Bridging Migrants' Social Protection Gap: Understanding the Incomplete Revolution of International Social Security Coordination[1]

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Abstract

Recent decades have seen a sharp but regionally imbalanced expansion of bi- and multilateral social security agreements (SSAs), which serve to bridge gaps in migrant workers' social protection by facilitating international portability of social rights and benefits. However, our knowledge about the factors shaping this remarkable, yet puzzling, development remains scarce. Integrating literatures on international cooperation and the migration–welfare state nexus, this study formulates theoretical expectations about how migration patterns interact with democracy, economic development, and social security design to shape countries' SSA trajectories. Analyzing a new global dyadic dataset covering almost 1,300 SSA adoptions throughout the post-war period, we find that a country-pair's level of development and similarity with regards to these three factors help account for their likelihood of establishing an SSA, with migration working as a demand driver. These findings help us better understand migrant–native gaps in social protection worldwide, and how they may be bridged.

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Introduction

International coordination of social security systems has a long history, but has seen a steady yet markedly uneven expansion over recent decades, in parallel with global trends towards migration growth and expanding state intervention in the realm of social security. Bilateral or multilateral social security agreements (SSAs) between countries is the dominant way for such international coordination to be created.[2] Such agreements serve to ensure the equality of treatment of migrants and natives in social security systems, thereby improving the coverage and generosity of migrants' social protection.[3]

Research on this topic has so far been limited. Although snapshots across the world at a couple of occasions have been provided, the historical development of social security coordination has not been traced on a global scale.[4] Considering the conventional understanding of the welfare state as a domestic project, and the potentially high costs faced by involved governments for strengthening migrants' social rights, the SSA expansion also presents a puzzle from an interest-based perspective. Indeed, although previous research has suggested a number of factors that may facilitate social security coordination, we lack an adequate theoretical understanding of why and when governments choose to establish SSAs.[5] Besides, empirical analyses of this phenomenon are scarce compared to the plentiful studies of other types of international agreements, such as preferential trade agreements and investment treaties. In addition, little is so far known about the effects of the SSAs, which also stands in sharp contrast to the state of the art in comparative welfare state literature.[6]

[2] An alternative mechanism is to establish protection through the enactment of international conventions. It should be noted, however, that the ILO Convention on the Protection of the Rights of all Migrant Workers and Members of their Families is one of the least ratified conventions (Ruhs 2013). This illustrates the difficulties of solving social protection unilaterally and points to the demand for bilateral or multilateral solutions.
[3] Hirose et al. 2011.
[4] Holzmann et al. 2005; Holzmann and Wels 2020.
[5] Avato et al. 2010.
[6] Taha et al. 2015; Holzmann and Werding 2015; Holzmann 2016.

This opens up a vast research agenda, ranging from issues related to the content of SSAs, to the factors explaining the variation over time and between countries and regions, and to the consequences of agreements for individual migrants and their countries of origin and destination. The facts that some countries have established numerous agreements while others have only a few or none at all, and that agreements have been entered at different points in time, offer useful opportunities for analyzing the explanations to these variations as well as their consequences. Such an uneven global development furthermore implies that considerable gaps remain in the social protection of oftentimes vulnerable migrant workers, which provides a normative foundation for the search of factors that may explain SSA expansion.

Against this background, the purpose of the present study is threefold. First, we generate a set of theoretical expectations – a theoretical framework – about the drivers of variations in international social security coordination, by integrating existing research on the migration–welfare state nexus and the international political economy literature on the formation of international agreements. Our framework elucidates how the levels and similarity between countries with regards to democracy, economic development, and social security design interact with bilateral migration patterns to shape their SSA trajectories. Second, we present a new dyadic dataset that charts the development of SSAs across the globe over the past 70 years, revealing a steady but uneven expansion of bilateral agreements as well as a stepwise adoption of multilateral agreements in several regions in recent decades. Third, we use this dataset to assess our theoretical framework in a dyadic duration analysis spanning the time since 1960. Overall, the results from these analyses support the importance of both levels of development and cross-country similarity in the theorized factors, while also confirming the relevance of other well-known drivers of international agreements.

The study contributes to multiple research literatures. First, it helps advance the emerging literature on transnational social security by providing a new global dataset on SSA adoption and a first theoretical framework for understanding international social security coordination. Second, it contributes to a larger literature concerned with the domestic and international sources of international cooperation, primarily by demonstrating how the design of social security institutions may influence international relations. Third, it adds to the literature on the migration–welfare state nexus by highlighting that the aforementioned factors shape governments' provision of social protection for migrants. Our primary concern in this study is what explains countries' diverse SSA trajectories, notwithstanding the existence of other important questions that also deserve attention in future research, including what effects agreements may have on migrants' wellbeing, migration flows, and public finances.

What are international social security agreements and why are they important?

International migrants face social and economic risks that differ in important respects from those of resident natives.[7] First off, since countries often do not provide access to the major social security systems until after a certain period of contribution, newly arrived immigrants oftentimes lack social security entitlements and will hence be referred to less generous and mostly means-tested social assistance type systems. It can also be noted that migrants usually have left behind important alternative safety nets in the form of informal social networks. Moreover, migrants are often at a disadvantage in national social security systems because, by default, entitlement criteria in these systems only consider periods of contribution or residence acquired in the current host country. This means that contribution periods made in the country of origin or previous countries of residence will be foregone, which may reduce both the

[7] Avato et al. 2010.

likelihood of qualifying for a benefit and the level of the benefit in cases where this is a function of contributions made. Furthermore, even if the contributions made in a previous country of residence are themselves sufficient to qualify for a benefit there, it is not always the case that benefits can be exported to the current country of residence. The situation may obviously be further complicated in situations involving multiple countries.

These are the problems that bilateral and multilateral social security agreements serve to address, by establishing a set of principles that countries' social security administrations are to abide by in cross-border situations.[8] Three principles are particularly important. The first principle is *equality of treatment*, which means that migrant workers, to the extent possible, should have the same rights and obligations as the natives of the destination country. Generally, equal treatment is also extended to the worker's family members regarding the rights they derive from the worker. The second principle is *maintenance of acquired rights and provision of benefits abroad,* which means that any acquired right, or right in course of acquisition, should be guaranteed and payable to the migrant worker in either territory, even if it has been acquired in another. The third principle is *maintenance of rights in course of acquisition*. For social rights that are conditional upon the completion of a qualifying period of contribution, covered employment, or residence – which is especially common for old age and disability pensions – this principle implies that periods served in all countries that are parties to the agreement should be added together, or totalized, when entitlement is evaluated. A fourth important principle related to the first is that of *reciprocity*, i.e., that each country agrees to apply the same mechanisms as each other country, and that there is a reasonable degree of comparability in the obligations that countries assume.[9]

[8] For an in-depth discussion, see Hirose 2011.
[9] In addition, agreements typically include clauses that determine the scope of applicable legislation and the methods used for totalizing contributions, and provide for mutual administrative assistance between the social security authorities.

Agreements are known to differ in terms of what branches of social security are covered, but the backbone of most of them concerns social insurance programs that protect workers against income losses, most typically pensions.[10] They also differ in terms of what persons are covered. For instance, some agreements are limited to particular occupations, such as seafarers, and others have special provisions for government employees or third-country nationals. In the present study, mostly for data related reasons discussed below, we do not consider the scope or content of the agreements, but apply a maximally inclusive definition. Whereas the agreements thus differ, there are also longstanding common themes. To illustrate, we here briefly describe three agreements of different types and time periods.

In 1904, what is generally regarded as the first international social security agreement was signed by France and Italy, in the wake of the 'great emigration' of Italians in the late 19th century. In addition to allowing for the export of savings between countries, the treaty established the principles of equal treatment and provision of benefits abroad with regards to work accident compensation for nationals of the two countries. Corresponding arrangements were also envisaged for pensions and unemployment benefits; however, these were premature, as France had not yet established a pension system and neither country had an unemployment insurance scheme in place. A follow-up agreement in 1919 introduced the principle of maintenance of rights in course of acquisition, by making periods of insurance earned in one country count towards the qualification requirements in the other.[11]

[10] Holzmann and Wels 2020.
[11] Roberts 2009.

1919 was also the year when earliest recorded multilateral social security agreement was established, involving Denmark, Norway, and Sweden. Like in the first Franco-Italian agreement, reciprocal equal treatment was stipulated among nationals of the countries with specific regards to work accident insurance. The agreement was supplemented 11 times before it was superseded in 1955 by a new comprehensive convention also adding Finland and Iceland as parties.[12] By that time, the scope had been expanded to also cover, in some form, sickness and unemployment benefits, maternity and child allowances, basic and earnings-related old age and invalidity pensions, and even social assistance. Opportunities for totalization and exportability has since been expanded, and the most recent, 2013 version of the Nordic convention is thus one of the most comprehensive SSAs to date.

Our third example SSA is more than a century younger than the first, but retains the same basic principles as the previous cases. In 2015, Brazil and the United States signed an SSA which, effective in 2018, established equality of treatment with regards to retirement, disability, and survivors' benefits and associated taxation for the nationals of the two countries (today more than 500,000 Brazilians in the United States and 30,000 Americans in Brazil). The agreement also stipulates portability of benefits between territories and allows, with certain restrictions, for counting coverage periods in both countries when determining entitlement to benefits.[13] The agreement furthermore eliminates situations where social security taxes needed to be paid in both countries on the same earnings, which, according to US estimates, would save firms in the two countries more than $900 million over the first six years.[14]

[12] Yoffee 1973.
[13] Social Security Administration 2018.
[14] U.S. Mission Brazil 2015.

