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Migrant Remittances and Social Protection

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Abstract:

This paper contributes to the debate on the impact of migrant remittances on *public* social protection. It examines empirically the determinants of *public* social protection focusing on migrant remittances using macro level panel data on a sample of 40 developed and developing countries. To address panel level heterskedasticity, autocorrelation, and endogeneity, FGLS, IV and two-step GMM estimation methodologies are adopted. The paper finds that remittances have a positive influence on social protection expenditures. The results highlight the importance of remittances to fiscal space and social protection.

Keywords: Remittances; social protection; panel data; FGLS; IV; GMM

JEL: H53; D78

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Migrant Remittances and Social Protection

I. Introduction

Social protection systems perform a key role in smoothing consumption through the reduction of unemployment, sickness and disability risks. Social protection consists of "policies and programmes that are designed to reduce the incidence of poverty; limit the exposure of risks such as unemployment, sickness, and disability; and smoothen consumption throughout the economic lifecycle" (Asher and Zen 2015, p1). It includes a) social insurance programs, which protect workers from income loss associated with unemployment, illness, accidents, disability or old age, b) income transfer programs, which protect families against poverty, and c) ear-marked transfers such as those provided by housing or health programs (Ganßmann 2000). Boccagni (2011) expands the definition of social protection to include public and private components, which address the social welfare of individuals, households and communities.

Migrant remittances can serve as a form of social protection. They support the basic consumption needs, provide access to education and health opportunities, and create opportunities for further migration and enhanced living conditions (Boccagni 2011). Brown et al. (2014), along the social protection definition of Boccagni (2011), view migrant remittances as a *private*, possibly informal, social protection alternative in absence of public and formal social protection programs or a complement in presence of inadequate programs.[3] In 2015, world migrants amounted to slightly above 243 million people or 3.3 percent of world population. Those migrants generated remittances, which amounted to about US$ 0.6 trillion or three quarters of one percentage point of world GDP.[4]

The nexus between migrant remittances and *public* social protection is the focus of this paper. To be able to explore this relationship, we first need to understand the determinants of *public* and *formal* social protection, and then explore the impact of migrant remittances on social protection.

A number of theories, mostly of political nature, have been advanced to explain *public* and *formal* social protection. One main theory is the influence of the type of welfare state, whether liberal (e.g. US), conservative (e.g. France) and social democratic (e.g. Finland) (Esping-Andersen 2009).[5] Political parties also play a role in explaining social protection. Trade unions and left leaning parties have the tendency to increase social protection (Korpi and Palme 2003).[6] Modernization and economic development (Wilensky 1975), global economy developments such as globalization and oil crises, and de-industrialization have also been advanced to explain social protection (Hong 2014).

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[3] Remittances may be transferred back home through personal networks (Yeates 2008), further adding to the perception about informality of remittances as a social protection alternative.

[4] World Development Indicators database define remittances to include personal transfers and compensation of employees. "Personal transfers consist of all current transfers in cash or in kind made or received by resident households to or from nonresident households. Compensation of employees refers to the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident and of residents employed by nonresident entities."

[5] Magazzino (2016) discusses the political determinants of social expenditures in general.

[6] See Hong (2014) for example.

A relatively limited and recent social policy literature explores the role of migrant remittances on *private* and *informal* social protection using household surveys. Examples of this research include Boccagni (2011) on Ecuador, Jimenez and Brown (2013) on Fiji, Brown and Jimenez (2011) on Tonga, Brown et al. (2014) on Fiji and Tonga, Dankyi et al. (2017) on Ghana, Sienkiewicz et al. (2015) on Kazakhstan, and Mendola (2017) on Mozambique. These studies highlight important messages. Migration provides the key means for social protection at home (Boccagni 2011). Remittances serve as an informal social protection alternative (to the formal social protection system) especially for the poorest (Brown et al. 2014; Jimenez and Brown 2014). Remittances encourage participation in informal social services groups and caregiving (Mendola 2017; Dankyi et al. 2017). Social protection may be more of symbolic as opposed to materialistic nature (Sienkiewicz et al. 2015). In brief migrant remittances provide social protection for families at home.

Although remittances are perceived to provide *informal* social protection, the link between remittances and *public* and *formal* social protection have received little attention. Stemming from the altruistic motive of remittances (Stark 1991; Brown 1997; Solimano 2003), remittances can increase consumption of families at home countries. In presence of consumption taxes, remittances increase collected taxes and expand government revenues (Abdih et al. 2012b; Chami 2013; Chami and Fullenkamp 2013). Besides remittances have a self-interest motive, which can also expand government revenues. Remittances create income, saving, and wealth to migrants, in the form of property and financial assets, which can be subject to income and wealth taxes.[7] Therefore through altruism and self-interest, remittances can increase government revenues, which in turn increase government expenditures including social protection (Abdih et al. 2012b). [8]

Remittances may also influence the tax base through their impact on labor supply. Remittances may discourage labor supply through a negative income effect, which in turn reduces labor income and consequently (direct) income taxes. Chami et al. (2003) are in favor of this view. Reduction in income taxes may reduce government and social protection expenditures.

An alternative hypothesis has been posited about the nature of relationship between migrant remittances and social protection. Remittances can decrease the demand for public goods and services, such as cash transfers to poor families and the provision of education and health services. In presence of a weakened demand, governments can become less accountable to their citizens, less efficient in the use of public resources, or perhaps corrupt. These in turn may reduce social protection (Abdih et al. 2012a).[9]

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[7] Remittances may increase government revenues through economic growth. By increasing the household income and saving, and therefore investment in home countries, remittances have a positive influence on economic growth. For example, Giuliano and Ruiz-Arranz (2009) find that remittances enhance growth in 100 developing countries by overcoming credit constraints, which enterprises face in financing investment. Nyamongo et al. (2011) obtain similar findings in African countries. Catrinescu et al. (2009) point out that the remittances boost economic growth in presence of quality economic and political institutions.

