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Caio Piza
World Bank



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Microlinks Seminar #22

Show Me the Data: Evidence & Experience on SMEs





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Caio Piza

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Caio Piza is an economist in the Development Impact Evaluation unit in the Development Research Group at the World Bank. He manages the Brazilian portfolio on impact evaluations, which focuses on finance and private sector development. As an applied microeconometrician, his interests range from microfinance to education and labor economics. Recently, Caio has turned his attention to agricultural economics in order to support ongoing impact evaluation in Brazil. Before joining the Bank, he spent two years at the Inter-American Development Bank in Washington, DC, and about five years as an assistant professor at Universidade Presbiteriana Mackenzie in São Paulo, Brazil. He holds a Master's degree in applied economics from Universidade Federal do Rio Grande do Sul (UFRGS) in Brazil and a Master's degree in development economics from the University of Sussex in the United Kingdom, where he is currently pursuing his PhD in economics.



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Joao Montalvao is a development economist at the World Bank's Africa Gender Innovation Lab. His research interests focus on microeconomic issues in development, including private sector, agriculture, education, and household behavior. Ongoing work includes impact evaluations that try to understand gender gaps in economic domains in order to help inform the design of policy interventions. Joao has a PhD in economics from the University College London.

The Impact of Business Support Services for Small and Medium Enterprises (SMEs) on Firm Performance in Low- and Middle-Income Countries: A Systematic Review

Presented by

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Outline

- Background
- Theory of Change (Logical Framework)
- Inclusion Criteria and Search Strategy
- Search Strategy Results
- Evidence

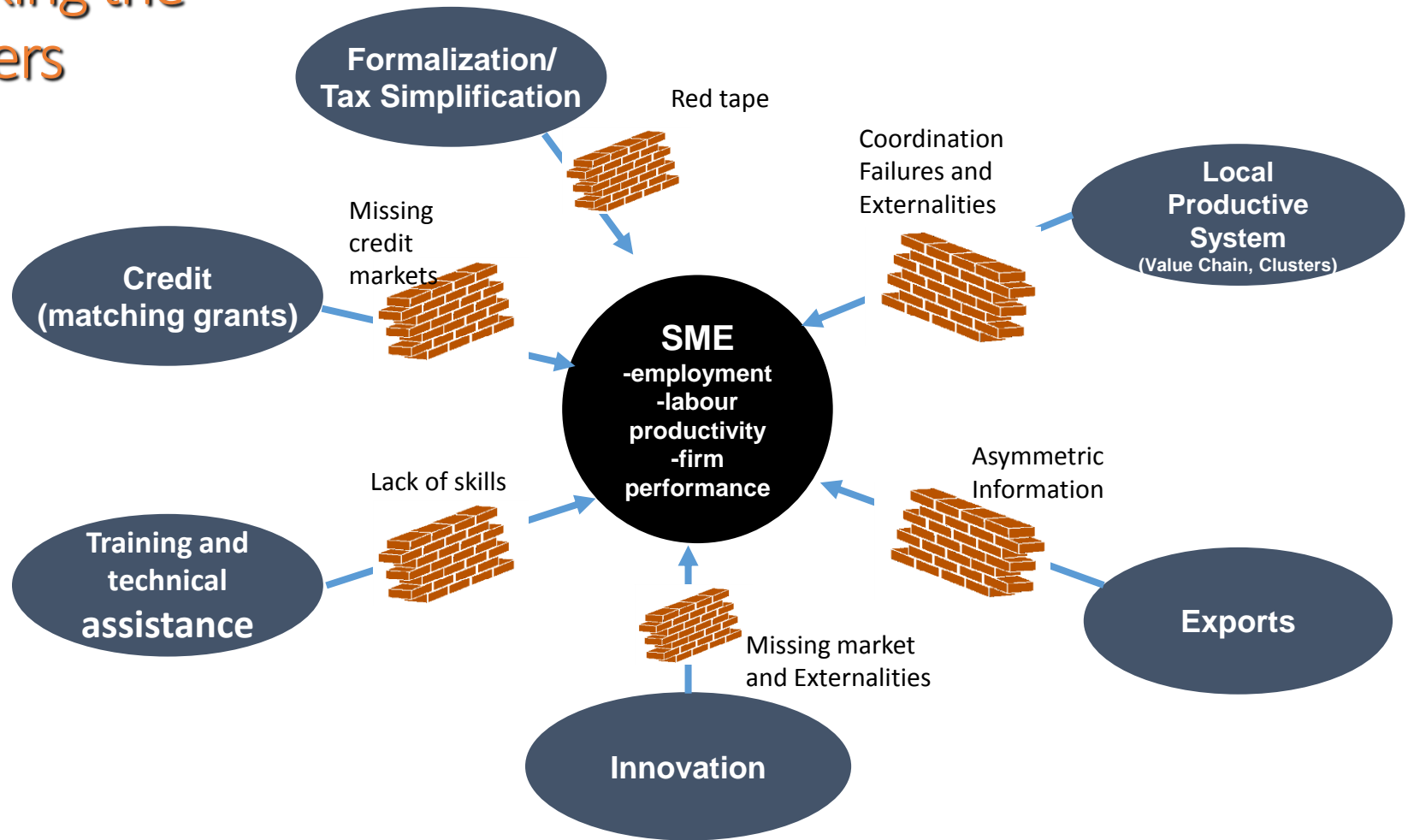
Background: The Relevance of SMEs

- Responsible for the majority of employment generation in developed and developing countries
- Maybe a viable way of spurring employment rates in low and middle-income countries (LMICs), particularly in African countries
- SMEs are targeted by public interventions and multilateral organizations
 - The World Bank devoted US\$9.8 billion and the International Finance Corporation (IFC) US\$25 billion to SME projects during the period 2006–12 (IEG, 2013).
- African economies: low number of SMEs in the formal economy

Background: Rationale

- Interventions in LMICs are often based on the assumption that SMEs face various market failures and missing markets as well as institutional constraints
- Direct interventions to SMEs: finance, matching grants, training, consulting services etc.
- Indirect interventions to SMEs: changes in business environment – tax simplification, business registration, reforms to boost competition etc.
- *What do we know about the impact of such interventions?*
- This systematic review summarizes rigorous evaluations of SME support services in LMICs.

Breaking the Barriers



Inclusion Criteria and Search Strategy

- Identify relevant papers for this review:
 - (1) Electronic searches in key platforms such as ISI, ECONLIT, ABI, PROQUEST, and SCOPUS (for a full listing of databases searched see section 3.2.1),
 - (2) snowball sampling of references from relevant papers and book chapters, including seminal work and those recently published, and
 - (3) suggestions from recognized experts in the field.