With regards to how many of the worlds' migrants are subject to social security coordination, a study by Holzmann et al. and a follow-up by Holzmann & Wels provide the best estimates to date.[15] In 2013, approximately 23.3 percent of the world's migrants – or 58 million people – were in a situation where they had indiscriminate access to social security in their host country and there was an SSA in place between the origin and destination countries.[16] This was a slight increase from around 21.9 percent in year 2000.[17]

Why are social security agreements important? The most obvious reason is that they serve to protect a vulnerable group of workers, the migrant workers. The few empirical studies on this topic to date, however, reach rather different conclusions about the extent to which this happens. Two simulation studies of intra-EU social security coordination suggested that benefit portability has primarily benefitted migrants from richer countries with more generous social security systems.[18] By contrast, a study of EU/non-EU corridors by Holzmann concluded that bilateral SSAs deliver "reasonably well" in terms of counteracting lower pensions or health coverage gaps for mobile individuals.[19] By improving protection of migrant workers, SSA could also potentially facilitate migration. The only known study of this topic is an EU-wide survey analysis by d'Addio and Cavalleri.[20] They found that respondents who reported an easy (rather than a difficult) experience with transferring social security across countries in the past were more positive towards moving to another EU country for professional reasons.

[15] Holzmann et al. 2005; Holzmann and Wels 2020.
[16] The largest portion of the migrants, 53 percent, have access to social security benefits in their host country (some of which may be unilaterally exportable) but lack coordination between their origin and host country.
[17] Holzmann and Wels 2020.
[18] Bruzelius et al. 2017; Bridgen and Meyer 2019.
[19] Holzmann 2016.
[20] d'Addio and Cavalleri 2015.

Yet, there are other potential effects that also appear important to highlight although they have not yet been empirically investigated. Agreeing to protect migrants could serve to facilitate the recruitment of workers to host countries and supply labor to their employers, thus being part of a market-making process. The equal treatment can further be seen as a mechanism to prevent unfair competition, not only between employers but also among workers. Another effect worth considering is that SSAs may directly and indirectly protect the public finances and other economic interests of the countries of origin by increasing labor migration and remittances, as well as securing the income of returning workers. There are other potential macro effects as well; for instance, the mobility of workers may balance the mobility of capital and enhance the bargaining power of workers – even if the contrary is the usual assumption. But while migration may be an important source of economic and other gains for countries and individual migrants, it may also create rather substantial costs and risks for the involved actors. Hence, to understand the drivers behind the emergence and expansion of SSAs, a political economy perspective is warranted.

Theorizing international social security coordination

For this endeavor, we argue that it is fruitful to build on the theoretical perspectives that have been used to explain the coming into being of international agreements in other policy areas, but also on theories about the social security systems as such and their relationship with migration. In the following, we therefore seek to outline a theoretical framework for analyzing SSA adoption by integrating two literatures with relevance for the matter at hand: the literature on the migration–welfare state nexus and the literature on formation of international treaties,

which has so far focused primarily on trade agreements, investment treaties and, more recently, bilateral labor agreements.[21]

As described above, the primary function of social security coordination is to establish an equivalence of the social rights of migrants and natives in the involved countries, in a formally – though perhaps not always practically – reciprocal way. Thus, at a basic level, social security agreements satisfy a fundamental precondition for international cooperation to occur in the first place, namely that they address a problem that cannot be easily solved by any country alone. To be sure, a country who wishes to improve the social protection of citizens abroad may unilaterally make benefits exportable, but this does not provide the same level of support as an SSA that guarantees the maintenance of rights in course of acquisition.

For rational governments to establish an SSA, the benefits it provides must exceed its costs to at least some group in each participating country. As a voluntary exchange, it also needs to be Pareto-improving in the sense that at least one of the countries is made better off by the agreement while none is made worse off than the next best alternative. And like for other types of international agreements, governments might not only face economic benefits and costs of establishing a social security agreement, but also political ones.[22]

Assessing the benefits and costs of SSAs amounts to nothing less than a formidable challenge. Given the state of the art of research, what we can do here is only to outline a first overarching picture (and, obviously, policymakers are basing their SSA decisions on incomplete information too).

[21] See, for example, Ruhs 2013, Ruhs and Palme 2018, Koopmans and Michalowski 2017, Eick and Larsen 2022 on the migration–welfare state nexus. See, for example, Baier and Bergstrand 2004, Mansfield and Milner 2012 on trade agreements. See, for example, Elkins, Guzman and Simmons 2006, Simmons 2014, Tobin and Busch 2010 on investment treaties and Chilton and Posner 2018, Peters 2019 on bilateral agreements.
[22] Mansfield and Milner 2012.

The economic benefits are perhaps most evident for the concerned migrants themselves, and usually come in the form of improved material security. To the extent that SSAs facilitate market integration, they may in principle also benefit all involved actors by increasing the effectiveness of used resources (and create what is sometimes labelled a win-win-win situation). However, the gains for many actors are less than certain and may only occur in the long-term. The potential economic costs for (not least host) countries are influenced by the size of migration flows and may also be influenced by what kind of social protection system the countries have in place. And even if the real differences in costs between welfare regimes may be negligible, the imagined costs of generous welfare systems may still be politically relevant because the imagined costs are huge.[23]

Even if immigrants may be deprived of the right to vote upon arrival, they and their descendants are potential future voters. At the same time, we know from research on the migration–welfare state nexus that awarding migrant social entitlements involves normative considerations and is a potentially sensitive political issue for the native population.[24] One relevant finding here is that the European populations appear to favor regulations where the principle of reciprocity is strong, meaning that migrants, in a sense, earn their rights to social security.[25] From that point of view, the principles underlying SSAs – which serve precisely to safeguard the social security rights that migrants have earned throughout their working lives – may imply that SSAs might be relatively well in line with public opinion.

[23] Blinder and Markaki 2019. Cf. Österman et al. 2023.
[24] See, for example, Eick and Larsen 2022.
[25] Reeskens and Oorshcot 2012.

As will be elaborated in subsequent sections, there are two other potential sources of political costs and benefits related to SSAs. First, politically influential organized interests, such as business or emigrant associations, may face costs and benefits associated with SSAs, which may in turn yield political pressures on the government. Second, on the international arena, there might be reputational and credibility gains to be made for governments by adopting SSAs.

As we argue below, the nature and level of these benefits are likely to vary across countries and over time in ways that can help explain the uneven development of SSAs described above. Specifically, we present a set of expectations for how governments' calculations are impacted in different ways by the *level of development* within the realms of A) social security, B) democracy, and C) economic development in the country, as well as by the *similarity* in these three factors between the own country and the prospective partner country. For obvious reasons, we will also consider migration between the two countries as an important underlying demand factor.

The development and similarity of social security systems

A first factor of relevance according to previous research is whether there are social security systems in place that motivate and enable coordination.[26] If neither country has a system that motivates coordination, or if they rely mostly on tax-funded social assistance, there should be less reason to expect a social security agreement. Furthermore, Avato et al. has suggested that social security systems should be easier to coordinate if they are equally well-developed.[27] More generally, however, one might expect that more similar systems (whether well- or not so

[26] Avato et al. 2010.
[27] Avato et al. 2010.

well-developed) should be easier to coordinate because with two similar systems it should be easier to establish a high level of reciprocity.

However, although reciprocity is a guiding principle for SSAs, it is not obvious that both countries need an equally well-developed or similar social security system. In fact, some early agreements were concluded by parties with very different levels of social protection. Also, from a rationalist point of view, one country having a well-developed social security system may be enough for another country to want to push for an SSA to ensure that "their" citizens/workers will also be fully insured. Furthermore, when the adequacy of social protection in one country is lower than in the other, there might be all the more reasons for immigrants or expatriates to that country to pressure the government in their home country to ensure that benefits are portable and that contribution periods in the new country add to their protection.

A topical case in point here is the ongoing discussions regarding a bilateral SSA between India and the United States. Backed up by Indian businesses operating in the US, the Indian government has for long been urging the United States to sign a totalization agreement to ensure that contributions paid to the American social security system by Indian workers in the US will be redeemable also for those on short-term visas who will not fulfill the minimum 10-year work requirement for social security benefits. Yet, the United States, who has bilateral SSAs with around 30 other countries in place, continues to oppose an agreement with India, with explicit reference to the incompatibility of the two countries' social security systems.[28] More specifically, since the wage for which mandatory social security contributions are paid in India is too low to make much of a difference to most US workers, these tend not to be at a

[28] CII-USIBC 2020.

similar disadvantage as the Indian workers in the US.[29] Moreover, the economic stakes involved are high since the foregone contributions by Indian workers yield a substantial windfall to the US social security system; according to the joint CII-USIBC report they amount to around $1 billion US dollars.[30]

Combining the two perspectives presented above, we thus expect that both a higher level of development of the social security system in any given country, as well as a higher similarity of the systems in two countries, make social security coordination more likely to occur.