[8] Tanzi (2002) argues however that globalization may influence tax systems and revenues, and the government regulation of labor markets and capital flows in such a way that reduces the degree of social protection.

[9] It is possible however that migrants become political and social actors and lobby the government for more social protection (Boccagni 2011).

This alternative hypothesis however rests on the nature of political regime. Tyburski (2014) argues that remittances improve or worsen quality of institutions depending on the nature of the political regime. In authoritarian regimes, governments do not need large coalitions to win; in such regimes the opportunity cost for individuals or (potential) voters of exercising political participation is high. Therefore recipients of remittances are discouraged from political participation, and thus have little chance to influence corruption. The opposite argument holds in democratic systems.[10]

This empirical research contributes to our knowledge about *public* social protection in three respects.[11] First, the *public* social protection literature has been mostly qualitative and is based on household survey data. An empirical investigation of its determinants at the macro level has been quite limited; few studies have been identified (Beblavy 2010; Hong 2014; Sepalika et al. 2014). Second, within these few studies, none to the best of our knowledge has explored the remittances-social protection nexus. Third, in examining the determinants of *public* social protection, this research uses a panel dataset on 50 developed and developing countries from different regions for the period 2006-2015, focusing on the influence that migrant remittances exert. Earlier research by Beblavy (2010), Hong (2014) and Sepalika et al. (2014) explored these determinants in 28 European Union member states, three East Asian countries (South Korea, Japan and Taiwan), and in Sri Lanka, respectively. By allowing large sample variation and heterogeneity, this study improves our understanding of *public* social protection and enhances our confidence in the empirical results.

The paper proceeds as follows. Section 2 specifies the empirical model building on previous studies specifications. Section 3 highlights the empirical issues we encounter in estimation and the consequent estimation methodologies adopted. Section 4 presents and discusses the estimation results. Section 5 examines the remittances-social protection nexus in developing countries, while section 6 concludes.

2. Empirical Model

The specification of the empirical model for this research builds on the earlier work of Sepalika et al. (2014), Hong (2014) and Beblavy (2010). We start in the first sub-section by discussing earlier model specifications before turning to this paper's empirical model in the second sub-section.

a. Social Protection Determinants in Empirical Literature

Sepalika et al. (2014) measure *public* social protection in Sri Lanka using social protection expenditures. Being related to government size, they distinguish between demand- and supply-side of government size in explaining social protection expenditures. The demand side reflects citizen-over-state considerations building on Wagner's law, and compensation and median voter theories. The supply side reflects state-over-citizen consideration building on fiscal illusion and bureaucratic theories.

[10] Williams (2017) finds however that remittances improve democratization in Sub-Saharan African countries through better schooling.

[11] The term *public*, as opposed to *public* and *formal*, will be used thereafter.

Relating to the demand for social protection, Sepalika et al. (2014) include per capita income, industrialization and population growth. Per capita income is included based on Bird's (1971) justification that the increase in per capita income in industrialized countries is associated with public sector growing in relative importance. Similarly, building on Wagner's law, industrialization is associated with larger share of the national income directed towards public goods. The growth in population requires more provision of public goods, such as education, health and infrastructure (Ponlapat 2011), as well as more care for the elderly due to the change in age distribution (Musgrave & Musgrave 1984). They measure per capita income as real per capita GNP, industrialization as manufacturing value added as a percentage of GDP, and population growth as the annual rate of population growth.

Besides their control for *domestic* demand-side variables, Sepalika et al. (2014) account for globalization factors, namely trade openness and FDI, which enhance vulnerability to economic shocks.[12] Globalization motivates the demand for social protection since workers are exposed to the risk of job losses. They measure trade openness as the sum of exports and imports as a percentage of GDP. FDI is measured as a percentage of GDP. Inequality and the demand for income redistribution is also accounted for. They argue, building on Ponlapat (2007), that since the poor majority are active voters, politicians have to address income inequality and redistribution. Similar to Ponlapat (2007, 2011) they measure inequality as the ratio of the nonagricultural sector GDP to agricultural sector GDP. Higher inequality is associated with more demand for redistribution programs.

On the supply side, Sepalika et al. (2014) account for the fiscal illusion theory building on Dollery and Worthington (1996). The latter study explains that, due to fiscal illusion, citizens expect oversupply of public goods and services since the government tax revenues are unobserved or incompletely observed. This in turn reduces the tax price of public goods and services. Thus Sepalika et al. (2014) include tax burden, direct tax revenue, and budget deficit to capture fiscal illusion in Sri Lanka. These are measured as tax revenue as a percentage of GDP, the percentage of direct tax to total tax revenues, and the budget deficit, respectively.[13] The supply of social protection is also related to bureaucracy size. As Ponlapat (2011) and Hicks and Swank (1992) purport, public spending is also demanded by bureaucrats themselves; in other words, the level of social protection supplied is determined by the size of bureaucrats. They measure bureaucracy size by the number of government officers: more civil servants are associated with an increase in social protection expenditures.

Hong (2014) examines the determinants of social expenditures in the East Asian countries - Japan, Korea, and Taiwan - building on modernization, globalization and power resources theories. She tests a number of hypotheses based on these three theories. In relation to modernization theory, she hypothesizes that welfare needs, modernization, national administrative capacity and democracy are positively associated with social expenditure levels. In relation to power resources theory, she hypothesizes that center-left representation in

[12] This is similar to Cameron (1978).

[13] In their empirical model, however, they exclude per capita income and budget deficit due to their correlation.

government determines changes in social expenditure and that the representation in parliament positively influences social expenditure commitments. Finally, in relation to globalization theory, she hypothesizes that globalization and the global financial crisis negatively and positively impact welfare expenditures, respectively.