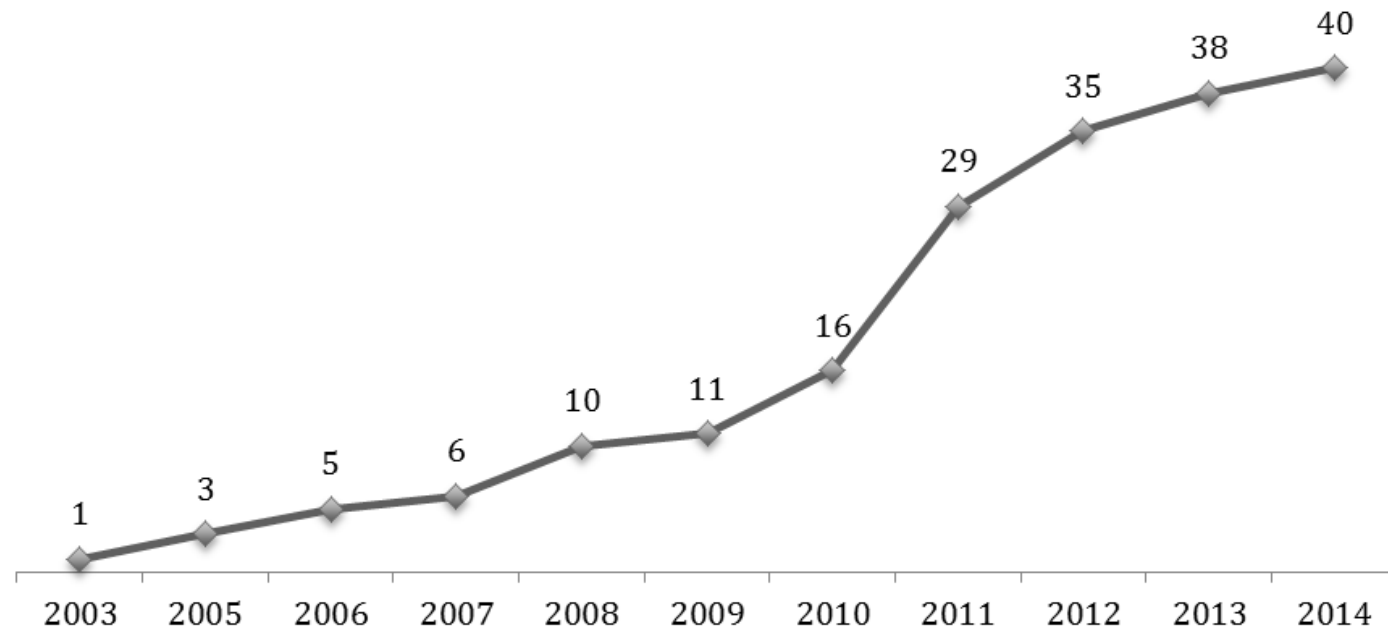
Inclusion Criteria and Search Strategy

- The review focused on quantitative papers employing convincing identification strategies to isolate the causal impact of the intervention under consideration
 - **Experimental** (randomised controlled trials, or RCTs)
 - **Quasi-experimental**
 - (i) regression discontinuity design (RDD)
 - (ii) instrumental variables (IV)
 - (iii) difference-in-differences (DID)
 - (iv) propensity score matching (PSM)

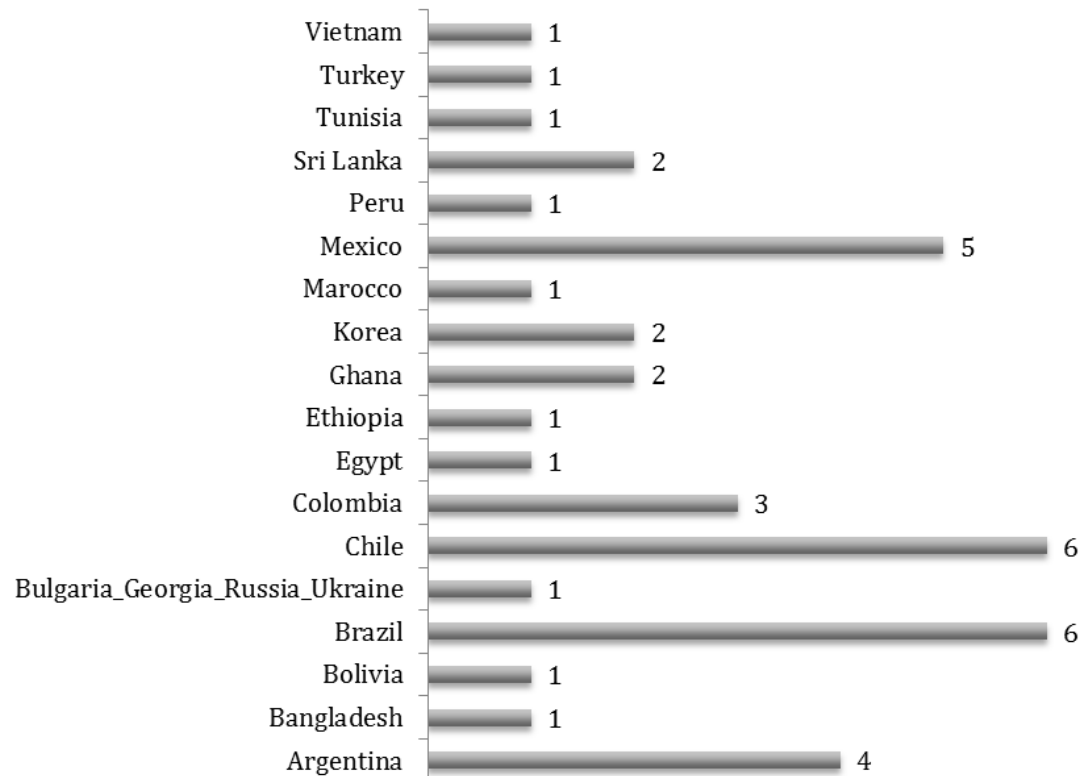
Inclusion Criteria and Search Strategy

- SME is defined in this review as businesses with 5 to 250 employees as in the international literature.
- The search focused on LMIC
- Studies published in English, Spanish and Portuguese
- The initial search returned 9,475 studies, which was reduced to 5,785 after dropping duplicates.
- The final sample included **40 studies**
 - 34 papers (23 peer reviewed and 17 working papers) 6 book chapters.
 - All produced between 2003 and 2014.

