Research Proposal for the NBER Productivity, Innovation and Entrepreneurship Program

Cash Flow Constraints and the Burden of Taxation:

Does Aligning the Timing of Taxation with Firms' Cash Flow Promote Firm Development?

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1. The timing of tax collection as a barrier to firm growth

Almost half a billion individuals in developing countries are entrepreneurs or owners of small and medium size firms. Their success will be crucial to driving the growth of emerging markets and to reducing poverty. A well-known difference to the environment of entrepreneurs in highly developed economies is firms are even more liquidity constrained, as financial markets are not very developed, leaving firms with very restricted access to credit.

One implication of this situation that to our knowledge has not been studied in any rigorous way so far is how this situation interacts with the *timing* of taxation. Models and analysis on the impact of taxation on firms in developed countries have often focused exclusively on how taxation affects firms' profitability, rather than their cash flow. However, for start-ups in general and those in developing countries in particular, cash flow constraints can be severely binding. In this context, bad timing of the tax obligation schedule can make things substantially worse.

In particular, the Value Added Tax (VAT) is usually levied on a monthly basis, and is due at the time the sales transaction is conducted. This time can be quite different from the time the selling firm actually receives payment. This is particularly true when firms sell to the government or other large firms, who are known to regularly pay their suppliers 3 or even 6 month later. Having to pay VAT upfront before receiving payment can significantly exacerbates firms' cash flow problems

For this reason, some countries including the UK, Sweden, Portugal and Romania have introduced a cash flow based VAT system for smaller firms, in which taxes come due only at the time payment is received. Given the importance of cash flow constraints for growth and investment in entrepreneurship, this change has the potential to significantly impact firms' development.

However, little is known about how such a reform actually affects firm behavior and growth. One reason for this is that it is typically very hard to find good exogenous variation that allows to measure such impacts. We have the extraordinary opportunity to be able to work with the Kenyan Tax Authority on this issue in a way that makes such causal identification possible. Within the Kenyan law, the tax administration has the authority to allow a selected group of firms to file and pay their VAT on a cash flow basis. They are interested in learning the impacts of such a change, and agreed to randomly select a group of firms for this treatment in the form of a randomized policy experiment. We have already signed an MOU with them, and are therefore confident that this collaboration is going forward.

The new system may be particularly beneficial to small firms that are more exposed to low cash flow periods and liquidity constraints. In other domains of development economics, such as agriculture, health, and household finance, researchers have already found that timing of payments can make a very large difference for policies in developing countries, as income flows in these environments tend to come at a much more irregular pace than in highly developed countries. Our proposed experiments are a first attempt at understanding the role of these forces in the context of how taxation affects entrepreneurs.

2. Methodology and data collection

The current proposal has been developed jointly in collaboration between the researchers and the Kenya Revenue Authority, in what is one of the first cooperation of this type between an African tax authority with academic researchers. The research aims to evaluate the impact of implementing a cash flow based VAT scheme in Kenya, by conducting a randomized policy experiment.

In this context, the tax authority will allow a randomly selected group of firms to use the cash flow based VAT, while a control group will remain under the current VAT payment system. We plan to stratify randomization by tax station, sector and transaction volume, based on the administrative data to which we have access.

We are currently in the process of completing exploratory work, including qualitative firm interviews and designing of the details of the intervention in collaboration with the tax authority. At the end of this summer, we expect to be ready to conduct the pilot version of the intervention, for which we are requesting funding in this grant application.

The Kenyan Tax Authority will cover the costs of the intervention itself, including the use of their infrastructure, system for administrative data collection and dissemination of the new VAT scheme. A team of 10 tax authority staff are currently contributing to the planning of the pilot. This includes staff from the research department and the tax administration department, as well as senior management. While we do not know the precise amount of these costs, we estimate their commitment through the pilot stage could be valued at approximately US$40,000.

We are therefore applying for data collection costs of the pilot intervention, which are not covered by the tax authority, i.e. qualitative and quantitative data collection with firms liable for the VAT, before and after the pilot intervention. This involves survey design and testing, obtaining of Kenyan permits to conduct survey, hiring of a survey coordinator and a team of surveyors/field assistants, as well as rentals of survey equipment and related materials. In addition, we are applying for funding for one of the PIs to travel to Kenya to help coordinate and observe the process in person.

