International movements of money and men: Impact on the informal economy

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Introduction1

- Shadow, informal or underground economies have been widely present worldwide for a long time.

- On average about a third of worldwide economic activity in the underground sector, with significant differences across countries/regions

- Even developed nations, with low other types of crimes, have significant underground sectors (e.g., Finland, Denmark).

- Policymakers looking to bolster tax revenue collections and enhance compliance with laws remain interested in means to limit the underground sector.

Introduction2

- Underground activity has numerous causes and effects.

- It undermines regulations, lowers tax collections and distorts insurance responsibilities.

- Overtime, numerous determinants of the shadow economy considered – literature surveys: Gërxhani (2004), Schneider (2005, 2011), Schneider and Enste (2000); Goel and Nelson (2016) provide robustness analyses; and Schneider (2012) some unresolved aspects

- Measurement of shadow activities a challenge – illegal acts (smuggling) by their nature are underground, but others may be on the surface legal (underreport legal income)

Introduction3

- This study contributes by considering effects of 3 new dimensions of international flows on underground sector.

- Literature has considered spatial influences, we consider aspects where even geographically diverse nations might feel impacts on shadow sectors (e.g., Bangladesh and USA).

- We consider : **(i) foreign direct investments (FDI); (ii) development aid (AID); and (iii) immigration (MIG).**

- *FDI and AID - movements of money; migration - movements of men.*

Key questions

- **How do FDI, development aid, and immigration impact shadow economy across countries?**
- **Are the magnitudes of impacts of FDI, aid and immigration similar?**
- **Does greater globalization increase the shadow economy?**
- **Are the effects of different aspects of globalization on the shadow economy similar?**

Literature

- While some flows of men and money considered here have been studied individually for earlier periods and a limited number of countries (Ali and Bohara (2017), Banerjee (1983), Hassan (2017), Nikopour et al. (2009)), the present study is the first to consider different dimensions simultaneously, using panel data for more than 100 countries and covering recent years.

- *Results and direction of causality mixed in the literature.*

- This exercise will evaluate the relative strengths of the 3 widely prevalent factors in terms of their impacts on the shadow economy.

- Greater FDI inflows might affect underground sector via subcontracting.
- Foreign development aid can have similar effects. On the other hand, much development aid comes with monitoring/conditions that provide an additional oversight beyond usual domestic law enforcement. Overall impact of aid would depend upon relative strengths of two effects.

- Immigrants might face lower entry barriers in shadow labor market, but face risk of deportation.

Theoretical motivation

- Theoretical rationale for this work relates to international transmission of knowledge and movement of humans or money flows.

- Foreign exposure brings learning about new ways of doing business (both in formal and informal sectors), and trade with other nations increases competitiveness in domestic markets which has implications for production and subcontracting, again in both formal and informal markets.

- Admittedly, there are numerous channels of information transmission across nations, something that has taken a new dimension with the internet (see Elgin (2013)). For instance, there may be "passive" transmission of information when nations in close geographic proximity are exposed to each other via informal exchanges (e.g., casual tourism and transient foreign workers). Active knowledge transfers can occur through official exchanges and formal trade.

- The literature on the determinants of the shadow economy has considered some dimensions (Schneider (2005), Schneider and Enste (2000)) with some aspects unresolved (Schneider (2012)).

- Along another dimension, prevalence of the shadow economy can be grounded in theories of tax avoidance, on which there has been theoretical (Sandmo (2005), Skinner and Slemrod (1985)) and empirical research (Cebula (2004, 2013)). In the specific context of cigarettes, tax avoidance has been studied at length due to wide prevalence of smuggling (see Goel (2012), Goel and Saunoris (2018)). Besides impacting the shadow sector, tax evasion can also impact economic growth (Caballe and Panadés (1997)).

- This paper adds the literature by considering several new dimensions that are quite prevalent internationally. In particular, we compare relative influences of FDI, development aid, and international migration on prevalence of the shadow economy.

- These dimensions can have different impacts on shadow economy.

- First, FDI and aid mainly capture monetary transfers, while migration represents human dimension. While monetary transfers may affect shadow economy via subcontracting and tax evasion, migrants find easy/rapid entry into informal markets.