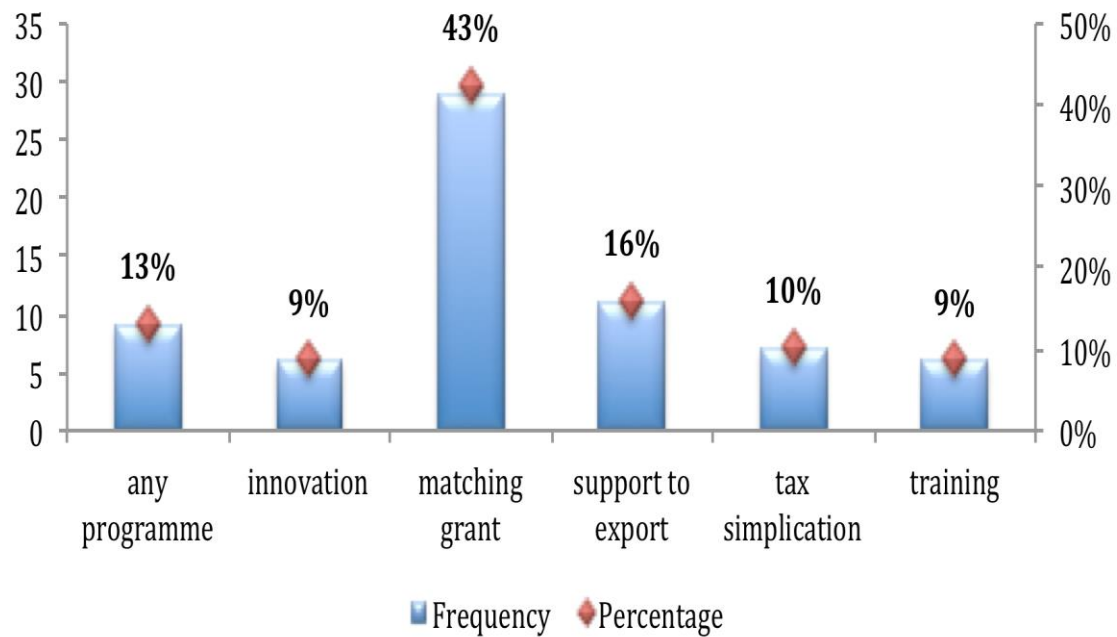
Search Strategy Results: Cumulative number of studies per year



Search Strategy Results: Number of studies per country

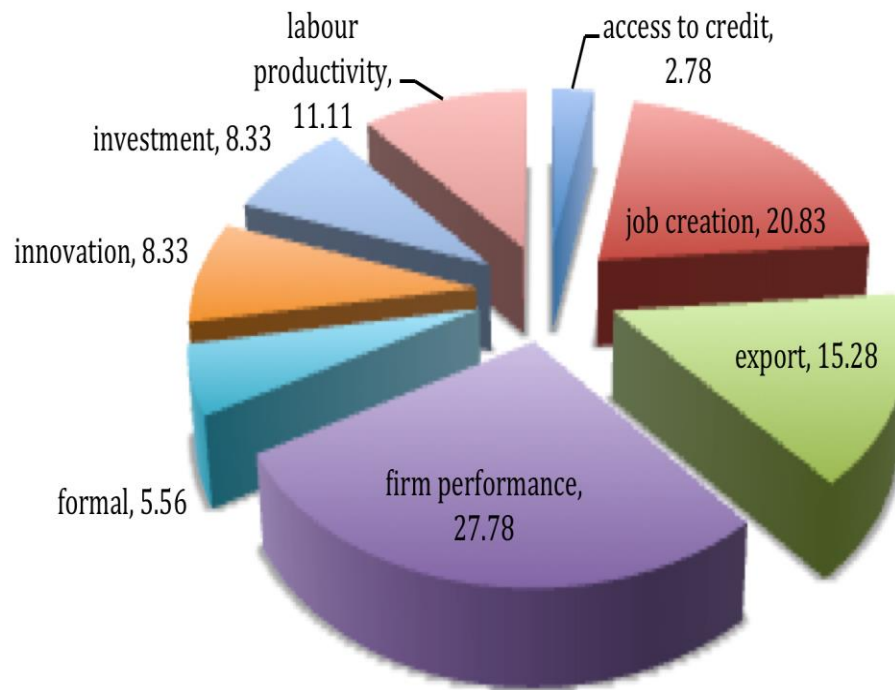


Number and Percentage of Reports per Intervention (Treatment)
One Effect Size per Study per Outcome

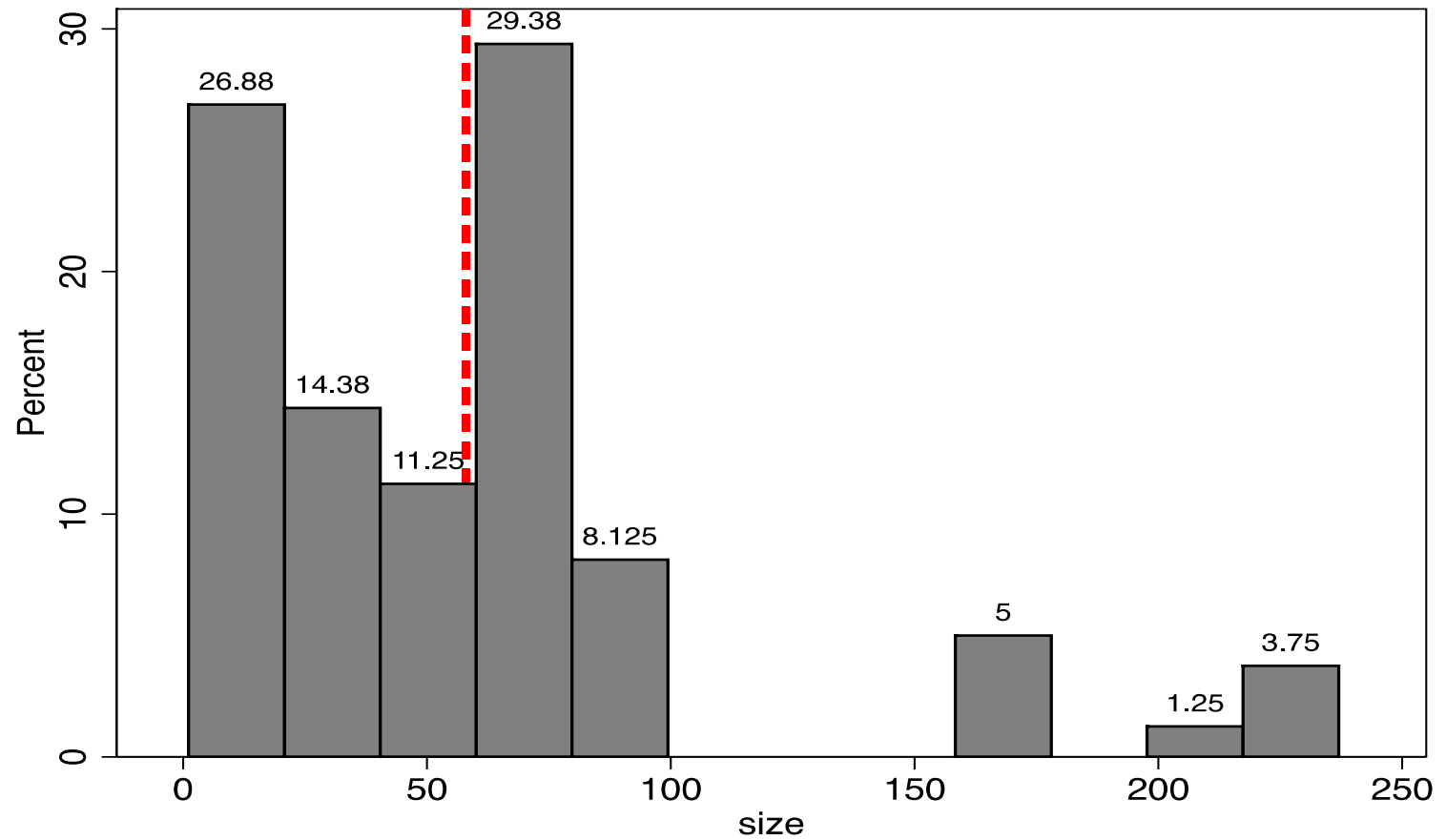


Note: 75 treatment effect estimates in total.