Democratic development and regime similarity

Second, a number of arguments can be derived for why democracies should be more likely to coordinate their social security systems. One strand of arguments can be derived from the welfare state literature, in which the early expansion of social rights and social protection benefits has for long been linked to the mass enfranchisement and introduction of electoral competition.[31] To be sure, it is not *prima facie* evident that the same basic mechanism would apply for international social security agreements, given that these primarily serve to improve the social rights of migrants. Yet, as we argue, there are both electoral and normative reasons to expect democracies to cater more to the social rights of their migrants.

From an electoral perspective, to the extent that immigrants or their children earn the right to vote after a certain period, the electorate will increasingly be made up of people to whom such rights matter.[32] This implies that there is a potential electoral benefit of improving migrants'

[29] Nanda 2020.
[30] CII-USIBC 2020.
[31] Skocpol and Amenta 1986; Lindert 2004. Although see Knutsen and Rasmussen 2018; Cronert and Hadenius 2021 for conflicting perspectives.
[32] Koopmans and Michalowski 2017.

social security through establishing an SSA. The same mechanisms should not apply in autocracies, where leaders' continuation in office is dependent on a much smaller group of elites, of which it arguably will take longer for immigrants to become part.[33] Furthermore, one might expect that the voice of migrants will be stronger in democracies where freedom of speech and a free press can be used to promote the interests of migrants beyond the ballot box. Thus, in such contexts there is also a potential political cost of excluding the migrants.

Another electorally relevant and oftentimes well-organized group is emigrants who have retained their right to vote, and who would benefit from maintaining their rights to social security after emigration. A recent illustrative example is the non-profit organization Swedes Worldwide, who is urging the Swedish government to establish a social security agreement with Thailand in light of the growing numbers of Swedes residing there, many of whom still pay Swedish taxes.[34] Another example is the British "End Frozen Pensions" campaign, who is calling for the UK government to establish reciprocal arrangements with Canada and other commonwealth countries to ensure that the British state pension for Britons residing in these countries is uprated by inflation like it is for those residing in the US or the EU, where such arrangements exist.[35]

As to the normative argument, Joppke has argued that the commitment to egalitarian norms that underpin liberal democracy makes it more difficult in democratic countries to exclude immigrants from rights enjoyed by their citizens.[36] Arguably these normative theories would also hold true for emigrating citizens, which would lead us to expect that democracies are more likely than autocracies to care about safeguarding the rights and wellbeing of their citizens

[33] Bueno de Mesquita et al. 1999.
[34] Svenskar i Världen 2021.
[35] International Consortium of British Pensioners 2022.
[36] Joppke 2001.

abroad.[37] Another argument for why we should expect democracies to derive more benefits from coordinating their social security systems comes from research in international organization and international political economy. Assuming, with Joppke, that democratic governments will prefer more egalitarian rights, formalizing these rights through international coordination can be a way to lock them in by tying the hands of future governments as well as to set an example in the hope that more countries will follow suit.[38] Also, especially relevant for newly democratized countries, signing international agreements might be a way to signal commitment and reduce uncertainty about how the country will act among domestic and international players.[39] Although this argument has not previously been applied specifically to SSAs, it could certainly be valid here as well.

Having said that, we do not wish to suggest that an autocratic regime may have no interest at all in concluding social security agreements. Granted that pensions and other social security systems in autocracies are more often targeted primarily at the critical supporters of the regime, these influential elites too might have an interest in ensuring that they are well protected if emigrating.[40] Nevertheless, for the reasons outlined above, we expect democracies to be comparatively more likely to engage in social security coordination.

On that note, it is worth discussing whether the regime types in the two countries will interact, so that the effect of democracy in country A will be higher or lower depending on whether the level of democracy in country B. On the one hand, as proposed by Chilton and Posner in regards to bilateral labor agreements that regulate immigration flows, "when there are large differences in the political regimes of the host and source countries, source countries are more likely to be

[37] Gamlen et al. 2019.
[38] Mansfield and Pevehouse 2008. Cf. Moravscik 2000.
[39] Mansfield and Pevehouse 2008.
[40] Knutsen and Rasmussen 2018.

concerned about the rights of their nationals."[41] At a more fundamental level, however, it might be easier to cooperate with countries that have a similar regime, which would mean that democracy in country A should matter more when country B is also democratic.[42] Hence, we expect an interaction effect such that democracy in both countries will increase the likelihood of an agreement over and above the effect of just one of the countries being a democracy.

Economic development

A third important factor to consider here is the level of economic development in the involved countries. The post-war history shows a number of examples of regional economic integration among countries of fairly similar levels of economic development where labor migration has been perceived as mutually benefitting, and social protection of migrant workers as a tool for smoothing the migration processes. Generally speaking, the potential benefits such arrangements have for the involved governments, by improving the circulation of labor and human capital and the protection of their migrant workers, might be attractive to all type of countries. However, it is not evident that same economic rationale applies to migration from, and among, poorer countries. As argued by Avato et al.:

> "As long as poverty drives migration (as it does in much south–south movement), formal social security and "correct" legal status will not be a priority for migrants. Migrants will be willing to endure short to medium term hardship and an undermining of a range of capabilities and rights (such as education, social assets, rights, and personal welfare) to provide economic safety nets for their families and future improvements to their wellbeing."[43]

[41] Chilton and Posner 2018, 57.
[42] Mansfield et al. 2002.
[43] Avato et al. 2010, 463.

In a similar vein, Ruhs has argued that although "in principle we might expect any country to promote the rights of their workers abroad", governments in low-income net emigration countries may have economic reasons to refrain from insisting on more or equal rights vis-à-vis high-income countries.[44] Low-income countries tend to have a strong interest in sending workers (particularly so low-skilled workers) to high-income countries, since doing so may yield benefits in the form of remittances, investments, and knowledge transfers. Thus, because the receiving high-income country might face a trade-off between generous admission and generous rights for immigrant workers, following Ruhs it can be expected that "an insistence on rights may jeopardize sending countries' objective of sending more workers abroad".

From this point of view, we expect that countries with similar levels of economic development are more likely to coordinate their social security systems, and especially that countries with a high level of economic development are more likely to coordinate among themselves.

Migration as a demand factor

Given that SSAs serve to improve the social protection of people who originate in one country but resides in another, it appears natural to expect that a higher number of migrants between two countries would increase the demand for social security coordination between the two. Here it is also important to understand that migration typically takes place in corridors, from a particular origin to a particular destination, as illustrated in the aforementioned examples on the India–US, Sweden–Thailand, and UK–Canada corridors. This implies that such migration-induced increases in demand for social security could, in principle, be handled through a series of bilateral agreements.

[44] Ruhs 2013, 137.

However, in line with our argumentation so far, we should primarily expect migration to increase the likelihood of social security coordination if the surrounding environment motivates it, and is willing to supply the support. Therefore, given what has been discussed above, we would expect increasing migration to trigger coordination to a larger extent when it occurs between two countries that enjoy a high level of economic development, when it occurs between two countries with highly developed social security systems, and when it occurs between two democracies.

International systemic factors

International cooperation is also known to be facilitated by other factors that reduce transaction costs for international agreements as well as migration, which are important to account for theoretically and empirically, in part because they are likely to be correlated with the factors in focus of our theoretical interest. To begin with, following previous literature on international agreements, there are reasons to consider whether countries have a common legal system or a common official language, as well as how close they are located.

Other types of existing economic and political relationships between the countries also need to be taken into consideration. One concerns whether countries have a shared colonial experience after 1945, either as pairs in a colonial relationship or as subjects to the same colonizer. To begin, Koopmans and Michalowski have argued that former colonial powers are more generous in terms of providing immigrants social rights.[45] At the same time, previous research indicates that it might be important to distinguish between the likely roles of United Kingdom, France, and other colonial powers. As France pursued the same kind of social policies in the colonies (seeing them as part of France) as they did towards residents in France, we expect that this

[45] Koopmans and Michalowski 2017.

common ground would increase the likelihood for SSAs with and among the former French colonies.[46] Expectations about the former British Empire are less clear: On the one hand, the British appear to have followed very different principles for its colonies, with a strong reliance on provident fund solutions instead of traditional social insurance/pension systems, and provident funds would appear to reduce the need for SSAs simply due to the assets being more portable. On the other hand, the establishment of the British Commonwealth with its special rules and regulations concerning migration, not only to the United Kingdom but also to and from other member states, might have entailed an increase in the likelihood for SSAs.[47]

As to other types of pre-existing relationships, previous research suggests that international agreements are more likely to occur between countries that are (i) part of the same military alliance, between those that are (ii) members of GATT/WTO, and between those that are (iii) already economically integrated through a customs union, common market, or economic union. Finally, considering the possibility of diffusion through learning among policymakers and civil servants involved in negotiating agreements, it is likely that the more agreements a country has established before, the lower transaction costs it faces and the more likely it should be to enter into new agreements.[48]

To summarize this section, we propose a theoretical framework highlighting why we should expect countries' SSA trajectories to be influenced by the *level* as well as the *similarity* between countries within the realms of social security system development, democracy, and economic development; with migration as an underlying driver of demand for international coordination.

[46] Grünewald 2022.
[47] Even if most of these special arrangements have gradually been circumscribed or disappeared.
[48] Mansfield and Milner 2012.