- Second, even FDI and development aid are qualitatively different. FDI is generally at private level, whereas development aid frequently has government as one of the parties and donors/ recipients do not usually have commercial motives.

- Third, enforcement may be different. Development aid often comes with monitoring by donors, thus providing an additional layer of oversight beyond local law enforcement. On the other hand, monitoring of migrants might be less effective - they may not be registered with local authorities.

- Lastly, international transfers of funds and people reflect active behaviors of economic agents. In contrast, geographic proximity might involve "passive" influences, even without funds/people (India-Pakistan; North and South Korea).

Hypotheses

- We can formulate 2 testable hypotheses with regard to the impacts of aid and migration; the impact of FDI is ambiguous.

- **Hypothesis 1:** Greater development aid is likely to lead to a smaller shadow economy, ceteris paribus.

- **Hypothesis 2:** Greater immigration is likely to increase the shadow economy, ceteris paribus.

Empirical model

- **Shadowit** = f(**FDIit, AIDit, MIGit,** Zit) (1)

- i = 1, ... , 194

- t = 2006, 2007, 2011, 2012

- Z = GDP, DEM, EF, GCONS, INF

Data1

- Shadow economy measure based on multiple-indicators-multiple-causes (MIMIC) method.
- Average prevalence of shadow economy was about 34% of GDP (*range: 8.4% to 81.9%*).

- Average FDI was 8% of GDP, and AID averaged 6.5% of GDP.

- *Data annual - 2006, 2007, 2012 and 2013. 2013 last year of shadow economy data; migration statistics come out every 5 years.*

Data2

- Correlations:

  - Shadow economy-FDI: 0.15

  - Shadow economy- AID: 0.32

  - Shadow economy-MIG: -0.22

Table 1
Variable definitions, summary statistics and data sources

Variable	Definition (mean; standard deviation)	Source
Shadow	Prevalence of shadow economy, MIMIC method (% of GDP); (33.82; 15.51)	Hassan and Schneider (2016)
FDI	Foreign direct investment, net inflows (% of GDP); (8.11; 26.14)	WDI
AID	Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent), (% of GNI); (6.47; 10.30)	WDI
MIG	Net migration per capita - total number of immigrants less emigrants, including both citizens and noncitizens; (0.004; 0.06)	WDI
GLOBidx	Index of globalization, with higher numbers indicating more globalization; (56.30; 17.11)	KOF Index of Globalization
ECOglob	Index of economic globalization, includes actual flows (with FDI and trade as components) and restrictions, higher numbers indicate more globalization; (61.48; 16.81)	KOF Index of Globalization
SOCglob	Index of social globalization, includes personal contacts, information flows and cultural proximity, higher numbers indicate more globalization; (49.26; 22.18)	KOF Index of Globalization
POLglob	Index of political globalization, higher numbers indicate more globalization; (62.08; 24.15)	KOF Index of Globalization

Estimation

- Country fixed-effects and year-dummies.

- Consider possible nonlinearities.

- Robust standard errors.

- 2-step GMM procedure to address simultaneity issues.
- *Variance inflation factors (VIFs) for baseline models < 10, implying multicollinearity not a significant concern.*

Results1

- FDI and MIG have positive effects on shadow economy, with greater statistical support for effect of MIG

- *Elasticity of shadow economy with FDI 0.005; with MIG 0.0008.*

- Effect of AID is negative, but statistically insignificant.

- Consistent with shadow economy offering easy entry for migrants and FDI providing subcontracting opportunities in formal and informal sectors

Results2

- Economic prosperity increases shadow economy in two of six cases; inflation has opposite effect.

- Economic prosperity offering greater opportunities in the informal sector as well, while inflation increases entry/setup costs

- Larger government consistently increases shadow economy (via possibly government subcontracting to the informal sector).

