Financial Development and Local Government Social Protection

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Outline

- Introduction and motivation
  - What is social protection
  - Research gap
- Research question
- Empirical model and data
- Empirical issues and methodology
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Introduction and motivation: what is social protection?

- IMF Government Finance Statistics Manual (2014) – Appendix 2 – Para A2.1:

"social protection is the systematic intervention intended to relieve households and individuals of the burden of a defined set of social risks. Social risks are defined as events or circumstances that may adversely affect the welfare of households either by imposing additional demands on their resources or by reducing their income. Needs may occur due to sickness, unemployment, retirement, housing, education, or family circumstances. Many governments devote considerable economic resources to protect citizens and their employees against these risks."

Introduction and motivation: what is social protection?

- Para A2.5:

"Generally, social protection may be divided into two classes—namely: Pensions and other retirement benefits; All other social benefits, collectively described as non-pension social benefits."

- Para A2.6:
- "*Pensions and other retirement benefits are payable when individuals cease employment upon retirement. Pensions may also be payable to other individuals—for example, a bereaved spouse or other dependents, or to someone suffering from a permanent disability.*"

Introduction and motivation: what is social protection?

- Para A2.7

"*Nonpension social benefits include payments made to individuals when they are temporarily unemployed, suffering from a medical condition, or suffering from an event that prevents them from working for a period*."

- *The beneficiaries, or their dependents, require medical, dental, and other treatments, or hospital convalescent, or long-term care as a result of sickness, injuries, maternity needs, chronic invalidity, old age, etc.* (in-kind)
- *The beneficiaries have to support dependents of various kinds: spouses, children, elderly relatives, physically or mentally disabled persons, etc.* (cash)
- *The beneficiaries suffer a reduction in income as a result of not being able to work full-time... People may be prevented from working for various reasons, including involuntary unemployment, temporary layoffs, short-time working, sickness, accidental injury, the birth of a child, etc.* (cash)

Introduction and motivation: what is social protection?

- Para A2.7
- *The beneficiaries suffer a reduction in income because of the death of the main income earner.* (cash/lumpsum)
- *The beneficiaries are provided with housing either free or at prices that are not economically significant, or by reimbursing some of the expense they incur.*
- *The beneficiaries are provided with allowances to cover education expenses incurred on behalf of themselves or their dependents* (occasionally in kind)

Introduction and motivation: research gap

- Current social protection theories fail to account for the role of financial development in expanding SP or identify which level of government should provide it.
- Mina (2020; 2021) summarizes the determinants of government expenditures. Social protection expenditures are a component.
- Government expenditures have been explained in terms of supply and demand (Heller and Tait 1982; Heller and Diamond 1990; Lindauer and Velenchik 1992)
  - Demand: demographic changes and rapid population growth; Wagner's law; development and industrialization of the economic and the need for government investment in human capital
  - Supply: tax revenues

Introduction and motivation: research gap

- SP expenditures have been explained in terms of Wagner's law, modernization and power resource theories (Di Gioacchino et al. 2014; Hong 2014; Sepalika et al. 2014)
  - Wagner's law: income level (negatively) and unemployment risk (positively) influence the preferences for SP (Di Gioacchino et al. 2014)
  - Modernization theory: demand for SP increases in underdeveloped economies (Williams 2014; Williams and Windebank 2015)
  - Power resource theory: labor unions and socialist parties increase demand for SP (Korpi 1983; Moller et al. 2003)

Introduction and motivation: research gap

- The role of financial development in extending government SP has been overlooked
- Financial development can influence the *demand* for government SP in two opposing directions.
  - It can increase the demand for SP through promotion of economic growth and development (Stiglitz 1989; Levine 1997; Calderon and Liu 2003; Panizza 2014; Valickova et al. 2014; Durusu-Ciftci et al. 2017; Nguyen et al. 2022)
  - It can decrease the demand for SP through increasing inflows of remittances, which foster private SP (Mina 2019)

Introduction and motivation: research gap

- Financial development can influence the *supply* of government SP.
- A well-developed and functioning financial system (financial institutions and markets) may encourage the taxation of financial services, and income and capital gains on financial instruments.
- Increased tax revenues increase government's fiscal ability to supply SP.