Hong (2014) uses public social expenditure (percentage of GDP) to measure social protection expenditures, the unemployment rate to measure unemployment, annual GDP growth rate to measure GDP growth, employment in agriculture (percentage of total employment) to measure agriculture employment, general government final consumption expenditure (percentage of GDP) to measure government expenditure, a composite polity score from the Polity IV project to measure democracy, a dummy variable for whether the chief executive party is center-left to measure left executive, the share of left parties' parliament seats to measure the percentage of left seats, trade (percentage of GDP) to measure trade, and finally dummy variables to capture the global economic crises of 1998-2002 and 2008-2011.

In explaining the size of *public* social protection expenditure in 27 European Union member states in 2006, Beblavy (2010) uses economic and social determinants. These include GDP per capita, old age dependency ratio, the employment rate (percentage of population aged 15-64), and the unemployment rate (percentage of economically active population).

b. Empirical Model Specification

Building on the earlier model specifications discussed above, we express the empirical model as:

$$SP_{it} = B_0 + B_1\, PCGDP_{it} + B_2\, GROWTH_{it} + B_3\, DEPENDENCY_{it} + B_4\, TRADE_{it} + B_5\, REMITTANCES_{it} + B_6\, TAX_{it} + B_7\, CORRUPTION_{it} + B_8\, FRACTIONALIZATION_{it} + B_9\, SHADOW_{it} + B_{10}\, GOVCONS_{it} + B_{11}\, RESOURCES_{it} + e_{it}$$

SP is the degree of *public* social protection measured in terms of general government social protection expenditures. *PCGDP* is real per capita GDP (log) which controls for the ability and willingness to pay for social protection services similar to Sepalika et al. (2014) and Beblavy (2010). An increase in real per capita GDP indicates a better ability to finance social protection services. Therefore, we expect a positive *PCGDP* coefficient.

GROWTH is the real GDP annual growth rate with higher growth rate offering more employment opportunities and incomes similar to Hong (2014). A higher growth rate reflects more potential to contribute to pay-as-you-go programs indicating a positive relationship with social protection. However, a higher growth rate may reduce poverty and thus the need for social protection services. Accordingly, *GROWTH* coefficient is not unambiguous.

DEPENDENCY is the age dependency of the elderly population as measured by the ratio of older dependents to the working-age population similar to Beblavy (2010). The higher the dependency ratio, the more demand for social protection services is. Thus we expect a positive coefficient of *DEPENDENCY*.

TRADE is the degree of trade openness of the economy, as measured by the sum of exports and imports as a percentage of GDP similar to Sepalika et al. (2014). Trade constitutes a globalization demand factor for social protection. On the one hand, trade can increase imports and

displace low-skilled workers, generating need for social protection. However, it can also enhance a country's exports and generate job opportunities, reducing the demand for social protection. Therefore the expected coefficient of *TRADE* is ambiguous.

REMITTANCES, the variable of interest, is migrant remittances as measured by received personal remittances in US dollars (log). As explained in the introduction, remittances may decrease the demand for *public* social protection acting as a private alternative. By increasing consumption, remittances can increase indirect consumption, income and wealth tax revenues and therefore the supply of social protection services. They may reduce the supply of *public* social protection however through the negative income effect they have on labor supply and therefore income taxes. In addition, by reducing the demand for public goods and services, remittances may reduce government accountability and enhance corruption, thereby reducing the supply of social protection. Therefore the expected coefficient of *REMITTANCES* is ambiguous.

TAX is indirect tax rates. Indirect taxes constitute the main channel through which remittances expand government revenues and the fiscal space. In presence of indirect taxes, such as value added or sales tax, the increase in consumption associated with the flow of migrant remittances can increase tax revenues and therefore the ability of the government to finance *public* social protection (Abdih et al. 2012b; Chami 2013; Chami and Fullenkamp 2013). Higher indirect tax rates would increase government revenues and therefore social protection expenditures. The expected *TAX* coefficient is positive therefore.

CORRUPTION is an International Country Risk Guide indicator of corruption within the political system. The values for this indicator ranges from 0 to 6. A higher score indicates a lower corruption level. Higher (lower) corruption in the economy would reduce (increase) *public* social protection. Therefore we expect a positive *CORRUPTION* coefficient.

Society fractionalization, *FRACTIONALIZATION,* can influence the demand for social protection. Unlike the earlier *public* social protection studies, we account for linguistic fractionalization (Alesina et al. 2003).[14] Fractionalization may have an impact on the government quality and therefore the provision of public goods and services. More fractionalized societies tend to be less solidary and therefore less likely to support the supply of publically financed social protection schemes. However, because fractionalized societies tend to experience conflicts and poverty, the demand for social protection increases. Therefore the expected coefficient of *FRACTIONALIZATION* is also ambiguous.

SHADOW is the extent to which shadow (informal) economy is present in the economy. It is measured as the average shadow economy indicator for the period 1999-2007 based on Schneider et al. (2010). The shadow economy indicator measures the percentage of the shadow economy to GDP. The larger the shadow economy the more the demand for social protection is. However, the supply of social protection services may be more difficult the larger the informal economy. Accordingly the coefficient of *SHADOW* is ambiguous.

GOVCONS is the national administrative capacity, similar to Hong (2014), as measured by the general government final consumption expenditure as a percentage of GDP. This variable also

[14] This variable is obtained from Alesina et al. (2003) and ranges from 0 to 1, with 0 indicating no fractionalization and 1 indicating complete fractionalization.

captures the supply side of social protection similar to Sepalika et al. (2014). The bigger the government size, the bigger its administrative capacity and the degree of social protection are. Therefore we expect a positive *GOVCONS* coefficient.