In addition, we have pinpointed a number of potentially relevant international systematic factors that needs to be accounted for when testing our expectations empirically.

Since most of the reasoning concerning bilateral social security agreements also applies to the multilateral ones, our theorization above have focused on the bilateral situation. However, the multilateral case demands some further reflections. Here, the establishment of the EU all the way from the Rome Treaty in the late 1950s provides a case in point. Even if we interpret it as politically driven market-making project (ultimately with military security objectives), it also comes with a value-based precondition that workers are to be covered by social security.[49] In other words, the market logic requires that social protection extends also to mobile workers, to ensure free movement not only of capital, goods, and services, but also of labor. This illustrates how multilateral agreements may be founded on competing, or even conflicting, principles. It may also indicate how it is possible, in connection to the establishment of a multilateral social security agreement, to override individual countries' narrow self-interests by relying on value-based principles that can serve to respond to more general mutual interests. Thus, we should be open to the possibility that theoretical mechanisms that revolve primarily around countries' material self-interests are less important for understanding multilateral social security agreements than they are for understanding bilateral ones.

The dyadic SSA dataset

To be able to test our expectations as broadly as possible, we create a global dataset on SSA adoption, relying primarily on two sources: ILO's NATLEX database, as well as the World Treaty Library (WTL), maintained by HeinOnline, which includes a collection of major original treaty datasets. The former contains the largest number of international social security

[49] Ruhs and Palme 2018.

agreements beginning in 1947, while the latter has a longer historical scope and furthermore contains a number of agreements from more recent decades that are not observed in the NATLEX data. While a full coverage cannot be guaranteed, both data sources have a global coverage and are regularly updated. Also, the fact that we do not consider years later than 2015 in our analyses should reduce the risk of reporting lags.

The dataset is constructed as follows: We begin by creating a list of the dyads between all existing countries that enjoy at least some degree of functional and/or formal sovereignty as defined by Coppedge et al., for each year between 1945 and 2015.[50] We then create an SSA coverage variable, which for a given country-pair we recode from 0 to 1 once the pair have entered its first bi- or multilateral SSA, according to the NATLEX data. Subsequent agreements pertaining to the same country-pair (such as updates or extensions) are not taken into consideration. Second, we do the same operation for each treaty observed in the World Treaty Library. The longer historical scope of the latter allows us to observe country-dyads that were covered by an agreement already at the start of our time series in 1945. Third, we take into consideration country-dyads covered by five multilateral SSAs not included in either of the two sources.[51] Fourth, to handle the regulations pertaining to the coordination of social security benefits within the EU (previously the EEC) and the EEA, we consider a country-dyad covered as soon as both countries are members of either community, after the first regulation on this topic was signed in 1958.[52]

[50] Coppedge et al. 2021.
[51] Roberts 2009; Avato et al. 2010. The agreements added this way are the Council of Europe's European Interim Agreements (first adopted in 1953), the CARICOM Agreement on Social Security (1996), the Acuerdo Multilateral de Seguridad Social del Mercado Común del Sur (1997), the Unified Law on Insurance Protection Extension covering the six Gulf Cooperation Council states (2005) and the Ibero-American Social Security Convention (2007).
[52] The regulations of primary relevance here are the Regulation (EEC) No 3 of the Council of 25 September 1958 concerning the social security of migrant workers, Regulation (EEC) No 1408/71 of the Council of 14 June 1971 on the application of social security schemes to employed persons and their families moving within the Community, the Regulation (EC) No 883/2004 of the European Parliament and of the Council of 29 April 2004

Following the bulk of the literature on international trade and investment agreements, we focus primarily on the adoption rather than the ratification of agreements, since we are primarily interested in what makes countries initiate cooperation in the first place; thus, the signing of the agreement is the crucial action for our analysis. Besides, for the agreements in the WTL it has not been possible to systematically identify the date of ratification. Still, focusing on the adoption as the initial step in establishing social security coordination has the advantage of providing a conservative test of our expectations, since the factors that facilitate adoption should have an even larger impact on subsequent, more demanding steps in the coordination (i.e., ratification and implementation).

Charting the post-war development of SSAs across the globe

As a first preview of the new dataset, Figure 1 charts the post-war era development of SSAs around the globe, distinguishing between bilateral and multilateral agreements across seven major world regions. The figure reports the cumulative number of country-pairs covered by at least one adopted agreement, for which a signatory belongs to the region in question.

on the coordination of social security systems (Roberts 2009). Omitting this criterion would primarily result in a less sharp increase in SSAs in Western and Eastern Europe at the time of the 2004 EU enlargement (cf. Figure 1).

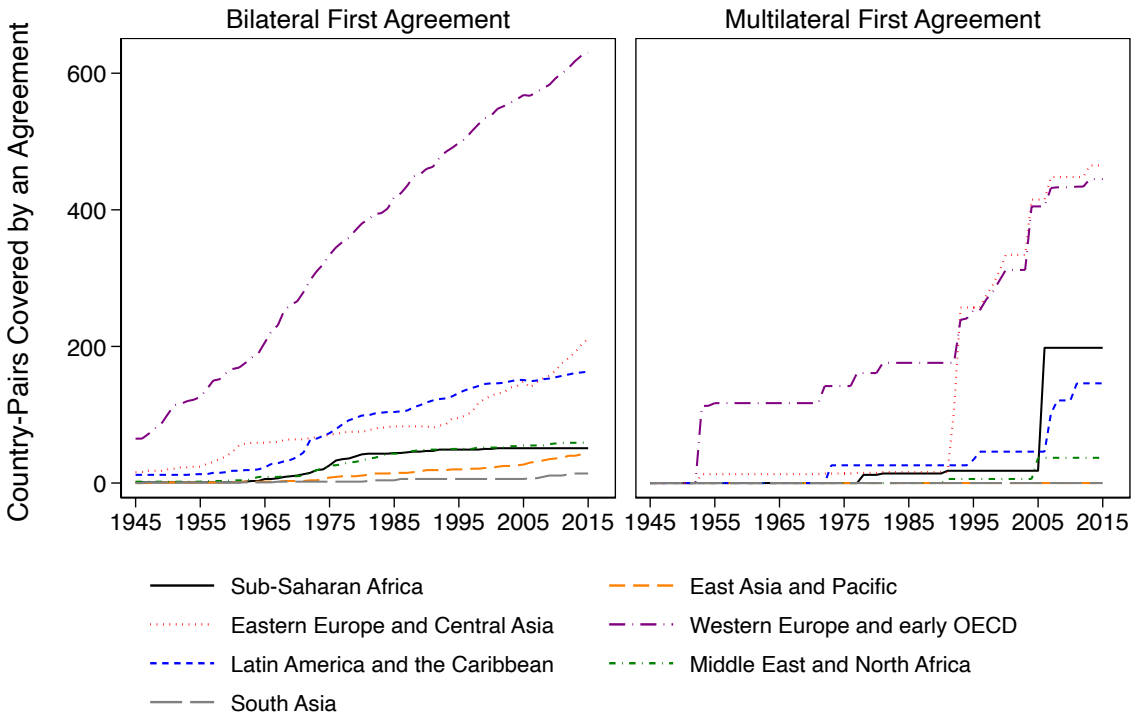

Figure 1. Country-pairs covered by an SSA, by type and region of signatories, 1945–2015.

Note: The figure reports the cumulative number of country-pairs covered by an adopted agreement, for which a signatory belongs to the region in question. Subsequent changes or potential terminations are not taken into consideration.

Agreements concluded during the first half of the 20th century were primarily bilateral, and this type of agreement has continued its gradual expansion over time. In recent decades, however, most large expansions in SSA coverage stem from regional multilateral agreements. Western Europe and other 'early' OECD member states have long been the dominant actors in social security coordination, both through bilateral agreements with states in Europe or elsewhere, and through multilateral regulation; initially in the form of the Council of Europe's two European Interim Agreements adopted by some members in 1953, and later in the form of an agreement among members of the European Economic Community first adopted in 1958 and expanded in 1971 and 2004.

Yet, clusters of coordination later emerged also elsewhere. Countries in Eastern Europe increasingly began to coordinate bilaterally during the 1950s and have later been integrated in multilateral arrangements with Western European countries, first in the form of a 1993 agreement on social security for inland waterway boatmen in continental and Eastern Europe, and later through the expansions of the European Union in the early 21st century. For the Central Asian countries in this region, one major event occurred in 1992 when ten states in the newly founded Commonwealth of Independent States agreed on coordinating citizens' rights to pension provisions.

In other world regions, the development of social security coordination started later. One of these regions is Latin America and the Carribean, where bilateral coordination started growing in the 1960s and where later on the CARICOM Agreement on Social Security (first adopted in 1996), the Acuerdo Multilateral de Seguridad Social del Mercado Común del Sur (1997), and the Ibero-American Social Security Convention (2007) represent important multilateral expansions. Another is Sub-Saharan Africa, where in 2006 a multilateral social security convention was adopted by 14 member states of the Inter-African Conference on Social Security (CIPRES), among which most prior coordination had primarily involved the former colonial powers. By contrast, with the exception of a multilateral agreement among six Gulf Co-operation Council member-states in 2005, the countries in the Middle East and the North of Africa, South Asia, and East Asia and the Pacific have seen very little coordination overall.