Research question

- **Does financial development impact *local* government social protection?**

- Why focus on local government?
  - Local government tends to better understand and align with local preferences than state and central governments
  - Local government works on reducing income gaps between urban and rural areas, the insufficiency of formal employment, and the symptoms of shadow economy

Empirical model

- $SP_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 DEPENDENCY_{it} + \beta_3 UNEMPLOYMENT_{it} + \beta_4 INCOME_{it} + \beta_5 INDUSTRY_{it} + \beta_6 GLOBALIZATION_{it} + \beta_7 GABILITY_{it} + \gamma_i + \varepsilon_{it}$

- *SP:* local government social protection expenditures (percentage of GDP)
- *FD*: financial development index (+/-)
- *DEPENDENCY:* population dependency (+)
- *UNEMPLOYMENT*: state of the economy (+)
- *INCOME*: income level (+/-)
- *INDUSTRY*: degree of industrialization (-)
- *GLOBALIZATION*: Degree of trade globalization (+/-)
- *GABILITY*: Government fiscal ability (+)

Empirical model

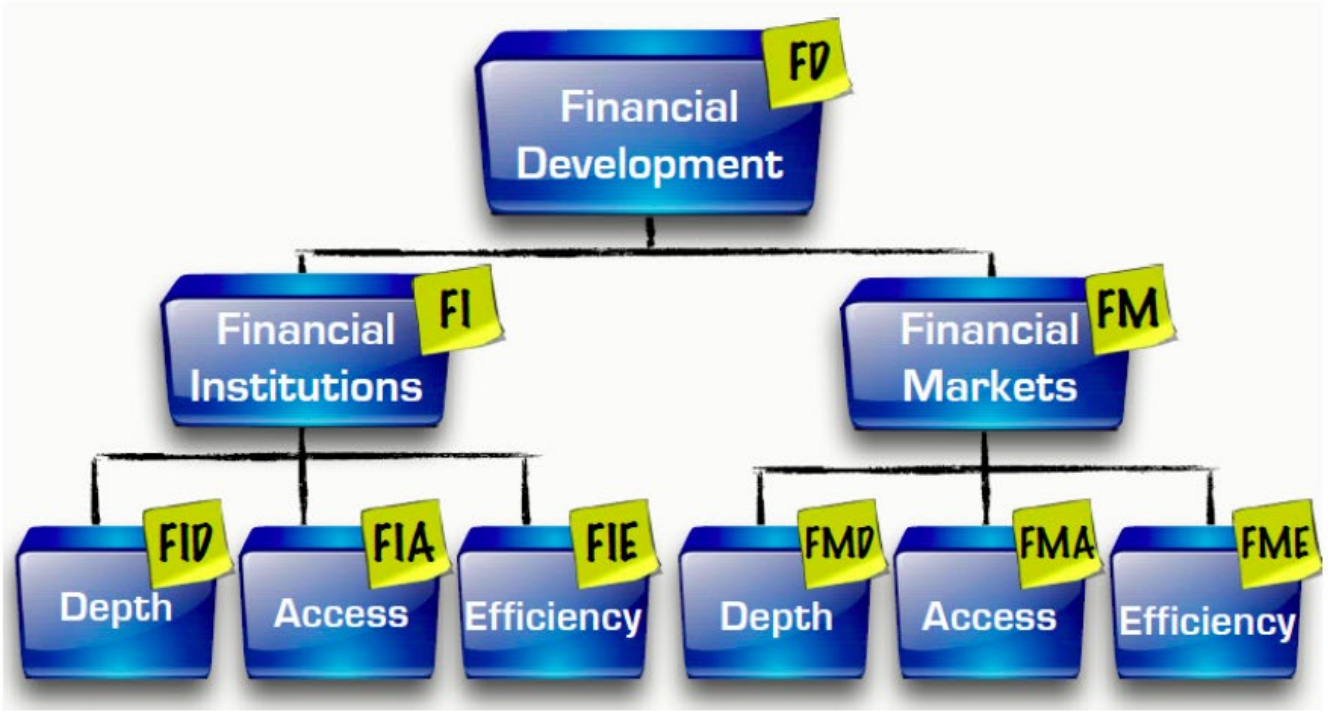
- γ: unobserved country effects
- ε: idiosyncratic error term
- Subscripts *i* and *t* are country and time indicators, respectively