Frequency of Outcomes in Percentage (%)
One ES per Treatment per Study - 72 ES in total



Average size of firms: 58 employees



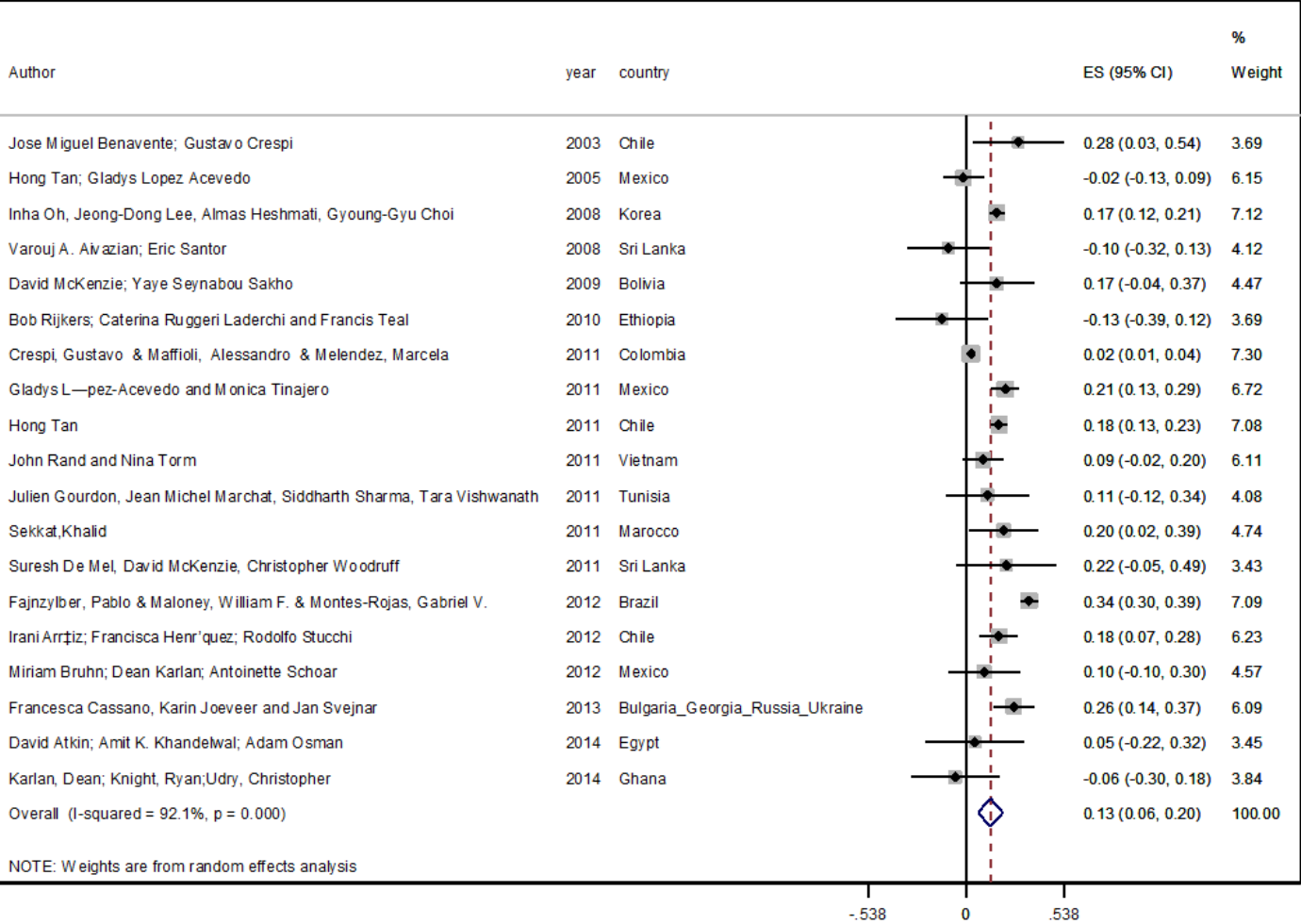
Results

- To compare effect sizes across studies we used two standardised measures. For binary outcome variables we computed risk ratio (RR), and for continuous variables we used standardised mean differences (SMD).
- Results for all interventions altogether and for matching grants separately.