Table 1. Country-dyads covered by an SSA, by region in 1960 and 2015.

Percentages	Sub-Saharan Africa	East Asia and the Pacific	Eastern Europe & Central Asia	Western Europe and early OECD	Latin America & Carib-bean	Middle East and the North of Africa	South Asia
				1960			
Sub-Saharan Africa							
East Asia & Pacific				0.2			
E. Eur. & Cent. Asia			11.1	8.2			
W. Europe + OECD		0.2	8.2	27.1	0.6	0.4	0.6
Latin Am. & Carib.				0.6			
M. East & N. Africa				0.4			
South Asia				0.6			
Total	0.0	0.0	2.1	5.3	0.1	0.1	0.1
				2015			
Sub-Saharan Africa	8.7			3.0	0.1	0.5	
East Asia & Pacific			0.7	4.6			
E. Eur. & Cent. Asia		0.7	38.6	39.5	0.3	1.1	
W. Europe + OECD	3.0	4.6	39.5	83.1	12.3	6.3	5.5
Latin Am. & Carib.	0.1		0.3	12.3	35.3	0.2	
M. East & N. Africa	0.5		1.1	6.3	0.2	13.5	0.8
South Asia				5.5		0.8	
Total	2.9	0.8	12.6	22.8	6.8	2.7	0.9

Cell values denote percentage of country-dyads with an adopted (bi- or multilateral) agreement. Zeros are left out for presentational purposes.

The geographical patterns of coordination discussed above are further substantiated in Table 1, which reports the percentage of country-dyads covered by at least one adopted (bi- or multilateral) agreement across pairs of regions at two points in time: 1960 and 2015. In 1960, social security coordination was primarily an intra-European phenomenon, yet limited in scope there as well. In 2015, the dominant position of Western Europe and the early OECD countries still stands out with regards to both intra-regional and inter-regional coordination, but while inter-regional coordination involving other regions remains scarce, some intra-regional clusters have emerged.

Analytical strategy, empirical design and variable construction

Following previous research on international agreements, our empirical analyses are primarily based on a duration analysis framework, which we use to investigate the relationship the between the factors theorized above and the time it takes before a country-pair adopts a bi- or multilateral SSA.[53] Here, country-dyads are observed yearly from as early as the available data allow until they "fail" by adopting an SSA, or otherwise are right-censored. As such, these analyses are built around the concept of hazard, which refers to the likelihood that an event of interest will occur at a particular point in time, given that it has not yet done so.

Our analyses are run on a directed dyadic dataset, meaning that each country-dyad occurs twice for each observed year. To cover as long a time period as possible given the data at hand, we begin our main analyses in 1960, with some supplementary analyses going back to 1950. All regression models include year-specific fixed effects to capture time dependence.[54] We start out by reporting a model estimated using conventional logistic regression. Next, to be able to include dyad-level fixed effects to control for unobserved dyad characteristics, we switch to ordinary least squares (OLS) regression.

As our main dependent variable, we use the dichotomous SSA coverage variable introduced above, which for a given country-pair scores 1 as soon as the pair enters into its first bi- or multilateral SSA, after which the dyad leaves the analysis. In some analyses, we consider cases of bilateral and multilateral adoption separately. For ease of interpretation, we multiply the dependent variable by 100.

[53] See, for example, Elkins, Guzman and Simmons 2006, Mansfield and Milner 2012, Chilton and Posner 2018.
[54] Robustness checks that add cubic splines of time since 1950 or the emergence of the dyad yield (Carter and Signorino 2010) yield essentially identical results, see Models S3:5 and S4:5 in the Supplementary Material.

The directed-dyadic approach allows for many different treatments of explanatory variables. For monadic variables, which refer to either of the countries, our main specification follows Mansfield and Milner by including each variable only once – pertaining to the host country.[55] Other variables however, refer specifically to the relationship between the dyads. For some of these variables, such as democracy, we believe that there could be both a monadic effect of a variable in the destination country, as well as an interaction with the same variable for the sender country. In those cases, we create dummy variables indicating whether none, one, or both countries in the dyad meet the criteria.

For democracy, to ease interpretation we create dummy variables based on the dichotomous measure of democracy developed by Boix, Miller and Rosato, which signifies a certain level of both political contestation and political participation.[56] The first variable indicates that either the host country or the sender country is a democracy. The second indicates that both countries are democracies. The reference category, accordingly, is that none of the two countries is a democracy.

For social security system design, we use data from the forthcoming database GLOBSPIN, which is in turn based primarily on information from the Social Security Programs Throughout the World (SSPTW) reports.[57] We create two measures based on these data; one measure of the level of development of the host country's social security system – focusing on the scope and coverage of social protection – and one measure of the similarity between the two countries' systems. We consider four categories of contribution- or employment-based programs: pensions, unemployment benefits, sick pay, and maternity leave. For each of these

[55] Mansfield and Milner 2012.
[56] Boix, Miller, and Rosato 2013.
[57] U.S. Social Security Administration 1961–2019.

four categories, we document whether the country has a program in place that covers a) public sector workers and/or b) private sector workers.[58] Each of these eight variables is coded 1 if there is a program in place through which employees in the sector are covered, 0 if there is no such program, and 0.5 if only certain individuals in the group are protected.[59]

We first use these eight variables to create a *social security development* index, by adding up the host country's scores on all of them. This index ranges between 0 and 8. Second, a *social security similarity* index is created by adding 1 for each of the eight program-sector variables for which the two countries in a dyad-year have the same score, and subtracting 1 for each program-sector variable for which they have different scores. In effect, the index ranges between -8 and 8. We rely on SSPTW reports from approximately every fifth year between 1961 and 2019, and we perform linear interpolation to retrieve a yearly measure.

To create two easily interpretable measures of host-country economic development, we use real GDP per capita in hundreds of USD (2015 prices). We include one variable capturing host country real GDP per capita, and another variable defined as the difference between the host and the sender country real GDP per capita. Annual GDP per capita data are derived from the CEPII Gravity Database, and inflation adjustment is based on the consumer price index provided by the US Bureau of Labor Statistics.[60]

To compile a time-series on bilateral migration stocks, we combine data based on official statistics from two sources. For the period 1960–1990, we use ten-year interval estimates

[58] Other groups, such as the self-employed and domestic workers are sometimes reported separately in the SSPTW reports, but for these groups the extent of missing data is much larger.
[59] For example, workers with earnings higher or lower than a legally defined threshold, those working under temporary contracts or those working in specific regions or occupations.
[60] Head et al. 2010.

produced by the World Bank.[61] For the period 1990–2015, we use equivalent estimates with five-year intervals produced by the United Nations' Population Division.[62] For each directed dyad, we create a measure of the natural logarithm of the total stock of immigrants from the origin country residing in the destination country, plus one person, as a share of the destination country population. At the cost of some accuracy, we then perform linear interpolation to retrieve a yearly measure. To account for the time that it reasonably takes for immigrants to gain influence in the destination, and to avoid concerns of reverse causation, we use a five-year lagged value of the logarithmized migrant stock. As a consequence, in the models that consider immigration, the earliest included year is 1965.

From the CEPII Gravity Database, we retrieve dyad-year level variables indicating whether the countries have a common legal system (after transition from socialism), whether they have a common official language, whether they are both members of GATT/WTO, and whether they have a shared colonial experience after 1945, either as pairs in a colonial relationship or as subject to the same colonizer.[63] For the former type of relationship, we distinguish between the UK, France, and other colonial powers. A variable indicating the logged population-weighted distance between the most populated cities in the countries is derived from the same source. Data indicating whether two countries share a military alliance are retrieved from the Alliance Treaty Obligations and Provisions dataset (ATOP, v. 4).[64] We use data from the NSF-Kellogg Institute Data Base on Economic Integration Agreements to create a variable indicating whether or not the two countries are economically integrated, defined here as being part of either a customs union, a common market, or an economic union.[65] Lastly, to capture diffusion

[61] Özden et al. 2011.
[62] United Nations' Population Division 2019.
[63] Head et al. 2010.
[64] Leeds et al. 2002.
[65] Bergstrand and Baier 2017. We need to assume that there are no changes in this variable after 2012, which is the latest reported year. Since the study ends in 2015, Brexit will not affect this variable.

across dyads stemming from policy learning, we create a variable indicating, for each country in a dyad, the proportion of other countries – except the second country in the pair – with which the destination country had already adopted an SSA as of the previous year.

Summary statistics for our main 1960–2015 sample are reported in Table S1 in the Supplementary Material. Taking partial missingness in the explanatory variables into account, this dataset contains observations from around 25,500 directed dyads, constituted by 161 out of a total of 177 countries that enjoy at least some degree of functional and/or formal sovereignty according to Coppedge et al.[66] Among the countries that are observed at some point, around 22 percent of the conceivable 1.38 million dyad-years in 1960–2015 are eventually unobserved. However, such partial missingness is reassuringly much lower in later years, which is also when most agreements are adopted. Thus, our main, most restrictive dataset includes 92 percent of the SSA adoptions observed during the studied period, and in supplementary analyses going back to 1950 the corresponding share increases to 95 percent (see Table S2 in the Supplementary Material).[67]

Results

Descriptive evidence

We begin by reporting cross-sectional descriptive evidence regarding the relationships of interest on the global level, at the end of our observation period in 2015. The three panels in

[66] Coppedge et al. 2021. The 16 countries never observed are Bosnia and Herzegovina, Comoros, Democratic Republic of the Congo, German Democratic Republic, Guinea-Bissau, Hong Kong, Kosovo, Maldives, Mongolia, Montenegro, North Korea, North Macedonia, South Sudan, South Yemen, Timor-Leste, and United Arab Emirates.