- *DEM and EF insignificant.*

	3.1	**3.2**	**3.3**	**3.4**	**3.5**	**3.6**
FDI	**0.02*** **(1.6)**			**0.02** **(1.6)**		
AID		**-0.14** **(1.3)**			**-0.06** **(0.5)**	
MIG			**6.97**** **(2.1)**			**7.31**** **(2.2)**
GDP	0.0002** (2.6)	0.0006 (1.4)	0.0001 (0.8)	0.0002** (2.2)	-0.0002 (0.4)	0.0001 (0.7)
DEM	0.02 (0.1)	0.09 (0.3)	0.37 (0.8)	0.10 (0.5)	0.28 (0.8)	0.53 (1.2)
EF	-0.02 (0.2)	-0.12 (1.0)	-0.02 (0.1)	-0.05 (0.6)	-0.11 (0.9)	-0.03 (0.2)
GCONS	1.99** (8.8)	2.17** (7.7)	1.90** (6.4)	1.90** (8.0)	2.07** (7.4)	1.81** (5.7)
INF	-0.06 (1.6)	-0.06 (1.3)	-0.09** (2.0)	-0.05 (1.3)	-0.05 (1.0)	-0.09* (1.8)
N	588	398	294	588	398	294
F-value	23.01**	19.1**	15.3**	14.3**	12.4**	12.9**
Fixed effects	yes	yes	yes	yes	yes	yes
Year dummies	no	no	no	yes	yes	yes

International movements of money and men and the informal economy: Baseline models
[Dependent variable: Shadow]

Table 3
International movements of money and men and the informal economy: Baseline models
[Dependent variable: Shadow]

	3.1	**3.2**	**3.3**	**3.4**	**3.5**	**3.6**	**3.7**	**3.8**
FDI	0.02* (1.6)			0.02 (1.6)			-0.06 (0.6)	-0.03 (0.4)
AID		-0.14 (1.3)			-0.06 (0.5)		-0.11 (0.6)	0.02 (0.1)
MIG			6.97** (2.1)			7.31** (2.2)	23.12* (1.6)	20.24 (1.5)
GDP	0.0002** (2.6)	0.0006 (1.4)	0.0001 (0.8)	0.0002** (2.2)	-0.0002 (0.4)	0.0001 (0.7)	0.0003 (0.6)	-0.0005 (0.8)
DEM	-0.02 (0.1)	-0.09 (0.3)	-0.37 (0.8)	-0.10 (0.5)	-0.28 (0.8)	-0.53 (1.2)	-0.46 (0.9)	-0.76* (1.6)
EF	-0.02 (0.2)	-0.12 (1.0)	-0.02 (0.1)	-0.05 (0.6)	-0.11 (0.9)	-0.03 (0.2)	-0.11 (0.6)	-0.08 (0.4)
GCONS	1.99** (8.8)	2.17** (7.7)	1.90** (6.4)	1.90** (8.0)	2.07** (7.4)	1.81** (5.7)	2.12** (5.3)	1.97** (4.9)
INF	-0.06 (1.6)	-0.06 (1.3)	-0.09** (2.0)	-0.05 (1.3)	-0.05 (1.0)	-0.09* (1.8)	-0.10* (1.8)	-0.09* (1.8)
N	588	398	294	588	398	294	199	199
F-value	23.01**	19.1**	15.3**	14.3**	12.4**	12.9**	10.9**	11.5**
Fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Year dummies	no	no	no	yes	yes	yes	no	yes
Mean VIF	4.93	5.07	6.47	5.02	6.48	6.64	7.11	9.25

Notes: See Table 1 for variable definitions. The numbers in parentheses are (absolute) t-statistics based on robust standard errors. * and **, respectively, denote statistical significance at the 10% and 5% (or better) levels.
VIF denotes variance inflation factor.

Table 3B **Elasticity of the size of the shadow economy with respect to FDI, AID, and MIG**	
FDI (Model 3.1 and 3.4)	+0.005
MIG (Model 3.3)	+0.0008
AID (Model 3.2 and 3.5)	negative

Notes: Elasticities based on Table 3 and evaluated at variable means. The negative coefficients of AID are statistically insignificant in Table 3, and, therefore, so are the corresponding elasticities.

Nonlinear aspects

- Set of models considered a quadratic term for FDI, AID and MIG.

- For FDI, significant positive coefficient for squared term.
- Insignificant linear and quadratic terms for AID.
- Positive effect of MIG increases at a decreasing rate.