Results: Firm Performance

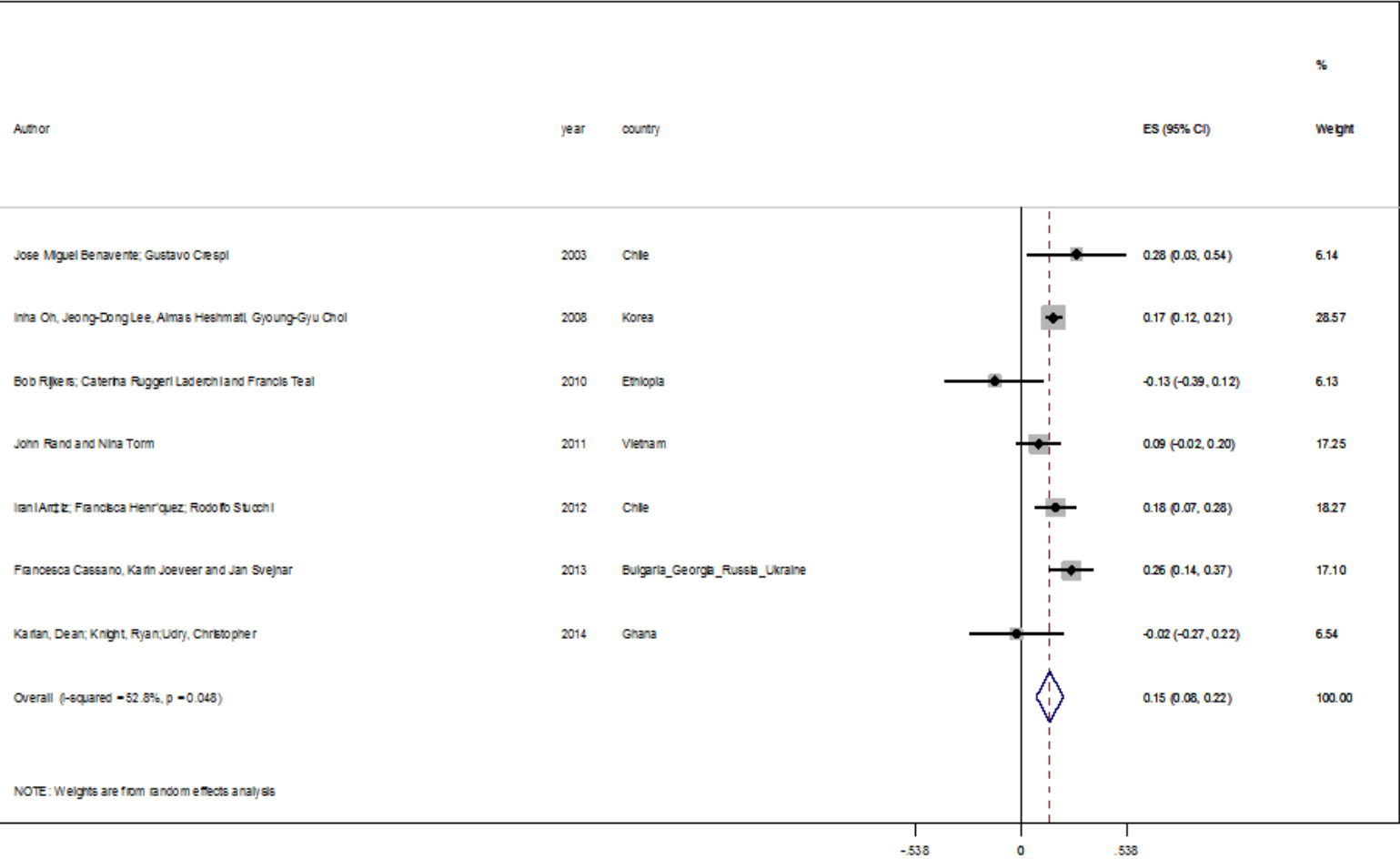
- Profits
- Revenue
- Sales
- Assets

Forest Plots: Firm Performance (All Interventions)



- 19 effect sizes
- On average, interventions had a positive effect of 0.13 standard deviations
- Most of the estimates come from interventions that took place in Latin American countries. Five estimates are from African countries
- Heterogeneity across studies is larger than within studies

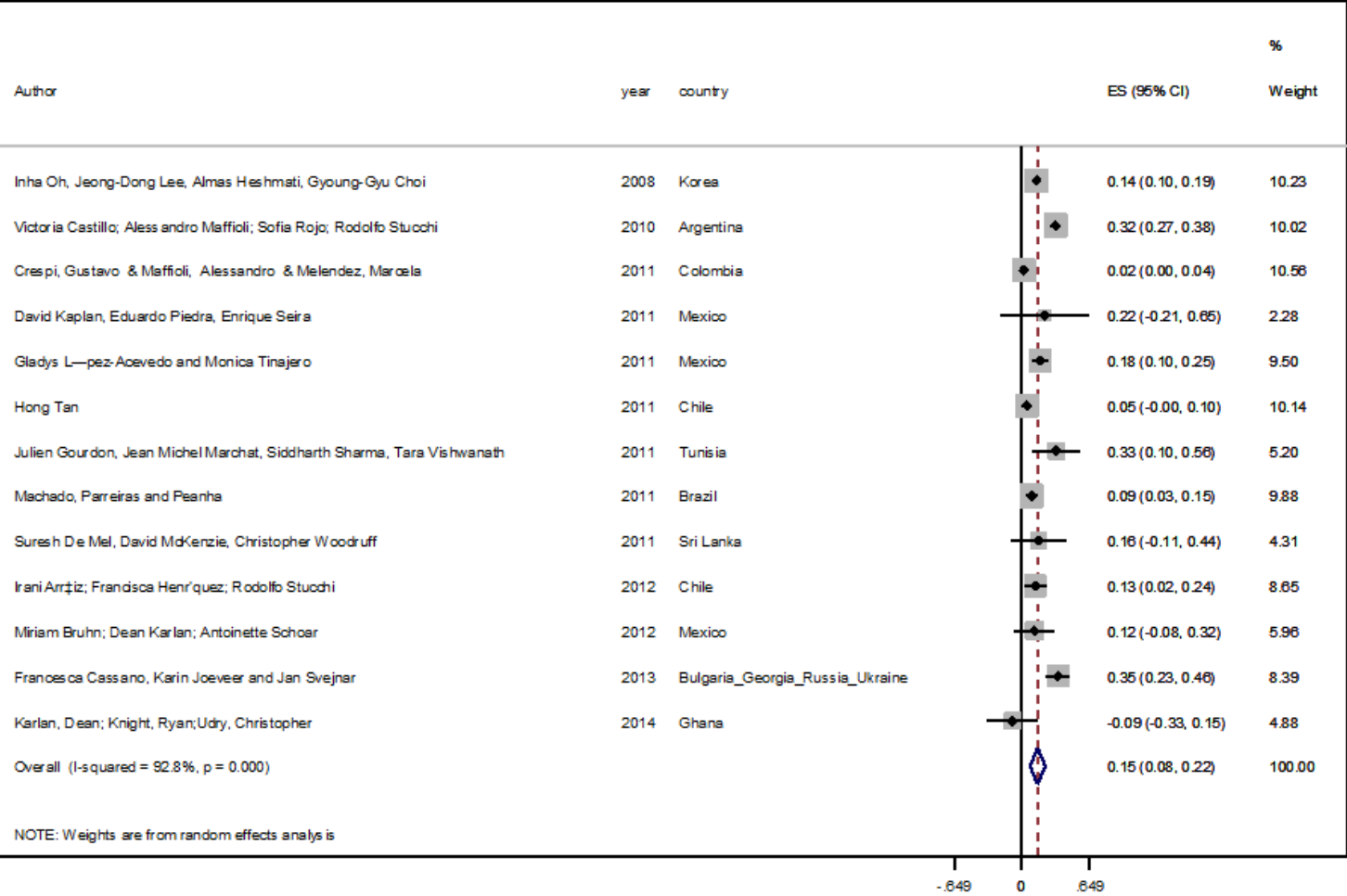
Forest Plots: Firm Performance (Matching Grants)



On average, interventions had a positive effect of 0.15 standard deviations.