[67] Another 61 out of the 1,255 observed SSA adoptions are omitted from all analyses because they occurred before 1950. These primarily involve Western European dyads.

Figure 2 report the share of observed country-pairs for which an SSA has been adopted, for a set of theoretically relevant categories of dyads. The left panel first divides the country-pairs based on whether none, one or both countries have a democratic political regime, and then again into deciles based on the stock of migrants from country B residing in country A (per country A capita). For each of the three regime categories, it is clear that SSAs are more common among country-pairs who have reached a certain level of bilateral migration. Indeed, among the bottom five immigrant stock deciles in each regime category, at most a few percent of country dyads are covered by an SSA.

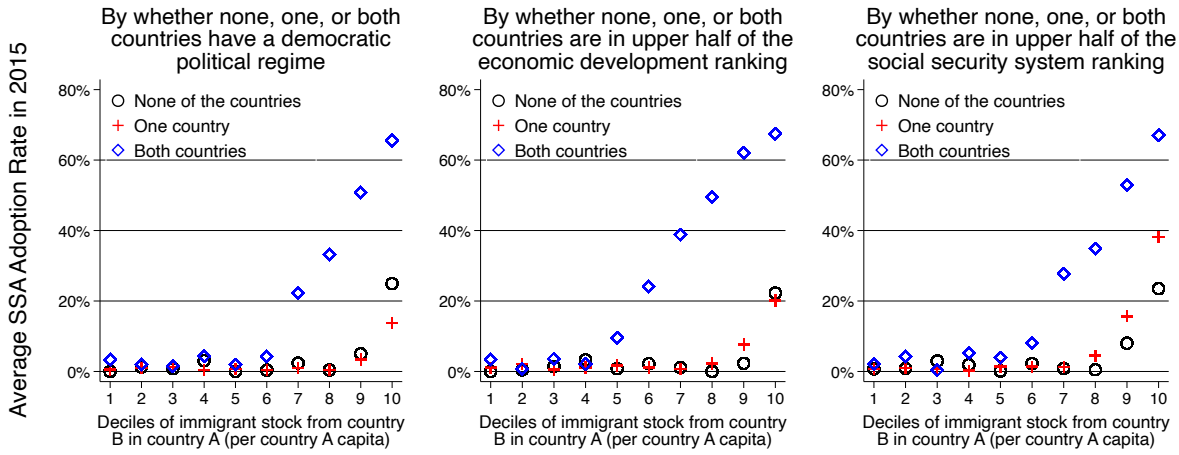

Figure 2. Likelihood that a country-pair has ever adopted a social security agreement, 2015.

Note: The political regime groups are based on Boix, Miller and Rosato's dichotomous measure of democracy. The ranking of economic development is based on GDP per capita in US dollars. The ranking of social security systems is based on the social security system development index created by the authors.

Also evident from the left panel is that fully democratic country dyads are considerably more likely to have adopted an SSA than partly or non-democratic dyads, at least so when the stock of migrants have reached a certain level. Still, among the country-pairs consisting of two authoritarian states, those in the top decile with regards to bilateral migration are more likely to have adopted an SSA, than the top decile country-pairs with one regime of each type. These descriptive patterns support our expectations that both the level and the similarity of democratic development matter for SSA adoption. The middle and right-hand plots reveal fairly similar patterns for economic development and social security development, although for these factors the level of development appear to matter somewhat more as compared to cross-country similarity, as indicated by the relative position of the three categories.

Duration analyses

The overall resemblance of the patterns in the three panels in Figure 2 is not surprising given that democracy, economic development, and social security development are correlated across countries. To disentangle and isolate the three factors, as well as to leverage within-dyad variation, we turn next to two sets of duration analyses.

Table 2 reports our first set of results, estimated on the full 1960–2015 dataset. We cannot claim strict exogeneity for any of the variables of interest, so like for most research on global dyadic data the interpretations we make should not been seen as strictly causal. Nevertheless, we take steps to increasingly isolate the relationships of interest in our models. To recapitulate, all models are hazard models in which the dependent variable is the first adoption of an SSA (multiplied by 100), which means that coefficients are to be interpreted as changes in the probability of adopting an SSA in a given year, conditional on not having done so before. In all models, we compute two-way-robust standard errors, clustered by both countries to allow for correlated error terms within both destination and source country.

Table 2. Main results: 1960–2015

	All SSAs 2:1: Logit	All SSAs 2:2: OLS	All SSAs 2:3: OLS	All SSAs 2:4: OLS	BSSAs 2:5: OLS	MSSAs 2:6: OLS
None is a democracy	*Reference category*					
One is a democracy	0.382**	0.049**	-0.020	-0.093***	-0.026*	-0.070***
	(0.192)	(0.022)	(0.025)	(0.027)	(0.015)	(0.022)
Both are democracies	2.130***	0.540***	0.368***	0.173**	0.044	0.148**
	(0.204)	(0.083)	(0.072)	(0.076)	(0.029)	(0.067)
Host real GDP per capita	0.220***	0.059***	0.056***	0.094***	0.068***	0.032**
	(0.033)	(0.012)	(0.010)	(0.022)	(0.015)	(0.015)
Host–origin diff. in real GDP per capita	-0.123***	-0.034***	-0.039***	-0.065***	-0.046***	-0.024**
	(0.020)	(0.008)	(0.008)	(0.018)	(0.012)	(0.011)
Host social security system development	0.187***	0.035***	0.024***	0.037***	0.016***	0.024*
	(0.042)	(0.007)	(0.007)	(0.013)	(0.006)	(0.012)
Social security system similarity	0.068***	0.023***	0.017***	0.024***	0.009***	0.017***
	(0.021)	(0.005)	(0.004)	(0.006)	(0.003)	(0.005)
Control variables						
Common legal tradition (post trans.)	0.394***	0.071***	0.066***			
	(0.119)	(0.020)	(0.018)			
Common official language	0.574***	0.044	-0.150**			
	(0.182)	(0.056)	(0.067)			
Population-weighted distance (log)	-1.191***	-0.365***	-0.113***			
	(0.070)	(0.050)	(0.030)			
Common colonizer post 1945	0.485	0.078	0.087			
	(0.301)	(0.075)	(0.065)			
Post-1945 colonial rel. with the UK	3.091***	2.897***	2.874***			
	(0.323)	(0.207)	(0.232)			
Post-1945 colonial rel. with France	2.444***	1.997***	1.936***			
	(0.293)	(0.154)	(0.183)			
Post-1945 colonial rel. with other country	1.457*	2.168	1.847			
	(0.795)	(1.403)	(1.406)			
Both in GATT/WTO			0.060**	0.168***	0.018	0.161***
			(0.025)	(0.054)	(0.016)	(0.051)
In military alliance			0.729***	0.667***	0.213***	0.510***
			(0.094)	(0.173)	(0.062)	(0.162)
Economic integration			11.27***	21.11***	-0.345	22.41***
			(3.275)	(4.913)	(0.655)	(5.228)
Host SSA adoption rate at t-1 (%)			0.011***	0.042***	0.028***	0.017***
			(0.004)	(0.007)	(0.005)	(0.005)
Constant	1.073	2.990***	0.845***	-0.768***	-0.622***	-0.203***
	(0.722)	(0.437)	(0.264)	(0.126)	(0.114)	(0.055)
Observations	1030438	1030438	1030438	1030350	1002612	1009582
Mean dependent variable (hazard rate)	0.187	0.187	0.187	0.184	0.087	0.101
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Dyad fixed effects	No	No	No	Yes	Yes	Yes

Two way-robust standard errors in parentheses, clustered by host country and origin country. $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$.

We begin by estimating a model that includes only our six variables of interest and a set of time-invariant dyad-level factors, as well as year-fixed effects. In column 2:1 this model is estimated using conventional logistic regression, whereas in column 2:2 the model is estimated using OLS regression. In line with our expectations, the results from the two estimators consistently indicate that the probability of adopting an SSA, conditional on not having done so before, is significantly higher for dyad-years where one or both countries are democracies,

where countries are on a higher and more equal level of economic development, and where they have more well-developed and more similar social security systems. Sticking to the OLS estimator, model 2:3 adds time-varying dyad-level variables on GATT/WTO membership, military alliances, economic integration, and host country SSA adoption rate at t-1. This shrinks the coefficients pertaining to democracy and social security systems substantially.