RESOURCES is natural resource abundance as measured by the total natural resources rent, including those of oil, natural gas, coal, minerals and forests, as a percentage of GDP. Natural resource abundance is expected to increase the supply of social protection services. Therefore we expect a positive *RESOURCES* coefficient.

We use a panel of 40 developed and developing countries over the period 2005-2014. Data on the dependent variable, *SP,* are obtained from the IMF's Government Finance Statistics. Data on *PCGDP*, *GROWTH*, *DEPENDENCY*, *TRADE*, *REMITTANCES*, *GOVCONS*, and *RESOURCES* are obtained the World Bank's World Development Indicators. Data on *TAX* are obtained from KPMG website. Data on *CORRUPTION* are obtained from ICRG. Data on *FRACTIONALIZATION* and *SHADOW* are obtained from Alesina et al. (2003) and Schneider et al. (2010), respectively

3. Empirical Issues and Estimation Methodology

There are a number of empirical issues we address in this paper. The first is the presence of unbalanced panel data. This issue arises from differences in data availability across variables and countries. The merge of variables from different data sources and the elimination of missing observations have resulted in an unbalanced panel data on 40 developed and developing countries over the period 2005-2014.[15] The second is the presence of unobserved country-specific effects and the choice of whether to treat these effects as fixed or random. The inclusion of constant fractionalization and shadow economy variables restrict the adoption of fixed effects estimation methodology, however.

The third is (across) panel heteroskedasticity. Due to the inclusion of heterogenous countries – developed and developing - with different levels of social protection, economic development, growth rates, dependency ratios, trade openness, remittances, tax rates, corruption levels, fractionalization, extent of informal economy, national administrative capacity, and reliance on natural resources, it is very unlikely that the variance of the error term across countries will be constant. The likelihood ratio (Chi-square) test statistic rejects the null hypothesis of panel-level homoscedasticity.[16]

The fourth is within panel autocorrelation. We use the Wooldridge *F*-test to detect panel autocorrelation. The null hypothesis assumes no first-order autocorrelation in the error term. Results indicate the rejection of the null hypothesis at the 1 percent level[17].

In presence of the above four issues, feasible generalized least squares (FGLS) is an appropriate estimation methodology. Baltagi (2005) points out that FGLS estimators fare well

[15] The included countries are: Albania, Australia, Austria, Belarus, Belgium, Bolivia, Bulgaria, China, Croatia, Cyprus, Czech Republic, Denmark, Egypt, El Salvador, Finland, France, Germany, Hungary, Iceland, Indonesia, Iran, Ireland, Italy, Jamaica, Japan, Kazakhstan, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Singapore, Slovenia, South Africa, Spain, Sweden, and Switzerland.

[16] The LR statistic is 448.4, which is statistically significant at the one percent level.

[17] The F-test statistic is 19.7, which is statistically significant at the one percent level.

estimating unbalanced one-way error component model compared to more complicated estimators such as maximum likelihood. His result is based on the Monte Carlo study of Baltagi and Chang (1994).

The fifth issue is the presence of endogeneity resulting from reverse causality. The degree of *public* social protection may influence the level of migrant remittances. *Public* social protection services may reduce the level of remittances, which migrants transfer to their families back home. It may also drive the level of government consumption or the national administrative capacity, growth, and the level of corruption. We detect simultaneity using Granger-causality test. The null hypothesis assumes that the dependent variable does not Granger-cause the explanatory variable. The results are reported in table 1. Suspected Granger-causality is confirmed for *GROWTH*, and *GOVCONS*. It is also interesting to detect that *SP* Granger-causes *TRADE*: If the government considers the reduction in unemployment, poverty and social protection services, it may pursue protectionist trade policies, which restrict imports in order to protect its domestic industries and labor. The adoption of instrumental variables (IV) estimation methodology is an appropriate methodology in presence of suspected endogeneity.

Table 1: Granger-causality Tests

	Obs.	F-Statistic	Prob.
PCGDP	275	0.937	0.393
GROWTH	275	6.942	**0.001a**
DEPENDENCY	275	2.237	0.109
TRADE	275	3.616	**0.028b**
REMITTANCES	275	0.329	0.720
TAX	275	1.436	0.240
CORRUPTION	275	0.143	0.867
GOVCONS	275	4.543	**0.012b**
RESOURCES	275	0.283	0.754

Notes: H_0: *SP* does not Granger-cause the explanatory variable. The test is undertaken using the stacked test of common coefficients in Eviews 8. A lag of two periods is used.

Therefore in this paper we adopt and compare the results of three estimation methodologies: FGLS, IV, and two-step GMM methodologies. We use STATA 13 software package.

4. Empirical Results

Table 2 presents the period average for social protection expenditures and migrant remittances. Ireland's social protection expenditures are the lowest amounting to 1.2 percent of total government expenditures, in contrast to Singapore, which has the highest percentage of 47.8 percent. As for remittances, Hungary has the lowest level of remittances amounting to US$ 0.13 billion, while Finland has the highest level amount to US$ 20.2.

