset could be split at different points in time, comprising, for example, the period from 1980 to 2010. In so doing, it could be tested whether colonial effects lose their explanatory power over time, with political regime effects becoming more pronounced again. Last but not least, more research on the variety of nondemocratic regimes and their pension design preferences becomes all the more necessary. Even though this study cannot find any political regime differences between closed autocracies and electoral authoritarian regimes with regard to social insurance preferences, some models with alternative operationalizations point to slightly significant and negative effects of electoral authoritarian regimes which requires for more research.

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Appendix

Variables	**Data sources**
Democracy	BMR (Boix et al. 2012), Polity IV (Marshall et al. 2018), V-Dem project (Coppedge et al. 2019)
Electoral authoritarian regime	V-Dem project (Coppedge et al. 2019)
British and French colonial rule	Colonial History Data (Hensel/Mitchell 2007)
GDP per capita; trade openness, military personnel	Gapminder (2018); Dataset on material capabilities of the state (Singer 1988, version 5)
Pension design	PENLEG (2021)
ILO membership	ILO (2019)

Table A: *Variables used in the logistic regressions.*

	Period: 1880-2010			Period: 1960-2010		
	Model 1 (BMR)	**Model 2** (Polity IV)	**Model 3** (Polyarchy)	**Model 4** (BMR)	**Model 5** (Polity IV)	**Model 6** (Polyarchy)
Democracy $_{t-1}$	-1.541 ***	-0.104 **	-7.481 ***	-1.439 *	-0.053	-4.250 **
	(0.490)	(0.041)	(2.002)	(0.774)	(0.063)	(2.024)
GDP per capita (log) $_{t-1}$	0.055	0.079	0.733	0.490	0.341	0.491
	(0.315)	(0.341)	(0.469)	(0.477)	(0.439)	(0.487)
ILO membership $_{t-1}$	0.526	0.238	0.890	1.302	0.596	0.912
	(0.519)	(0.586)	(0.644)	(0.951)	(1.458)	(1.002)
British colonial legacy	-3.002 ***	-2.542 ***	-2.681 ***	-2.060 **	-1.148 *	-1.719 **
	(0.777)	(0.807)	(0.835)	(0.814)	(0.852)	(0.836)
French colonial legacy	2.004	1.980	2.566	2.348 **	2.746 *	2.599 **
	(1.403)	(1.491)	(1.916)	(1.205)	(1.539)	(1.232)
Constant	0.806	0.228	-2.889	- 3.703	-2.732	-2.698
	(2.596)	(2.822)	(3.460)	(4.032)	(4.226)	(4.028)
Penalized log likelihood	*-48.776*	*-41.177*	*-39.961*	*-20.894*	*-15.332*	*-19.365*
Number of observations	*118*	*108*	*114*	*56*	*48*	*54*
Wald/Chi2	*22.69 *****	*19.78 ******	*24.30 ******	*11.56 *****	*10.15 **	*12.66 *****

Table 1.1: *Implementation of old-age pension schemes with a social insurance design. Influential case Swaziland is excluded.*
*p < .10. **p < .05. ***p < .01.

	Period: 1880-2010			Period: 1960-2010		
	Model 1 (BMR)	**Model 2** (Polity IV)	**Model 3** (Polyarchy)	**Model 4** (BMR)	**Model 5** (Polity IV)	**Model 6** (Polyarchy)
Democracy $_{t-1}$	-1.369 ***	-0.092 **	-5.981 ***	-0.715 *	-0.020	-3.315
	(0.509)	(0.040)	(1.729)	(0.750)	(0.058)	(2.085)
GDP per capita (log) $_{t-1}$	-0.033	0.047	0.436	0.220	0.435	0.318
	(0.302)	(0.330)	(0.405)	(0.354)	(0.412)	(0.379)
ILO membership $_{t-1}$	0.089	-0.037	-0.033	0.039	-0.096	-0.032
	(0.201)	(0.212)	(0.202)	(0.206)	(0.227)	(0.214)
British colonial legacy	-2.968 ***	-2.401 ***	-2.595 ***	-2.041 **	-1.111	-1.741 **
	(0.812)	(0.857)	(0.822)	(0.871)	(0.925)	(0.877)
French colonial legacy	1.910	2.091	2.319	1.931 **	2.995 *	2.271 **
	(1.258)	(1.484)	(1.500)	(0.977)	(1.536)	(1.052)
Trade openness $_{t-1}$	-0.115	0.055	0.095	0.040	0.189	0.164
	(0.273)	(0.281)	(0.276)	(0.283)	(0.297)	(0.289)
Constant	1.740	0.640	-0.494	-0.846	-2.803	-0.965
	(2.402)	(2.611)	(2.913)	(2.795)	(3.175)	(2.878)
Penalized log likelihood	*-41.641*	*-37.781*	*-38.456*	*-16.715*	*-11.456*	*-16.781*
Number of observations	*104*	*101*	*104*	*49*	*46*	*49*
Wald/Chi2	*19.56 ****	*17.49 ****	*23.18 ****	*11.00 **	*10.11*	*11.98 **

Table 1.2: *Implementation of old-age pension schemes with a social insurance design. Robustness checks with trade openness.*
*p < .10. **p < .05. ***p < .01.