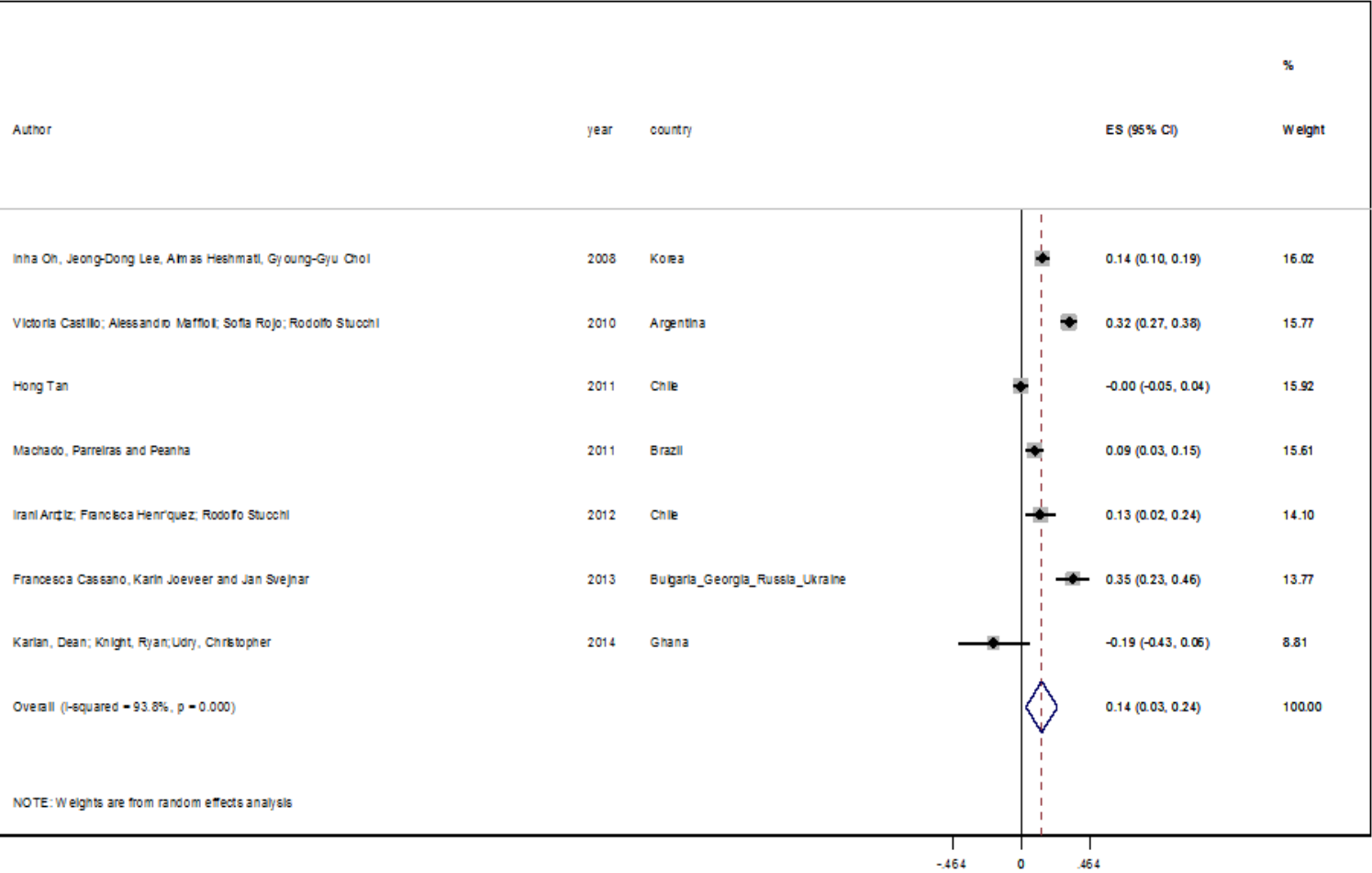
Results: Employment

Forest Plots: Employment(All Interventions)



- Findings are very heterogeneous but, on average, interventions had a positive effect on job creation of 0.15 standard deviations. The results is significant at 1% level.

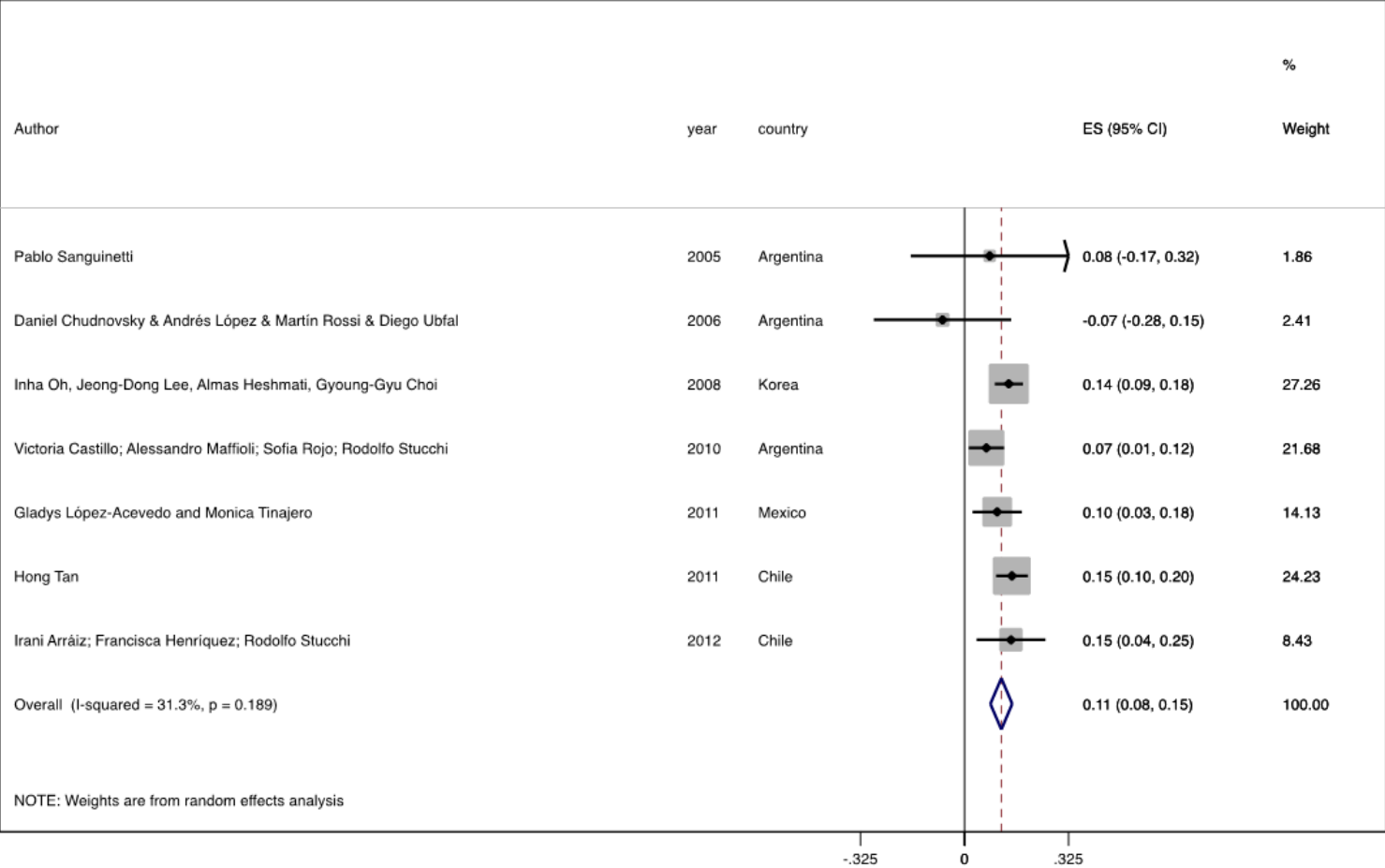
Forest Plots: Employment (Matching Grants)



- A positive and statistically significant effect on job creation of 0.14 standard deviations.