Table 2: Country Statistics (Period Average)

Country	*SP*	*REMITTANCES*
Albania	28.178	1.420
Australia	40.179	1.752
Austria	26.754	2.987
Belarus	30.037	0.680
Belgium	34.976	9.905
Bolivia	32.499	1.614
Bulgaria	13.027	0.667
China	19.819	12.784
Croatia	25.003	0.472
Cyprus	31.183	1.430
Czech	43.431	1.160
Denmark	34.799	2.160
Egypt	30.833	0.415
El Salvador	33.695	11.725
Finland	41.815	**20.210**
France	41.708	0.843
Germany	43.031	12.392
Hungary	21.340	**0.133**
Iceland	34.168	2.826
Indonesia	26.057	0.606
Iran	32.394	0.640
Ireland	**1.168**	7.256
Jamaica	21.527	0.204
Japan	39.074	7.247
Kazakhstan	39.733	1.923
Lithuania	43.607	1.807
Luxembourg	31.696	1.528
Malta	32.517	0.230
Netherlands	32.510	0.357
New Zealand	34.924	1.611
Norway	38.437	0.673
Poland	34.402	0.508
Portugal	37.146	8.130
Romania	27.454	5.531
Singapore	**47.774**	1.766
Slovenia	36.155	0.452
South Africa	11.113	0.842
Spain	36.110	1.891
Sweden	38.555	2.225
Switzerland	41.348	3.722
Total	33.027	3.593

Country	*SP*	*REMITTANCES*
Min	1.168	0.133
Max	47.774	20.210

The correlation coefficients matrix presented in table 3 shows high positive correlation coefficients between *SP*, *DEPENDENCY* and *PCGDP*. The correlation between *SP* and *REMITTANCES* does not exceed 0.2 in absolute value, initially suggesting an insufficiently strong relationship. *REMITTANCES* are positively correlated to (low) corruption and negatively correlated to trade openness. The low correlation among the explanatory variables lowers multicollinearity concerns in the empirical model.

Table 3: Correlation Matrix

	1	3	4	5	6	7	9	10	11	12	13	14
SP (% Total Gov. Exp.)	1											
PCGDP	0.566	1										
GROWTH	-0.321	-0.375	1									
DEPENDENCY	0.632	0.581	-0.404	1								
TRADE	0.141	0.200	-0.012	0.078	1							
REMITTANCES (US$-log)	0.190	-0.125	0.019	0.099	-0.299	1						
TAX	0.139	0.147	-0.113	0.149	0.273	*-0.088*	1					
CORRUPTION	0.340	0.450	-0.187	0.285	*0.048*	0.300	0.210	1				
FRACTIONALIZATION	-0.243	*0.044*	0.110	-0.149	0.127	*-0.069*	*-0.055*	0.187	1			
SHADOW	-0.245	-0.577	*0.095*	-0.252	*0.025*	-0.160	0.234	-0.372	*0.054*	1		
GOVCONS	0.376	0.555	-0.374	0.505	0.094	-0.106	0.516	0.342	*-0.022*	-0.183	1	
RESOURCES	-0.335	-0.386	0.252	-0.535	-0.349	*0.080*	-0.245	-0.205	*0.050*	0.363	-0.399	1

Notes: All coefficients are statistically significant at the 5 percent level except those in italics, which are statistically insignificant.

Table 4 present the estimation results. Wald and *F* test statistics indicate the joint significance of the explanatory variables in all regressions at the 1 percent level. FGLS estimation results show that *REMITTANCES*, *PCGDP*, *DEPENDENCY*, and *CORRUPTION* have a positive influence on social protection. An increase in remittances by one percent increases *SP* by three quarters of a percentage point. This result indicates that more remittances help release more government resources to *public* social protection.

An increase in per capita GDP, *PCGDP*, by one percent increases formal social protection by more than 5 percent. This result is consistent with our earlier rationale that an increase in real per capita GDP indicates a better ability to finance social protection services.

The ratio of older dependents to working-age population, *DEPENDENCY*, has a similar positive coefficient to *PCGDP* and is consistent with our expectation that the demand for social protection increases with higher dependency ratios. The positive *CORRUPTION* coefficient suggests that a reduction in corruption increases the degree of social protection in consistence with Chami and Fullenkamp (2013) and Abdih et al. (2012b).

Table 4: Social Protection and Remittances

	FGLS	FGLS-Lags	IV	GMM
PCGDP	**5.249a**	**3.994a**	**7.194a**	**7.357a**
	(0.642)	(0.730)	(2.624)	(2.271)
GROWTH	**-0.060a**	**-0.104a**	**-0.228c**	**-0.316a**
	(0.021)	(0.021)	(0.133)	(0.106)
DEPENDENCY	**0.554a**	**0.470a**	**0.395b**	**0.370b**
	(0.055)	(0.051)	(0.168)	(0.166)
TRADE	**-0.015a**	**0.011b**	0.022	0.009
	(0.006)	(0.005)	(0.018)	(0.016)
REMITTANCES	**0.756a**	**1.288a**	**1.878a**	**1.729b**
	(0.217)	(0.195)	(0.701)	(0.695)
TAX	-0.274	-1.288	-2.137	-2.573
	(0.805)	(0.868)	(2.592)	(2.565)
CORRUPTION	**1.858a**	**1.573a**	1.569	1.231
	(0.560)	(0.492)	(2.535)	(2.457)
FRACTIONALIZATION	**-1.660a**	**-2.095a**	**-1.817b**	**-1.690a**
	(0.263)	(0.229)	(0.739)	(0.646)
SHADOW	0.455	0.577	4.544	4.419
	(0.846)	(0.869)	(3.162)	(3.002)
GOVCONS	-0.042	-0.026	0.070	0.093
	(0.058)	(0.056)	(0.230)	(0.207)
RESOURCES	-0.026	-0.000	0.125	0.190
	(0.045)	(0.043)	(0.232)	(0.221)
Constant	-51.876a	-48.449a	-105.343a	-100.345a
	(10.027)	(10.502)	(40.645)	(36.204)
Observations	355	310	268	268
R-squared			0.513	0.496
Number of countries	40	39	39	39
Wald test	**1203.8a**	**1028.1a**		
F-test			**6.91a**	**6.91a**
	FGLS	FGLS-Lags	IV	GMM
Underidentification test			**17.2a**	**17.2a**
Overidentification test			2.582	2.582
Weak identification test			**10.45c**	**10.45c**
Stock-Yogo critical value			7.77	7.77

Notes: a, b, and c indicate significance levels of 1 per cent, 5 per cent and 10 per cent, respectively. The numbers in parentheses are the Huber-White sandwich standard errors allowing for (within) panel-level autocorrelation. Instruments for IV and two-step GMM are the first and second lags of *GROWTH*, *TRADE* and *GOVCONS*. Hansen *J* statistic is reported for the overidentification test. The Kleobergen-Paap rk Wald *F*-statistic is reported for the weak identification test. The Stock-Yogo critical value is reported for the 10 percent level.