- *In general, nonlinearities in determinants of shadow economy require attention in literature.*

Using globalization measures

- Use KOF Globalization Index (GLOBidx) and its sub-indices for economic (ECOglob), social (SOCglob) and political dimensions (POLglob).
- Both overall globalization index (GLOBidx) and social globalization (SOCglob) increase shadow sector.
- Economic globalization (ECOglob) and political globalization (POLglob) fail to achieve statistical significance.

- *While FDI increases informal sector, economic globalization, of which FDI is a component, has no significant effect.*
- *Effect of social globalization, while not directly including immigration, related to aspects similar to immigration (cultural proximity, personal contacts, etc.).*

Robustness check1: Alternative regressors

- **Dropping GDP:** General pattern of findings similar - coefficient on migration is positive and significant in three of four instances, while exhibiting some nonlinearities.

- **Dropping GDP and democracy (DEM):** Results quite similar to what was reported earlier. Significantly, migration remained positive and significant at the 5% level.

- **Dropping EF:** Mostly positive effects of migration, but no influence of FDI and AID.

- ***Migration emerges as relatively strong driver of shadow economy.***

Robustness check2: Considering tax burden

- Escaping high taxes and burdensome regulations are primary inducements for individuals and firms to operate underground, although new immigrants might not face the full brunt of government intervention. Whereas, regulations and taxes are considered via the index of economic freedom, we directly considered tax burden (TAXbur - % of tax revenues in GDP).

- Expect higher tax burden to increase shadow economy.

- Results show TAXbur to be positive, but statistically insignificant.

- Results for other variables generally supported what was reported earlier, except democracy was now negative and significant.

Simultaneity issues

- FDI, AID and MIG separately taken to be endogenous in a robust two-step GMM estimation, <u>with indices of language and ethnic fractionalization as instruments</u>.

- *Identification tests of instruments satisfied*

- GMM estimates were not quite supportive of the direction or magnitude of FDI, AID or MIG indicated earlier.

- Although MIG had a positive impact, the size of coefficient was implausibly large in magnitude (perhaps due to nonlinearities in underlying relation).

- Future research may give additional consideration to causality from variables reflecting international flows of money and men to the informal economy.

Concluding remarks1

- Adding to literature on drivers of informal economy, this paper studies relative impacts of international movements of money and men.

- While some aspects like the effect of FDI on shadow economy have been considered before, the present study is the first to consider three dimensions of flows of money and men: FDI, aid and migration.

- Other contributions of this work are the large sample of nations and the recent time period.

Concluding remarks2

- Migration positively impacts the size of the underground sector, while the influences of development aid and FDI lack statistical significance.

- These effects can be seen as consistent with notion that migrants find easy entry into shadow markets.

- Numerically, the positive impact of migration is small, despite its statistical significance. This supports Hypothesis 2.

Table 7

Countries with the lowest and highest prevalence of the shadow economy and impact of a ten percent increase in immigration

Lowest shadow economy (year)	Shadow economy (% of GDP)	Shadow economy after a ten percent increase in immigration
Switzerland (2007)	8.44%	8.51%
United States (2012)	8.63%	8.70%
Austria (2007)	9.23%	9.30%
Qatar (2011)	9.77%	9.85%
Kuwait (2006)	9.87%	9.95%
Highest shadow economy (year)	Shadow economy (% of GDP)	Shadow economy after a ten percent increase in immigration
Congo, Dem. Rep. (2012)	81.85%	82.50%
Gambia (2011)	78.65%	79.28%
Bolivia (2011)	76.92%	77.53%
Liberia (2012)	76.84%	77.45%
Tanzania (2007)	76.46%	77.07%

Note: The impact of immigration is based on the elasticity (= 0.0008) reported in Table 3B.

Concluding remarks4

- Extensions considered included examination of nonlinear effects and using indices of globalization.

- Some evidence of nonlinearities in impacts of FDI and immigration.

- When globalization indices are used, overall globalization and social globalization increase the shadow economy, but economic globalization and political globalization have no significant impact.

Concluding remarks5

- Overall, this research provides evidence on how some international flows of money and people may impact the informal sector.

- An important implication is that policies actively inviting FDI and those encouraging immigration should consider the spillovers to the underground sector. On the other hand, development aid does not seem to have such spillovers.

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