	Period: 1880-2010			Period: 1960-2010		
	Model 1 (BMR)	**Model 2** (Polity IV)	**Model 3** (Polyarchy)	**Model 4** (BMR)	**Model 5** (Polity IV)	**Model 6** (Polyarchy)
Democracy $_{t-1}$	-1.479 ***	-0.109 ***	-6.399 ***	-0.649	0.0224	-2.760 *
	(0.506)	(0.042)	(1.736)	(0.736)	(0.066)	(1.956)
GDP per capita (log) $_{t-1}$	-0.147	-0.091	0.280	-0.003	-0.059	0.088
	(0.315)	(0.338)	(0.405)	(0.408)	(0.436)	(0.225)
ILO membership $_{t-1}$	0.099	-0.003	-0.016	0.090	0.142	-1.645
	(0.204)	(0.208)	(0.201)	(0.214)	(0.255)	(0.875)
British colonial legacy	-2.854 ***	-2.332 ***	-2.460 ***	-1.806 **	-0.839	-1.675 *
	(0.812)	(0.858)	(0.835)	(0.871)	(0.919)	(0.872)
French colonial legacy	2.140 *	2.284	2.558	2.391 **	4.052 **	2.466 **
	(1.297)	(1.490)	(1.625)	(1.048)	(1.547)	(1.068)
Military personnel $_{t-1}$	0.280	0.302	0.324	1.453	2.895	0.923
	(0.269)	(0.257)	(0.280)	(1.460)	(1.997)	(1.266)
Constant	2.358	1.329	0.529	0.094	-0.672	0.211
	(2.478)	(2.648)	(2.955)	(3.160)	(3.129)	(3.144)
Penalized log likelihood	*-40.104*	*-35.502*	*-36.315*	*-17.418*	*-11.897*	*-5.701*
Number of observations	*108*	*103*	*108*	*53*	*49*	*53*
Wald/Chi2	*21.92 ****	*19.81 ****	*24.95 ****	*12.39 **	*10.92 **	*13.29 ***

Table 1.3: *Implementation of old-age pension schemes with a social insurance design. Robustness checks with military personnel.*
*p < .10. **p < .05. ***p < .01.

	Model 1 (BMR)	Model 2 (Polity IV)	Model 3 (Polyarchy)
Democracy $_{t-1}$	-1.009 ** (0.728)	-0.032 (0.062)	-5.025 (3.447)
GDP per capita (log) $_{t-1}$	-0.034 (0.331)	0.213 (0.467)	0.108 (0.386)
ILO membership $_{t-1}$	0.059 (0.206)	-0.058 (0.227)	-0.076 (0.226)
British colonial legacy	-2.499 *** (0.922)	-2.202 ** (0.875)	-2.184 ** (0.893)
French colonial legacy	2.232 (1.494)	2.168 (1.511)	2.474 * (1.497)
Constant	1.568 (2.631)	-0.353 (3.445)	1.580 (3.058)
Penalized log likelihood	-23.798	-15.058	-20.372
Number of observations	68	59	65
Wald/Chi	13.28 **	13.47 **	14.37 **

Table 1.4: *Implementation of old-age pension schemes with a social insurance design, 1945-2010.*
*p < .10. **p < .05. ***p < .01

	Model 1 (1880-2010)	**Model 2** (1960-2010)	**Model 3** (1880-2010)	**Model 4** (1960-2010)
Electoral authoritarian regime $_{t-1}$	-1.070 *	-0.906	-0.921	-1.465 *
	(0.606)	(0.850)	(0.591)	(0.876)
GDP per capita (log) $_{t-1}$	-0.172	-0.048	-0.029	0.200
	(0.407)	(0.438)	(0.375)	(0.415)
ILO membership $_{t-1}$	0.063	-0.060	0.035	-0.108
	(0.206)	(0.232)	(0.206)	(0.225)
British colonial legacy	-2.345 **	-1.269 **	-2.626 ***	-1.274
	(0.941)	(1.022)	(0.891)	(0.893)
French colonial legacy	2.808 *	3.359 *	2.390	3.610 **
	(1.519)	(1.588)	(1.493)	(1.628)
Military personnel $_{t-1}$	0.590	0.691		
	(0.683)	(1.058)		
Trade openness $_{t-1}$			0.022	0.294
			(0.282)	(0.323)
Constant	1.568	-0.353	1.955	-0.383
	(2.631)	(3.445)	(2.974)	(3.271)
Penalized log likelihood	-27.473	-12.763	-29.602	-11.848
Number of observations	88	45	87	44
Wald/Chi	16.31 **	10.31 **	15.59 **	10.36

Table 2.1: *Implementation of old-age pension schemes with a social insurance design in nondemocratic regimes.* *p < .10. **p < .05. ***p < .01.

Eigenständigkeitserklärung

Hiermit erkläre ich, dass ich die vorliegende Arbeit ohne unerlaubte Hilfe selbstständig angefertigt und keine anderen als die angegebenen Quellen- und Hilfsmittel verwendet habe. Die den benutzen Werken wörtlich oder inhaltlich entnommenen Stellen habe ich als solche kenntlich gemacht. Einer Überprüfung der Dissertation mit qualifizierter Software im Rahmen der Untersuchung von Plagiatsvorwürfen stimme ich zu.

Bremen, 23.04.2021

Ort/Datum

Unterschrift