In contrast to the positive influence of the above variables, *GROWTH*, *FRACTIONALIZATION* and *TRADE* have a negative influence. The negative coefficient of *GROWTH* indicates that growth reduces poverty and thus the demand for social protection services. The negative influence of *FRACTIONALIZATION* suggests more fractionalized societies suffer reduction in the degree of *public* social protection since they less likely support the supply of publically financed social protection schemes. *TRADE* has a negative and statistically significant influence on social protection, possibly through bigger influence of exports on job opportunities and incomes. This in turn reduces the demand for social protection services. However, this result is sensitive to reverse causality treatment, as IV and GMM estimates show further below. *TAX*, *SHADOW*, *GOVCONS*, and *RESOURCES* have statistically *insignificant* impact on social protection.[18]

Before adopting IV estimation methodology and in order to overcome the endogeneity issue, we apply FGLS to one-period lagged explanatory variables. Lagging variables to avoid the reverse causality problem has been used in Bania et al. (2007), Bansak et al. (2007), Clemens et al. (2012) and Vergara (2010). Results confirm those of FGLS estimation methodology, except for *TRADE* whose coefficient becomes positive. *PCGDP*, *DEPENDENCY*, and *CORRUPTION* have positive but smaller coefficients compared to the non-lagged variable estimates, while *REMITTANCES* has a bigger positive coefficient. *GROWTH* and *FRACTIONALIZATION* have a stronger negative influence than the estimates obtained before. The statistical insignificance of *TAX*, *SHADOW*, *GOVCONS*, and *RESOURCES* remain unchanged.

IV and GMM estimates are presented in the third and fourth columns of table 4. The underidentification test statistic indicates a rejection of the null hypothesis of underidentified model. In other words, the model is identified. Hansen's overidentification *J* statistic fails to reject the joint null hypothesis that instruments are valid, i.e. uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. A rejection of the null hypothesis raises doubts on instrument validity. The robust Kleibergen-Paap Wald *F*-statistic rejects the null hypothesis of weak identification. Weak identification arises when the excluded instruments are *weakly* correlated with the endogenous regressors.

REMITTANCES has bigger positive coefficient estimates than those of FGLS suggesting that when reverse causality is accounted for, remittances has a bigger impact on social protection. *PCGDP* estimates suggest a bigger influence of the level of economic development in financing social protection services. *DEPENDENCY* continues to have a positive though smaller impact in both magnitude and statistical significance. Both IV and GMM estimates of *GROWTH* confirm the negative influence that growth has on reducing poverty and the demand for social protection. Similarly the negative influence of *FRACTIONALIZATION* is confirmed: More fractionalized societies

[18] To investigate further the influence of these variables, we ran simple FGLS regressions for each of these variables despite the fact that the model does not suffer multicollinearity problem. The variance inflation factor is equal to 2.1. *TAX* continued to have insignificant impact. *SHADOW* and *RESOURCES* had a statistically significant negative impact. The negative impact of the former suggests that the bigger the informal economy share in GDP, the less able the government is in financing social protection services. The negative impact of *RESOURCES* in contrast may suggest that the higher the natural resource endowment in the economy, the higher the average income in the economy is and therefore the less demand for social services. *GOVCONS* on the other hand has a statistically significant positive impact.

suffer reduction in the degree of *public* social protection they less likely support the supply of publically financed social protection schemes. The influence of *TRADE* and *CORRUPTION* disappears when accounting for endogeneity.

5. Robustness Check

Building on the perception that remittances provide a *private* and *informal* social protection alternative, we examine this impact of remittances in developing countries.[19] The estimation results are reported in table 5. IV and GMM results show a positive *DEPENDENCY* and *SHADOW* influence and a negative *FRACTIONALIZATION* influence higher than that for the full sample. IV estimate of the *REMITTANCES* coefficient show a significant positive influence higher than that for the full sample, though an insignificant GMM estimate. Based on these results, we can conclude that in developing countries social protection is more driven by the dependency ratio, the share of informal economy, and the degree of fractionalization in society.

Table 5: Social Protection and Remittances in Developing Countries

	FGLS	FGLS-Lags	IV	GMM
PCGDP	**3.929a**	**1.904c**	8.056	4.868
	(0.990)	(1.043)	(5.514)	(4.655)
GROWTH	**-0.069b**	**-0.169a**	0.024	0.065
	(0.031)	(0.039)	(0.081)	(0.046)
DEPENDENCY	**0.428a**	**0.377a**	**0.616a**	**0.576a**
	(0.053)	(0.061)	(0.167)	(0.146)
TRADE	**0.018b**	**0.039a**	0.000	-0.012
	(0.008)	(0.007)	(0.026)	(0.019)
REMITTANCES	**0.661c**	**1.435a**	**2.801b**	1.457
	(0.348)	(0.330)	(1.342)	(1.086)
TAX	**-1.993c**	**-2.881b**	0.862	1.893
	(1.079)	(1.379)	(3.855)	(3.299)
CORRUPTION	1.496	1.189c	**13.139c**	8.306
	(0.968)	(0.683)	(6.921)	(5.414)
FRACTIONALIZATION	**-1.379a**	**-0.738b**	**-2.182c**	**-3.039a**
	(0.384)	(0.348)	(1.163)	(0.857)
SHADOW	**3.290b**	**0.126**	**5.616b**	**5.635b**
	(1.455)	(1.724)	(2.836)	(2.786)
GOVCONS	**-0.276b**	**-0.211c**	-1.040	-0.424
	(0.114)	(0.109)	(0.748)	(0.553)
RESOURCES	**-0.174b**	-0.119	-0.439	-0.162
	(0.078)	(0.076)	(0.318)	(0.246)
Constant	-36.608b	-19.734	-136.196c	-86.851

[19] The former group includes Albania, Belarus, Bolivia, Bulgaria, China, Croatia, Cyprus, Egypt, El Salvador, Indonesia, Iran, Jamaica, Kazakhstan, Lithuania, Malta, Romania, Singapore, and South Africa.