To further isolate the relationships of interest, the model reported in column 2:4 adds a full set of directed-dyad fixed effects to ensure that only within-directed-dyad variation is used to estimate the relationships of interest. A substantial interpretation of the results for the variables of interest in this model yields the following: A country-dyad has a 0.173 percentage points higher hazard of adopting an SSA when it is fully democratic compared to when it is fully non-democratic. A mixed-regime dyad, however, has a 0.093 percentage points lower hazard of adopting an SSA than the non-democratic dyad, which supports the relevance of regime similarity. Considering that the average hazard rate in the analyzed sample is close to 0.19 percent, these differences must be considered substantial. Next, consistent with the expectations derived from our theoretical framework regarding the level and similarity of economic development, an increase in real host country GDP per capita by 100 USD (2015 prices) corresponds to an increase in the hazard of SSA adoption by 0.094 percentage points, while an equivalent increase in the real GDP per capita difference between the two countries decreases the hazard by 0.065 percentage points.

Lastly, the results suggest that both the level of social security development and the similarity of social security systems matter for SSA adoption. A one-step increase in these two indexes is associated with a 0.037 and 0.024 percentage point increase in the probability of adoption, respectively. As far as democracy and economic development is concerned, it is worth noting

that very similar relationships appear in an alternative version of model 2:4 that is extended back to 1950 (thus inevitably omitting the social security variables; see Table S2 in the Supplementary Material).

Next, it is worth asking how the relationships observed so far change if we consider bilateral and multilateral SSAs separately. This question is investigated in columns 2:5 and 2:6 of Table 2, which account only for adoptions of bilateral social security agreements (BSSA) and adoptions of multilateral social security agreements (MSSAs) respectively, while excluding from the sample all dyads who have at some point established their first social security coordination through the other type of agreement.[68]

The results show that most variables of interest have coefficients of similar sign and magnitude across the two models. The variables pertaining to economic development and social security appear to play similar roles for both types of agreements (taking into account the reduced average hazard in the subsamples). However, the two types of agreements also differ in certain respects. Beginning with democracy, it appears that the overall differences between regime categories observed in column 2:4 are primarily driven by the MSSAs analyzed in column 2:6, for which coefficients are on a similar magnitude; especially so considering the markedly lower average hazard in this smaller sample. If only BSSAs are considered, the average hazard in the sample is reduced even more, and the differences between regimes are smaller. Both coefficients fall below conventional levels of significance, while still pointing in the expected direction.

[68] If such dyads were not excluded from analyses that only considered one type of agreement, the estimated effect of any factor that matters also for the other type of agreement would be deflated.

On a side note, another variable for which the impact on the two types of agreements appears to differ is economic integration, for which the large positive effect observed in model 2:4 turns out to be entirely driven by the multilateral agreements observed in model 2:6. This should not come as a surprise, considering that many multilateral agreements have been negotiated among member states of existing economic unions such as EU and Mercosur, and that joining the EU automatically entails a coordination of social security with all other member states.

Next, let us return to how migration patterns interact with the factors analyzed so far in shaping SSA development. This question is analyzed in the second round of models, representing three sets of two specifications that consider all SSAs, BSSAs, and MSSAs respectively. Reported in full in Table 3, these models replicate models 2:4–2:6 in Table 2 but add a variable capturing the five-year lagged logarithmized bilateral immigration stock per destination country capita (thus beginning in 1965). The second model in each set also includes the interactions between the immigrant stock variable and the six variables related to democracy, economic development, and social security.

A first take-away from these models is that on average, immigration is positively related to SSA adoption; a relationship driven primarily by MSSAs. Of more interest, however, is how the relationship between migration and SSA adoption varies across contexts. For ease of interpretation, the marginal effects of migration at different levels of democracy, economic development and social security development estimated in these models are presented in Figure 3.

Table 3. Results for bilateral immigrant stock interactions: 1965–2015

	All SSAs 3:1: OLS	All SSAs 3:2: OLS	BSSAs 3:3: OLS	BSSAs 3:4: OLS	MSSAs 3:5: OLS	MSSAs 3:6: OLS
None is a democracy						
One is a democracy	-0.111***	-0.897***	-0.040**	-0.296**	-0.076***	-0.733**
	(0.029)	(0.336)	(0.016)	(0.131)	(0.025)	(0.330)
Both are democracies	0.129*	0.761	0.042	0.341	0.101	0.491
	(0.072)	(0.474)	(0.029)	(0.224)	(0.063)	(0.437)
Host real GDP per capita	0.089***	0.468***	0.063***	0.323***	0.030*	0.178***
	(0.024)	(0.100)	(0.015)	(0.073)	(0.017)	(0.067)
Host–origin diff. in real GDP per capita	-0.063***	-0.338***	-0.048***	-0.240***	-0.018	-0.124**
	(0.019)	(0.086)	(0.013)	(0.063)	(0.012)	(0.057)
Host social security system development	0.016	0.150**	0.011	0.086**	0.008	0.080
	(0.012)	(0.067)	(0.007)	(0.042)	(0.011)	(0.051)
Social security system similarity	0.019***	0.088***	0.010**	0.052***	0.010**	0.050*
	(0.006)	(0.032)	(0.004)	(0.018)	(0.004)	(0.026)
Host immig. stock per cap. (log+1) at t-5	0.027**	-0.061***	0.007	-0.055***	0.021**	-0.010
	(0.012)	(0.019)	(0.007)	(0.015)	(0.009)	(0.014)
Host immig. stock per cap. (log+1) at t-5#						
…One is a democracy		-0.056**		-0.018**		-0.046**
		(0.022)		(0.008)		(0.022)
…Both are democracies		0.048		0.022		0.030
		(0.030)		(0.014)		(0.028)
…Host real GDP per capita		0.029***		0.019***		0.011***
		(0.006)		(0.005)		(0.004)
…Host–origin diff. in real GDP per capita		-0.019***		-0.013***		-0.007**
		(0.005)		(0.004)		(0.003)
…Host social security system develop.		0.010**		0.005*		0.005
		(0.004)		(0.003)		(0.003)
…Social security system similarity		0.005***		0.003***		0.003*
		(0.002)		(0.001)		(0.002)
Both in GATT/WTO	0.101**	0.102**	-0.010	-0.010	0.119***	0.119***
	(0.047)	(0.047)	(0.017)	(0.017)	(0.042)	(0.042)
In military alliance	0.418***	0.360**	0.202***	0.166***	0.256*	0.238*
	(0.144)	(0.140)	(0.061)	(0.058)	(0.134)	(0.132)
Economic integration	22.37***	22.36***	-0.974	-1.042	23.88***	23.89***
	(5.221)	(5.219)	(0.980)	(0.961)	(5.529)	(5.535)
Host SSA adoption rate at t-1 (%)	0.031***	0.026***	0.029***	0.027***	0.004	0.002
	(0.008)	(0.008)	(0.006)	(0.006)	(0.005)	(0.005)
Constant	-0.494**	-1.670***	-0.611***	-1.451***	0.055	-0.347
	(0.222)	(0.355)	(0.174)	(0.316)	(0.137)	(0.229)
Observations	866120	866120	844987	844987	850445	850445
Mean dependent variable (hazard rate)	0.174	0.174	0.087	0.087	0.131	0.131
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Dyad fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Two way-robust standard errors in parentheses, clustered by host country and origin country. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$.

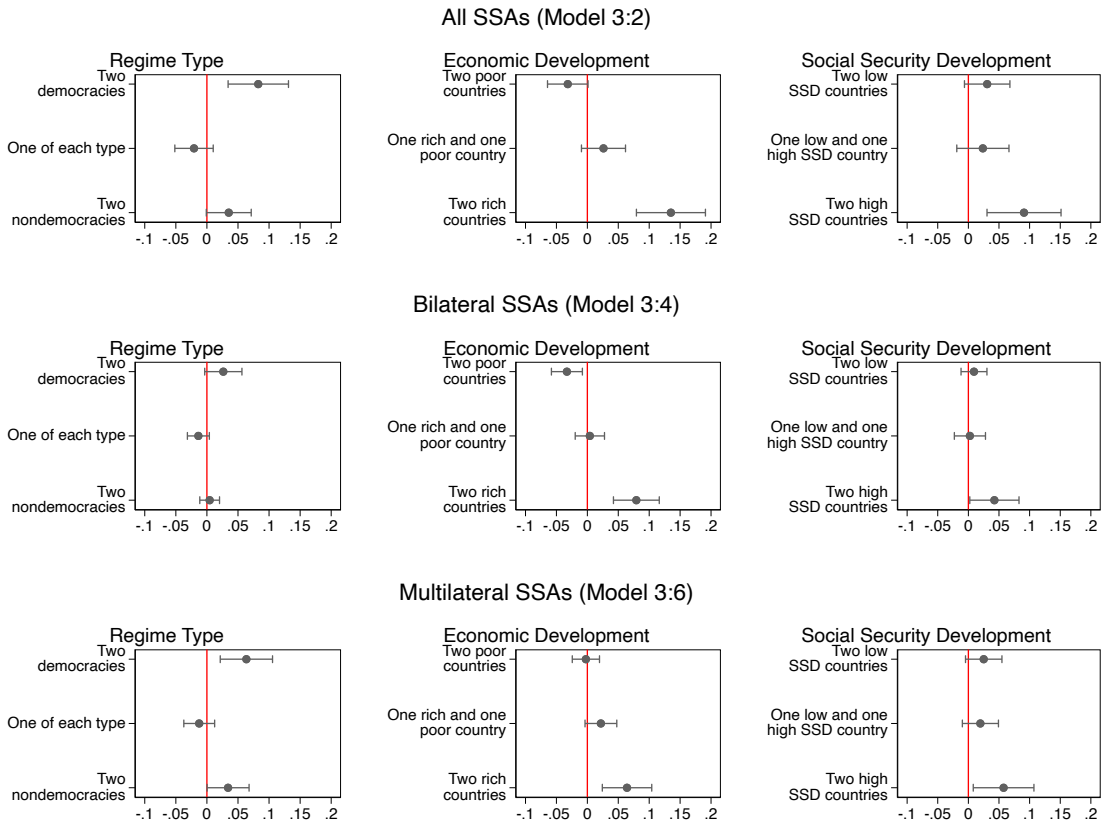

Figure 3. Marginal effects of 1 percent increase in immigrant stock on SSA adoption hazard.