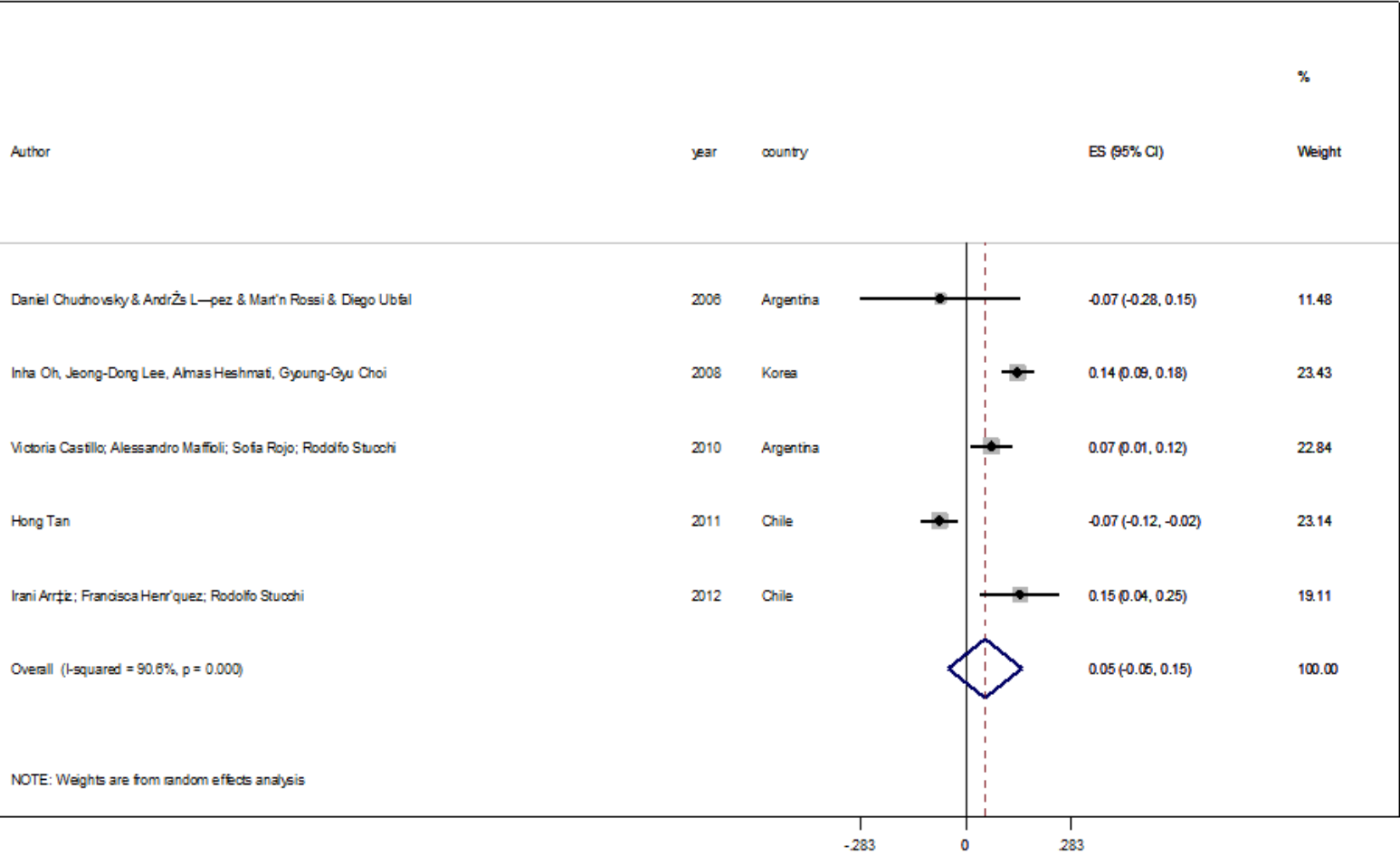
Results: Labour Productivity

Forest Plots: Labour Productivity (All Interventions)



- Evidence almost exclusively from LA.
- A positive and statistically significant effect on labour productivity of 0.11 standard deviations.

Forest Plots: Labour Productivity (Matching Grants)



- Interventions had a positive, small and an insignificant effect on labour productivity.

Secondary Outcomes

- Exports: On average, positive effect of 0.04 SDs and statistically significant
- Innovation: On average, positive effect on innovation of 0.02 SDs and not significant – similar results for matching grants
- Investment: On avg., positive effect of 0.13 SDs and statistically significant – the effect for matching grant is very similar

Meta-regressions

Results: Meta-Regressions for Primary Outcomes

	Firms Performance	Employment Creation	Labour Productivity
RE estimate -- no controls	0.13***	0.15***	0.11***
t-stat	(4.58)	(4.27)	(6.62)
p-value	0.000	0.001	0.001
<i>Moderator variables</i>			
LAC fixed effect	0.10**	0.19***	0.14**
t-stat	(2.28)	(3.10)	(3.71)
p-value	0.036	0.01	0.014
Africa fixed effect	0.15***	0.15***	Na
t-stat	(4.81)	(4.01)	Na
p-value	0.000	0.002	
Firm size	0.16***	0.21***	0.13
t-stat	(4.95)	(3.8)	(2.24)
p-value	0.000	0.004	0.11
Risk of bias	0.09**	0.07	0.11**
t-stat	(2.14)	(1.32)	(3.10)
p-value	0.047	0.116	0.027

Note: ***, **, * Statistically significant at 1, 5 and 10 percent respectively.

Risk of bias

Summary of Risk of Bias in Included Studies

	Selection Bias and Confounding	Spillovers, cross-over and contamination	Outcome reporting	Analysis reporting	Other Risks
Yes	2	1	39	23	27
Unclear	18	33	0	16	0
No	23	9	4	4	16
	Low	Medium	High	Total	
Overall	2 5%	13 30%	28 65%	43	

Results: Meta-Regressions for Primary Outcomes (MG)

	Firms Performance	Employment Creation	Labour Productivity
RE estimate -- no controls	0.15**	0.13*	0.052
t-stat	(3.53)	(2.08)	(1.11)
p-value	0.012	0.083	0.33
<i>Moderator variables</i>			
<i>LAC fixed effect</i>	0.11*	0.13	0.14
t-stat	(2.06)	(1.14)	(1.44)
p-value	0.095	0.305	0.244
<i>Africa fixed effect</i>	0.17***	0.17**	Na
t-stat	(9.01)	(3.02)	Na
p-value	0.000	0.029	
<i>Firm size</i>	0.17*	0.27*	0.24
t-stat	(2.29)	(2.71)	(2.72)
p-value	0.084	0.053	0.113
<i>Risk of bias</i>	0.15	0.015	0.068
t-stat	(1.80)	(1.08)	(0.76)
p-value	0.131	0.33	0.501

Note: ***, **, * Statistically significant at 1, 5 and 10 percent respectively.

Meta-Regressions for Secondary Outcomes

- The coefficients are very similar to those reported in the forest plot.
- Most of these estimates lack statistical power.
- After controlling for the risk of bias, only the effect on investment is statistically significant but reduces sharply.

Publication bias

- The funnel plots indicate that there might be some publication bias towards studies showing positive effects of business support on SMEs performance and employment.
- There is no indication of publication bias regarding the effects of business support on labour productivity.

Concluding Remarks

- The results provide an indication for policy makers that SME support might improve firm-level performance and impact jobs.
- The evidence suggests that none of the different types of support has a negative impact on performance or job creation.
- Insufficient number of impact evaluations (we are not talking about RCTs) prevents us to assess other interventions separately
- **Results should be interpreted with caution due to significant risk of bias, publication bias and lack of statistical power.**

Thank you!