	FGLS	FGLS-Lags	IV	GMM
	(15.817)	(15.127)	(74.605)	(63.770)
Observations	153	131	91	91
R-squared			0.522	0.398
Number of countries	18	18	15	15
Wald test	**435.4a**	**857.2a**		
F-test			**38.9a**	**47.5a**
Underidentification test			**7.9c**	**7.9c**
Overidentification test			3.1	3.1
Weak identification test			**75.7a**	**75.7a**
Stock-Yogo critical value			12.2	12.2

Notes: a, b, and c indicate significance levels of 1 per cent, 5 per cent and 10 per cent, respectively. The numbers in parentheses are the Huber-White sandwich standard errors allowing for (within) panel-level autocorrelation. Instruments for IV and two-step GMM are the first difference of *GROWTH*, the first two and three lags of *TRADE* and *GOVCONS*, respectively. Hansen *J* statistic is reported for the overidentification test. The Kleobergen-Paap rk Wald *F*-statistic is reported for the weak identification test. The Stock-Yogo critical value is reported for the 5 percent level.

6. Concluding Remarks

In examining the determinants of *public* social protection, this paper focuses on the social protection-remittances nexus using in a large sample of 40 countries, both developed and developing. Migrant remittances play a positive role in enhancement of degree of social protection. This influence is robust to changes in estimation methodology.

The definition of social protection adopted in this paper is restricted to *public* social protection migrant remittances feed through *formal* channels. It does not account for *private* social protection, which takes place through *informal* channels and on which data are unavailable. It is most likely that when accounted for the impact of remittances on the degree of social protection rises.

The positive impact that remittances have on fiscal space and social protection draws attention to policies and mechanisms that attract remittances. Anecdotal evidence suggests that migrant remittances are sensitive to transaction costs in developing countries, which could be lowered with financial technology. Therefore initiatives that boost financial technology can be particularly useful in attracting more remittances through inexpensive, formal channels.

References

Y. ABDIH – A. BARAJAS – R. CHAMI – C. EBEKE (2012a), "Remittances Channel and Fiscal Impact in the Middle East, North Africa, and Central Asia", IMF Working Paper 12/104, International Monetary Fund, Washington.

Y. ABDIH – R. CHAMI – J. DAGHER – P. MONTIEL (2012b), "Remittances and Institutions: Are Remittances a Curse?", *World Development*, 40, pp. 657–66.

A. ALESINA – A. DEVLEESCHAUWER – W. EASTERLY – S. KURLAT – R. WACZIARG (2003), "Fractionalization", *Journal of Economic Growth*, 8, pp. 155-194.

M.G. ASHER – F. ZEN (2015), "Social Protection in ASEAN: Challenges and Initiatives for Post-2015 Vision", Lee Kuan Yew School of Public Policy Research Paper No. 15-13.

B. BALTAGI (2005), *Econometric Analysis of Panel Data*, 3rd edn, J. Wiley & Sons, Hoboken, NJ.

B.H. BALTAGI – Y.J. CHANG (1994), "Incomplete Panels: A Comparative Study of Alternative Estimators for the Unbalanced One-Way Error Component Regression Model", *Journal of Econometrics*, 62, pp. 67-89.

N. BANIA - J.A. GRAY - J.A. STONE (2007), "Growth, Taxes, and Government Expenditures: Growth Hills for U.S. States", *National Tax Journal*, 60, pp. 193-204.

C. BANSAK – N. MORIN - M. STARR (2007), "Technology, Capital Spending, and Capacity Utilization", Economic Inquiry, 45, pp. 631–645.

M. BEBLAVY (2009), "Comparative Analysis of Determinants and Effects of Social Protection Spending in the New EU Member States", in P. Saunders and R. Sainsbury (eds), *Social Security, Poverty and Social Exclusion in Rich and Poorer Countries*, Intersentia Publishing, Antwerp.

R.M. BIRD (1971), "Wagner's Law of Expanding State Activity", *Public Finance/Finances Publique*, 26, pp. 1–26.

P. BOCCAGNI (2011), "Migrants' Social Protection as a Transnational Process: Public Policies and Emigrant Initiative in the case of Ecuador", *International Journal of Social Welfare*, 20, pp. 318-325.

R. BROWN (1997), "Estimating Remittances Functions for Pacific Island Migrants", *World Development*, 25, pp. 613-26.

R.P.C. BROWN - E.V. JIMENEZ (2011), "Subjectively-assessed Welfare and International Remittances: Evidence from Tonga", *Journal of Development Studies*, 47, pp. 829-845.

R.P.C. BROWN – J. CONNELL - E.V. JIMENEZ-SOTO (2014), "Migrants' Remittances, Poverty and Social Protection in the South Pacific: Fiji and Tonga", *Population, Space and Place*, 20, 434-454.