Empirical model and data sources

Variable	Measurement	Data Source
SP	Local government SP expenditures (% GDP)	IMF's Government Finance Statistics (GFS)
FD	Index of financial development	IMF's Financial Development Index database
INCOME	Real per capita GDP in constant 2017 international US$ and based on purchasing power parity (log)	World Bank's World Development Indicators (WDI)
DEPENDENCY	Age-dependency of the elderly population (% working age population)	World Bank's WDI
INDUSTRY	Ratio of industry to agriculture value-added	Author's calculation based on World Bank's WDI
UNEMPLOYMENT	ILO-modelled unemployment rate	World Bank's WDI
GLOBALIZATION	Sum of exports and exports (% GDP)	World Bank's WDI
GABILITY	Ratio of general government final consumption expenditure to tax revenue	Author's calculation based on World Bank's WDI

Financial development index components

Figure 3. Financial Development Index



Source: IMF staff, based on Čihák and others (2012).

Financial development index construction

Table A1. Construction of the Financial Development Index

	FINANCIAL INSTITUTIONS	FINANCIAL MARKETS
DEPTH	1. Private-sector credit (% of GDP) 2. Pension fund assets (% of GDP) 3. Mutual fund assets (% of GDP) 4. Insurance premiums, life and non-life (% of GDP)	1. Stock market capitalization to GDP 2. Stocks traded to GDP 3. International debt securities government (% of GDP) 4. Total debt securities of nonfinancial corporations (% of GDP) 5. Total debt securities of financial corporations (% of GDP)
ACCESS	1. Branches (commercial banks) per 100,000 adults 2. ATMs per 100,000 adults	1. Percent of market capitalization outside of top 10 largest companies 2. Total number of issuers of debt (domestic and external, nonfinancial corporations, and financial corporations)
EFFICIENCY	1. Net interest margin 2. Lending-deposits spread 3. Non-interest income to total income 4. Overhead costs to total assets 5. Return on assets 6. Return on equity	1. Stock market turnover ratio (stocks traded/capitalization)

Empirical issues and methodology

- Empirical issues:
  - **Multicollinearity:** correlation matrix and VIF diagnostics suggest no potential multicollinearity concerns
  - **Endogeneity:**
    - Unobserved country effects
    - Simultaneity between the dependent variable *SP* on the one hand and *DEPENDENCY* and *UNEMPLOYMENT* on the other
    - Variable omissions

Empirical issues and methodology

- We adopt IV (2SLS) / FE and system GMM estimation methodologies
- As instruments for *DEPENDENCY* and *UNEMPLOYMENT,* we use the first lag and difference, the female youth LFPR and the LFPR.

Empirical results – Sample

- Income classification of sample countries:
  - HIC (36)
  - UMC (20)
  - LMC (12)
  - L (3)
- Regional classification of sample countries:
  - East Asia and Pacific: 12
  - Europe and Central Asia: 41
  - Latin America and Caribbean: 6
  - Middle East and North Africa: 3
  - South Asia: 1
  - Sub-Saharan Africa: 8

Financial development index – Descriptive Statistics

	Obs.	Mean	Std. dev.	Min	Max
	All Countries				
FD	6905	0.268	0.217	0	1
FI	6905	0.351	0.230	0	1
FM	6905	0.174	0.229	0	1
	High-Income Countries				
FD	2331	0.464	0.225	0	1
FI	2331	0.559	0.223	0	1
FM	2331	0.351	0.262	0	1
	Upper Middle-Income Countries				
FD	1863	0.233	0.148	0	0.741
FI	1863	0.323	0.166	0	0.723
FM	1863	0.134	0.176	0	0.735
	Lower Middle-Income Countries				
FD	1856	0.143	0.091	0	0.509
FI	1856	0.213	0.110	0	0.634
FM	1856	0.067	0.114	0	0.600
	Low Income Countries				
FD	855	0.081	0.039	0	0.178
FI	855	0.148	0.072	0	0.309
FM	855	0.011	0.022	0	0.100