Note: The plots report the predicted marginal effects of a 1 percent increase in the bilateral immigrant stock on the hazard of SSA adoption at three different values of a variable of interest, with all other variables held at their means. Spikes denote 95 percent confidence intervals. Estimates are derived from Models 3:2, 3:4, and 3:6 in Table 3.

The three left-hand plots report the predicted marginal effect of a 1 percent increase in the bilateral immigrant stock on the probability of SSA adoption for a democratic, a non-democratic, and a mixed regime dyad, respectively, with all other variables held at their means. The results suggest that the effect of migration on SSA adoption is largest in democratic dyads, at around 0.08 percentage point, and driven mainly but not only by MSSAs. However, for MSSAs, increased migration also has a positive albeit smaller impact in non-democratic dyads. In dyads where only one country is a democracy, by contrast, the association between migration and SSA adoption is close to zero or even negative. This underlines how coordinating social security in response to increasing migration is particularly challenging in mixed-regime dyads.

The plots in the middle column report the predicted marginal effect of migration in three country-pairs with different combinations of economic development, with all other variables held at their means.[69] For a dyad consisting of two rich countries, the effect is clearly the largest at around 0.14, or around half of that if only BSSAs or MSSAs are considered separately. For a dyad consisting of two poor countries, the effect estimates are close to zero or even negative (although only significantly so for bilateral agreements), suggesting that in this case a growth in migration *discourages* SSA adoption. For dyads consisting of one rich and one poor country, migration appears to have no or at best small effects. Lastly, the three right-hand plots report the effect by whether none, one or both countries have a well-developed social security system.[70] The results suggest that migration primarily drives the adoption of SSAs among countries with equally well-developed systems, and that these patterns are more pronounced for BSSAs than MSSAs.

To summarize, our results as a whole support our expectations, suggesting that our theoretical framework is relevant for understanding variations in SSA adoption between countries and over time, alongside other factors known to be important for international cooperation. To be clear, not each one of our expected relationships turn out substantively or statistically significant, and we cannot claim strict causality despite controlling for time-invariant dyad-level confounders as well as numerous time-variant factors. Still, the empirical patterns are sufficiently clear to suggest that 1) over-time variations in political regimes, levels of economic development and social security system design can help account for why some country dyads

[69] Here, a rich country refers to a country at around the 90th percentile of Real GDP per capita (e.g. Germany/West Germany averaged over the studied period), while a poor country is one at around the 25th percentile (e.g., India averaged over the studied period).
[70] Here, we again use the average scores for Germany (7.67) and India (1.44) to define the levels of social security development.

establish SSAs and others do not in response to increases in bilateral migration, and that 2) not only the levels but also the similarities between countries in these aspects of development matter. Two sets of robustness checks pertaining to Models 2:4 and 3:2, reported in Tables S3 and S4 in the Supplementary Material, confirm that the same conclusions can be drawn from models that exclude dyads in Western Europe, omit the EU/EES adoption criterion, or add cubic splines of time.

Considering that our analyses focus only on the initial step of social security coordination – agreement adoption – our findings should be seen as reassuring. If anything, one might expect that the relevance of our theoretical framework is even stronger for subsequent, more intensifying steps in the coordination process, such as ratification and implementation. Testing this conjecture will be an important task for future research. Pending such investigation, we have run tentative additional versions of Models 2:4 and 3:2 which, instead of adoption, consider the dates when SSAs entered into force, to the extent such information is available in our original sources. Reported in Tables S3 and S4 in the Supplementary Material, the results from these analyses are generally highly similar to the results on SSA adoption, although the impact of migration appears somewhat weaker. However, given the difficulties of verifying the reliability and completeness of the information on entry into force dates in our existing sources, we refrain from drawing any particular conclusions based on these findings.

Concluding discussion

This study has sought to describe and better understand the development of international social security coordination around the world over the past 70 years, using a new global dataset on bi- and multilateral social security agreements (SSAs) that serve to bridge the gaps in social

protection between migrants and natives. While a general expansionary trend was observed, there are notable regional differences: Western Europe and the 'early' OECD countries started earlier than the rest of the world and are still in the lead with regards to bilateral agreements. Eastern Europe and Central Asia have continued to expand such agreements while other regions lag behind substantially. The picture is different for multilateral agreements, where there is a common expansionary trend over the world, except in South Asia, East Asia, and the Pacific.

In an attempt to advance our understanding of these patterns, we have outlined a theoretical framework with a set of expectations regarding the drivers of SSA development, integrating insights from research on international agreements in other policy fields and research on the migration–welfare state nexus. For the sake of parsimony given the state of the art, we focused our framework on how migration between two countries, as an underlying demand factor, interacts with the levels and the similarity between the two countries in terms of democracy, economic development, and social security system development to shape the incentives for the involved governments to either establish or resist coordination through SSAs. We subjected our expectations to an empirical test in a global dyadic analysis. Overall, our results support the importance of both levels of development and cross-country similarity in the factors highlighted in our theoretical framework, while also corroborating the relevance of other well-known drivers of international agreements, such as geographical and linguistic proximity, colonial relationships, economic and military alliances, and policy learning.

What is our contribution to the different literatures – what can we write home about? To the emerging literature on transnational social security, we provide a new historical dataset that reveals new and more detailed geographic and temporal patterns in SSA adoption; a common

expansionary trend but also variations over time and regions in the world when it comes to bilateral (first) and multilateral (later) agreements.[71] The overarching theoretical framework we propose to help explain these variations, and the first empirical assessment of said framework, can hopefully stimulate new more detailed theoretical investigations and empirical work with more specific foci than ours. The latter may include both in-depth qualitative case-studies and quantitative analyses of the explanations and effects of specific SSAs that in different ways could strengthen the causal identification.

Our work also speaks to the larger literature concerned with the domestic sources of international cooperation.[72] First, the dataset on SSAs provided here will enable new research that systematically compares the determinants of different types of bi- and multilateral agreements. Of particular relevance for such analyses are the results that highlight the role of cross-country similarity in regards to both political regimes, economic development, and social security systems for SSA adoption. These results underscore how international cooperation is facilitated by similarities in other aspects than those commonly analyzed in international relations research.

Lastly, to the literature on the migration–welfare state nexus, we make a specific contribution by examining how migration patterns interact with the levels and similarities of the aforementioned institutional and structural factors to shape policy coordination that helps bridge the well-known migrant–native gaps in social protection.[73] These findings have

[71] See Avato et al. 2010, Taha et al. 2015, Holzmann and Wels 2020 for literature on transnational social security.
[72] See, for example, Tobin and Busch 2010, Mansfield and Milner 2012, Chilton and Posner 2018.
[73] See, for example, Ruhs 2013, Koopmans and Michalowski 2017, Eick and Larsen 2022, Mårtensson et al. 2021.

important implications for policy development, international cooperation, and the design of social security systems to better address the needs of migrant populations worldwide.

This being said, our analysis has also generated a number of questions that remain for future research to resolve. More work could certainly be done to explore and exploit the variation in content between SSAs. This should include analyses that go beyond the first SSA of each dyad to also consider both subsequent cases of adoption as well as ratification and implementation. Also, variation in the content of agreements can likely tell us more about the drivers of SSAs, as well as about their effects on migrant wellbeing and migration flows for that matter. From a theoretical perspective, it would likely be worthwhile to consider in more detail how domestic actors' interests with regard to SSAs vary depending on the institutional context and, by extension, how these agreements can be linked to countries' underlying welfare and production regimes as well as their growth models.

Lastly, it is worth noting that our observation period has been one of emergence and expansion of SSAs. It is of course an open question whether this expansion of migrants' social rights will continue, or if its growth is approaching its limits in ways similar to what Peter Flora observed about the development of the welfare state as such.[74] Based on our results about past developments, it is motivated to ask a number of questions in relation to the conditions that we have found to be of significance for SSAs, especially in light of current global trends: Will international migration continue on the same levels or diminish due to new policy restrictions? Will countries grow richer, more (or less) democratic, converge in terms of social security? Will regional economic integration continue (and spur MSSAs)? Indeed, after Brexit, we also have to recognize that SSA development may be reversed and theorize around risk factors for

[74] Flora 1986.

such events in relation to both bi- and multilateral SSAs. We hope that the work reported here can help pave the way for a new research agenda addressing these and other critical questions.

SUPPLEMENTARY MATERIAL

Supplementary material for this article can be found at the *World Politics* webpage.

DATA

Replication files for this article can be found at https://doi.org/10.7910/DVN/IDZOBQ.

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