D. CAMERON (1978), "The Expansion of the Public Economy", *American Political Science Review*, 72, pp. 1243–61.

R. CHAMI (2013), *Remittances Can Act as Drag on Development* [Audio podcast], Retrieved from http://www.podcasts.com/imf-podcasts-27/episode/remittances-can-act-as-drag-on-development

R. CHAMI – C. FULLENKAMP (2013), "Beyond the Household", *Finance & Development*, 50, pp. 48-51.

R. CHAMI – C. FULLENKAMP –S. JAHJAH (2003), "Are Immigrant Remittance Flows a Source of Capital for Development?", IMF WP 03/189. International Monetary Fund, Washington.

M.A. CLEMENS – S. RADELET – R.R. BHAVNANI - S. BAZZI (2012), "Counting Chickens when they Hatch: Timing and the Effects of Aid on Growth", *The Economic Journal*, 122, pp. 590– 617.

E. DANKYI – V. MAZZUCATO – T. MANUH (2017), "Reciprocity in Global Social Protection: Providing Care for Migrants' Children", *Oxford Development Studies*, 45, pp. 80-95.

B. DOLLERY – A. WORTHINGTON (1996), "The Empirical Analysis of Fiscal Illusion", *Journal of Economic Surveys*, 10, pp. 261–97.

W. DONNER – H. RODRIGUEZ (2008), "Population Composition, Migration and Inequality: The Influence of Demographic Changes on Disaster Risk and Vulnerability", *Social Forces*, 87, pp. 1089-1114.

G. ESPING-ANDERSEN (2009), *The Three Worlds of Welfare Capitalism*. Polity Press, Cambridge.

H. GANßMANN (2000), "Labor Market Flexibility, Social Protection and Unemployment", *European Societies*, 2, pp. 243-269.

M. GESTHUIZEN – P. SCHEEPERS (2010), "Economic Vulnerability among Low-educated Europeans: Resource, Composition, Labour Market and Welfare State Influences", *Acta Sociologica*, 53, pp. 247-267.

J. HEINTZ - N. KABEER - S. COOK (2008), "Economic Growth, Social Protection and 'Real' Labour Markets: Linking Theory and Policy", IDS Bulletin, 39, pp. 1-10.

A.M. HICKS – D.H. SWANK (1992), "Politics, Institutions, and Welfare Spending in Industrialized Democracies, 1960–82", *The American Political Science Review*, 86, pp. 658–74.

I. HONG (2014), "Trends and Determinants of Social Expenditure in Korea, Japan and Taiwan", *Social Policy & Administration*, 48, pp. 647-665.

E.V. JIMENEZ – R.P.C. BROWN (2013), "How Responsive are Remittances to Recipients' Welfare? Evidence from Fiji", *International Migration*, 51 (SUPPL.1), pp. e179-e201.

W. KORPI – J. PALME (2003), "New Politics and Class Politics in the Context of Austerity and Globalization: Welfare State Regress in 18 Countries, 1975–95", *American Political Science Review*, 97, pp. 425-46.

E.K.K. LARTEY – E. MENGOVA (2016), "Does Institutional Quality in Developing Countries Affect Remittances?", *Journal of Developing Areas*, 50, pp. 59-76.

C. MAGGAZINO (2016), "The Political Determinants of Social Expenditure in the European Countries", *International Journal of Economic Perspectives*, 10, pp. 5-20.

M. MENDOLA (2017), "International Migration and Informal Social Protection in Rural Mozambique", *Research in Economics*, 71, pp. 282-290.

R.A. MUSGRAVE – P.B. MUSGRAVE (1984), *Public Finance in Theory and Practice*, McGraw-Hill, New York.

OECD (1994), *The OECD Jobs Study: Evidence and Explanations*, OECD, Paris.

B. PONLAPAT (2007), "Explaining the Growth of Public Spending in Thailand: Demand-side, Supply-side Explanations and Empowerment", *NIDA Development Journal*, 47, pp. 57-82.

B. PONLAPAT (2011), "The Determinants and Distributional Effects of Public Education, Health, and Welfare Spending in Thailand", *Asian Affairs: An American Review*, 38, pp. 113–42.

F. SCHNEIDER – A. BUEHN - C.E. MONTENEGRO (2010), "Shadow Economies all Over the World : New Estimates for 162 countries from 1999 to 2007", Policy Research Working Papers, WPS 5356, World Bank.

S.R. SEPALIKA – N. SUDASINGHE – D. PATMASIRIWAT (2014), "Determinants of Social Expenditure in Sri Lanka", *Asian Social Work and Policy Review*, 8, pp. 96-108.

J.J. SIENKIEWICZ – Y. SADOVSKAYA – A. AMELINA (2015), "The Kazakh-German Social Space: Decreasing Transnational Ties and Symbolic Social Protection", *Population, Space and Place*, 21, pp. 270-281.

A. SOLIMANO (2003), "Remittances by Emigrants: Issues and Evidence", UNU-WIDER Discussion Paper No. 2003/89.

O. STARK (1991), *The Migration of Labor*, Basil Blackwell, . Cambridge, MA.

V. TANZI (2002), "Globalization and the Future of Social Protection", *Scottish Journal of Political Economy*, 49, pp. 116-127.

M.D. TYBURSKI (2014), "Curse or Cure? Migrant Remittances and Corruption", *The Journal of Politics*, 76, pp. 814-824.

R. VERGARA (2010), "Taxation and Private Investment: Evidence for Chile", Applied Economics, 42, pp.717-725.

N. WEI (2010), "China's Social Protection System of the Elderly", *Books and Ideas*, 9 September.

H. L. WILENSKY (1974), *The Welfare State and Equality*, University of California Press, Los Angeles, CA.

K. WILLIAMS (2017), "Do Remittances Improve Political Institutions? Evidence from Sub-Saharan Africa", *Economic Modelling*, 61, pp. 65-75.

N. YEATES (2008), "Global Migration Policy", in N. Yeates (ed), *Understanding Global Social Policy*, Policy Press, University of Bristol.