Local government SP expenditures by income level Descriptive Statistics

	Obs.	Mean	SD	Min	Max
All countries	1511	1.547	2.802	0	20.282
High-income Countries	1005	2.01	3.247	0	20.282
Upper middle-income Countries	299	0.716	1.134	0	7.289
Lower middle-income countries	181	0.568	1.135	0	7.921
Low-income countries	26	0.037	0.041	0	0.14

Empirical Results

Country	Mean	Obs.	Country	Mean	Obs.	Country	Mean	Obs.
Albania	1.446	15	Germany	2.474	28	Norway	3.847	32
Armenia	0.057	9	Greece	0.412	27	Panama	0.000	8
Australia	0.113	28	Guatemala	0.048	8	Paraguay	0.002	4
Austria	1.680	27	Indonesia	0.076	19	Poland	1.772	28
Azerbaijan	0.023	20	Iran	0.511	11	Portugal	0.520	27
Belarus	0.642	30	Ireland	1.278	32	Romania	0.809	32
Belgium	1.371	27	Israel	0.827	32	Russia	0.605	21
Bolivia	0.091	14	Italy	0.672	27	Senegal	0.000	2
Botswana	0.000	2	Japan	3.826	17	Serbia	0.532	6
Bulgaria	0.722	32	Kazakhstan	0.638	25	Slovak Rep.	0.439	27
Cabo Verde	0.183	11	Kenya	0.014	18	Slovenia	0.777	29
China	3.592	27	Kiribati	0.000	10	South Africa	0.000	21
Costa Rica	0.000	2	Korea	2.121	2	Spain	0.534	27
Croatia	1.000	27	Kyrgyz Rep.	0.233	21	Sweden	6.312	27
Cyprus	0.000	27	Latvia	0.906	28	Switzerland	1.218	32
Czech Rep.	1.184	27	Lithuania	1.065	27	Tajikistan	0.101	4
Denmark	17.917	32	Luxembourg	0.382	32	Thailand	0.010	16
El Salvador	0.028	19	Moldova	0.641	28	Uganda	0.025	22
Estonia	0.694	29	Mongolia	0.569	20	Ukraine	2.782	23
Fiji	0.000	4	Myanmar	0.000	8	United Kingdom	3.196	32
Finland	4.991	27	Nepal	0.239	2	Zambia	0.000	5
France	1.791	31	Netherlands	3.366	31			
Georgia	0.465	27	New Zealand	0.048	18			

Empirical results - Sample

- Descriptive statistics suggest that the average *SP*, *FD*, *INCOME* and *INDUSTRY* increase with the income level, while *DEPENDENCY* and *UNEMPLOYMENT* decrease with it.
- *GABILITY* is highest in high-income countries followed by low-income, lower middle-income and upper middle-income countries.

Empirical results – IV (2SLS) / FE

- *For full sample and high-Income Countries:*
  - *F* test suggests that variables are jointly significant in all regressions.
  - Under-identification tests reject the null hypothesis that the model is under-identified.
  - The Hansen *J* statistics fail to reject the null hypothesis that the instruments are valid.

IV/FE Estimation Results (full sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	FD	FI	FM	FID	FIA	FIE	FMD	FMA	FME
FD	**0.987****	**0.923****	0.348	**1.418****	0.114	0.318	0.575*	0.468	-0.125
	(0.388)	(0.448)	(0.299)	(0.575)	(0.449)	(0.317)	(0.342)	(0.343)	(0.162)
INCOME	0.252	0.200	0.386**	0.228	0.379	0.387*	0.289	0.371*	**0.410****
	(0.183)	(0.200)	(0.194)	(0.189)	(0.253)	(0.209)	(0.180)	(0.193)	(0.197)
DEPENDENCY	0.003	0.004	0.003	0.003	0.003	0.003	0.001	0.002	0.003
	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.009)
INDUSTRY	**-0.0003****	**-0.0003****	**-0.0003****	**-0.0003****	**-0.0003****	**-0.0003****	**-0.0003****	**-0.0003****	**-0.0003****
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
UNEMPLOYMENT	0.014	0.014	0.014	0.013	0.014	0.015	0.011	0.014	0.013
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
GLOBALIZATION	0.002	0.003	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GABILITY	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	-1.465	-1.073	-2.376	-1.208	-2.279	-2.467	-1.408	-2.248	-2.411
	(2.024)	(2.180)	(2.108)	(1.897)	(2.611)	(2.203)	(1.926)	(2.076)	(2.128)
Observations	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178	1,178
Number of Countries	64	64	64	64	64	64	64	64	64
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	224.7***	209.0***	214.5***	228.3***	199.1***	203.7***	228.4***	227.0***	198.3***