Participation in Matching Grants Schemes: Evidence from Mozambique

Francisco Campos, World Bank
Leonardo Iacovone, World Bank
Joao Montalvao, World Bank

USAID, May 2015

Question

- **What distinguishes firms who participate in MGS?**
 - Which part is driven by self-selection on the part of firms?
 - Which part is driven by screening on the part of MGS?
- Baseline data from our IE of the MESE program in Mozambique offers some insights

Why do we care?

- **Popular intervention**

- Last twenty years: \geq \$2 billion spent on MGS
- 40% recent WB projects in PSD include one

- **Program targeting**

- Limited government/donor funds
- Should target firms that benefit the most
- Not necessarily those with high-growth potential (“gazelles”)

- **Limited rigorous evidence on "additionality"**

- Randomized experiments difficult in practice [Campos et al, 2013]
- Helps identify comparison groups for non-experimental IEs

Quick recap of MGS

- **Funding restricted to soft (intangible) capital**
 - E.g. training, marketing, quality certification, software, R&D
 - Market failure(s) assumed to prevent firms from making these investments (e.g. credit, information)
- **Costs shared between government and firm**
 - To keep firms' “skin in the game”
 - Assumed to attract firms who value it most
- **Participation is the outcome of sequential process**
 - Awareness → Application → Acceptance
 - Each stage different effects on participation

Participation in MGS

- **Awareness (first stage)**
 - Program outreach efforts
 - Social networks
 - Incentives to participate

Participation in MGS

- **Application (second stage)**
 - Expected benefits/costs from participating
- The theory here is ambiguous
 - Returns likely highest among most constrained firms
 - But gazelles may have complementary resources that bolster returns to soft capital

Participation in MGS

- **Acceptance and disbursement (third stage)**
 - Based on eligibility criteria
 - But room for bureaucratic discretion
 - Incentives to pick gazelles which likely grow faster regardless of grants (“cream-skimming”)

Context

- We exploit baseline dataset from our IE of the MESE program in Mozambique
- **MESE program**
 - 70% cost sharing grants for micro-enterprises, and 50% for small and medium enterprises (max grant = \$70,000)
 - Advertised through workshops with business communities, media, leaflets distributed through associations, etc.
 - Prioritized women-owned businesses and enterprises operating in remote areas
 - Firms selected to participate received advice

Most popular investments on training, marketing, and quality certification. $\approx 90\%$ from micro-enterprises.

Table 1. Activities approved and disbursements

	Approval rates (1)	Disbursement rates (2)
<i>N=807 activities</i>		
Design of promotional materials	22.9%	17%
Websites and e-commerce	19.0%	13%
Employee training	18.2%	20%
Quality certification	11.2%	16%
Business plan	8.2%	13%
Trade fair participation	7.7%	7%
IT systems	3.0%	3%
Accounting, internal auditing	2.2%	2%
Short term management contracts	2.1%	2%
Market research	1.2%	2%
M&A, partnerships, investors' search	1.1%	1%
Product development research	1.0%	2%
Improvement of production efficiency	0.9%	2%
Packaging design	0.7%	1%

Data

- 300 participants and 700 non-participants
- Collected shortly after applications, before grants distributed
- Characteristics of firms and owners
 - Demographics (e.g. age, gender, education)
 - Firm characteristics (e.g. age, employees, physical capital, credit)
 - Management practices (e.g. keeps written business records)
 - Financial literacy and intelligence (e.g. cognitive reflection test)
 - Social capital (e.g. membership in business associations)

Summary statistics

Table 2: Firm characteristics, full sample

	Mean
Firm age 5 years or less [yes =1]	.214
Firm size less than 2 workers [yes =1]	.240
Firm size 2 to 4 workers [yes =1]	.323
Firm size 5 to 9 workers [yes =1]	.212
Firm size 10 or more workers [yes =1]	.225
Business assets [MT in logs]	13.6
Credit	
Received any loan in past 2 years [yes =1]	.265
Doesn't fear getting credit application rejected [yes = 1]	.775
Can borrow at least MT50,000 within 2 weeks? [yes = 1]	.503
Urban province [yes =1]	.641

Summary statistics

Table 3. Owner characteristics, full sample

	Mean
Age	41.2
Female [yes = 1]	.295
Medium education [yes = 1]	.290
High education [yes = 1]	.204
Cognitive reflection test [score = 0-3]	.223
Financial literacy [score = 0-4]	2.40
Management practices [score = 0-6]	2.55
Social networks	
Member of a business association [yes = 1]	.108
Knows at least 10 firm owners [yes = 1]	.512
Interacts at least once a month with other firms owners [yes = 1]	.257

Results

Table 4. Determinants of participation, by participation stage

Logit estimates, marginal effects reported

	Participation stages			
	Aware (1)	Applied (2)	Accepted (3)	Participate (4)
<i>Sample mean</i>	.377	.804	.373	.113
<u>Firm characteristics</u>				
Firm's age 5 years or less [yes =1]	.287***	.197***	.116*	.061***
Business assets [in logs]	.021**	.049***	.026	.009***
Firm size 10 or more workers [yes =1]	.123***	.032	.014	.014
Access to credit [score = 0-3]	.008	-.030*	.033	.007
Competition [score = 0-2]	-.027	-.009	.032	.000
<u>Owner characteristics</u>				
Female [yes =1]	-.055	.056	.039	.009
Age [x10]	.013	-.031**	.041	.003
Cognitive ability [z-score]	.108***	.011	.017	.017***
Noncognitive ability [z-score]	.032*	-.014	.051	.000
Management practices [score = 0-6]	.048**	-.048**	.025	.004
Business social networks [index = 0-3]	.088***	.011	.103***	.022***
Urban area [yes =1]	-.262***	-.206***	.243***	.008
Observations	1000	377	303	1000

Notes: *** denotes significance at 1% level, ** at 5%, * at 10%. Each column corresponds to a separate regression. Sample in columns 1 and 4 is all owners/firms. Dependent variables are indicators that equal 1 if the owner reports be aware of the program in column 1, if the firm applied to the program in column 2, and if the firm participated in the program in columns 3 and 4. Samples are all owners/firms in columns 1 and 4, owners/firms that report to be aware of the program in column 2, and owners/firms that applied to the program in column 3.

Results: what did we learn?

- Awareness explains the bulk of participation
 - Younger, relatively larger firms more aware
 - Socially connected, high-skill owners more aware
- It is possible that program is targeting gazelles
 - Most of it driven by increased awareness and self-selection
 - But screening also favored socially connected owners in urban areas
- On the other hand, conditional on awareness, program attracted owners lacking managerial skills and more credit constrained [weak evidence]

Policy implications

- There is room for improving targeting of MGS
 - Design information campaigns that reach out to both gazelles and 'subsistence' firms
 - Provide better incentives for program staff to avoid cream-skimming
- Evaluate causal impact
 - Matching grants promising, but need rigorous IEs
 - Measure impact over gazelleness distribution
 - Test different design features to see which are better at attracting firms who benefit most from MGS



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