System Dynamic Two-step Estimation Results (full sample)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	FD	FI	FM	FID	FIA	FIE	FMD	FMA	FME
FD	0.375	-0.120	0.395	**1.123****	**-0.584*****	-0.080	0.249	-0.099	**0.282*****
	(0.325)	(0.293)	(0.240)	(0.532)	(0.189)	(0.144)	(0.278)	(0.187)	(0.086)
INCOME	-0.030	0.057	-0.047	**-0.157****	**0.151*****	0.023	-0.021	0.048	-0.048
	(0.063)	(0.048)	(0.057)	(0.077)	(0.039)	(0.053)	(0.051)	(0.037)	(0.033)
DEPENDENCY	-0.008	-0.006	-0.008	-0.012	**-0.010****	-0.008	-0.006	-0.005	-0.005
	(0.008)	(0.008)	(0.006)	(0.007)	(0.005)	(0.010)	(0.008)	(0.006)	(0.006)
INDUSTRY	0.000	0.000	0.000	0.000	0.000	0.000	0.000**	0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UNEMPLOYMENT	0.004	0.003	0.004	0.003	0.006	0.001	0.003	0.003	0.004
	(0.008)	(0.008)	(0.008)	(0.008)	(0.006)	(0.008)	(0.004)	(0.005)	(0.009)
GLOBALIZATION	**-0.003****	**-0.004*****	**-0.003*****	-0.002	**-0.003*****	**-0.004*****	**-0.003*****	**-0.004*****	**-0.003****
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GABILITY	**0.004*****	**0.004*****	**0.004*****	**0.005*****	**0.004*****	**0.004*****	**0.004*****	**0.004*****	**0.004*****
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
L.SP	**0.951*****	**0.960*****	**0.952*****	**0.956*****	**0.939*****	**0.960*****	**0.961*****	**0.963*****	**0.965*****
	(0.020)	(0.016)	(0.018)	(0.019)	(0.023)	(0.014)	(0.015)	(0.013)	(0.018)
Constant	0.392	-0.239	0.572	1.390***	-0.592	0.112	0.278	-0.269	0.466
	(0.490)	(0.683)	(0.541)	(0.350)	(0.430)	(1.000)	(0.492)	(0.399)	(0.498)
Observations	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241	1,241
Number of Countries	63	63	63	63	63	63	63	63	63
Wald test	15,004***	24,830***	3,409***	8,093***	4,681***	23,937***	16,117***	23,713***	7,339***

Summary of FD results (5 percent statistical significance level and above)

	ALL	High	UM	LM	ALL	High	UM	LM
	IV/FE				System GMM			
FD	+	+						
FI	+	+		+			+	
FM								
FID	+	+			+			
FIA			-	+	-			
FIE			+	-				
FMD				+				
FMA								
FME				+	+			

Conclusion

- IV/FE estimation results suggest that *financial development* has a positive impact on local government social protection expenditures for the full country sample and high-income countries.
- Both IV/FE and system GMM estimation results show that *financial institutions depth* has a positive impact on local government social protection for the full country sample.
- Distinguishing sample countries by income level shows that financial institutions increase social protection expenditures in the high- and lower-middle-income countries. This result is sensitive to the estimation methodology though (IV/FE).
- *The impact of financial development on local government social protection is sensitive to country income level and regional classification. We cannot reach a robust general conclusion.*

Thank you!

- Comments and feedback are appreciated.