The content of the data collection will include the following two types of measures: 1) Firm performance variables, for which we are planning to measure impacts. This includes e.g. revenues, costs, employment, and investment. 2) Variables aimed at understanding the mechanisms. This includes e.g. the extent of firms' liquidity constraints and cash flow fluctuations; savings and credit constraints; firms' assessment of potential gains from addressing the mismatch between the timing of cash flow and tax payments; firm owners'/managers' personal discount rates (including time inconsistency), which may play an important role in shaping the response to the intervention. This data will complement the administrative data to which we have access through the tax authority.

3. Budget

Survey manager based in Kenya (USD 2,500 per month, for 3 months)	$7,500
Survey field officers based in Kenya (8 people one month each, USD 700 per month)	$5,600
Survey implementation costs (incl. transportation, equipment rental, meals for field staff, data checks, payment for respondents' time, etc.)	$4,900
Travel costs: one visit to Kenya for a principal investigator (flights & accommodation)	$2,000
Total	**$20,000**

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ACADEMIC EMPLOYMENT AND AFFILIATIONS

2017 -	Assistant Professor, University of Zurich
2016 - 2017	Visiting Assistant Professor, University of Zurich
2011 - 2017	Assistant Professor, Harvard Business School
2010 - 2011	Post-Doctoral Fellow, Abdul Latif Jameel Poverty Action Lab, MIT Department of Economics
2016 -	UBS International Center of Economics in Society
2015 -	Non-Resident Fellow, Center for Global Development (CGD)
2015 -	Research Affiliate (Public Economics, Development), Center for Economic Policy Research (CEPR)
2014 -	Affiliate, Bureau of Research and Economic Analysis of Development (BREAD)
2012 -	Faculty Research Fellow (Public Economics), National Bureau of Economic Research (NBER)
2012 -	Affiliate, Abdul Latif Jameel Poverty Action Lab (J-PAL)
2011 -	Member, State Capabilities Programme, International Growth Centre (IGC)
2011 -	Faculty Affiliate, Center for International Development, Harvard University (CID)

EDUCATION

2010 Ph.D., Economics, Harvard University
- Dissertation: Essays on Tax Evasion and Savings: Evidence from Three Randomized Experiments in Chile
- Committee: Michael Kremer (chair), Raj Chetty, David Cutler, Sendhil Mullainathan

2004 M.A., International Economics, Graduate Institute of International Studies, Geneva
- Thesis: Wage Differentials between Swiss and Foreign Workers
- Committee: Slobodan Djajic, Yves Flueckiger

2002 B.A., International Relations, Graduate Institute of International Studies, Geneva

PUBLICATIONS

Journal articles:

Paul Carrillo, Dina Pomeranz and Monica Singhal, "Dodging the Taxman: Firm Misreporting and Limits to Tax Enforcement," *American Economic Journal: Applied Economics,* 2017. (Featured in BBC Radio)

Dina Pomeranz, "No Taxation without Information: Deterrence and Self-Enforcement in the Value Added Tax," *American Economic Review*, 2015. (Featured in CNN, Vox.eu, World Bank News, Bloomberg News and others.)

Dina Pomeranz, "Impact Evaluation Methods in Public Economics: A Brief Introduction to Randomized Experiments and Comparison with Other Methods," *Public Finance Review,* 2015.

Pamela Castellon, Cristobal Marshall and Dina Pomeranz, "Improving Audit Strategies through Randomized Enforcement Messages: Methodology and Application in Chile," *Tax Administration Review*, 2014.

Working papers:

Felipe Kast and Dina Pomeranz, "Saving More to Borrow Less: Experimental Evidence from Formal Savings Accounts in Chile," *NBER WP w20239*, 2014. Revision requested by *Journal of Public Economics*. (Featured by La Tercera newspaper.)

Felipe Kast, Stephan Meier and Dina Pomeranz, "Under-Savers Anonymous: Evidence on Self-Help Groups and Peer Pressure as a Savings Commitment Device," *NBER WP w18417*, 2012. Revision requested, *Journal of Development Economics*. (Featured by Time, Business Insider, Freakonomics, The Wall Street Journal, Yahoo! Finance, and others.)

Ben Olken, Maria Paula Gerardino, Stephan Litschig and Dina Pomeranz "Can Audits Backfire? Evidence from Public Procurement in Chile," 2016.

Research in progress:

Sebastian Bustos, Dina Pomeranz and Gabriel Zucman, "The Impact of Monitoring Multinational Firms on Profit Shifting: Evidence from a Natural Experiment in Chile"

Paul Carrillo, Dave Donaldson, Piyush Panigrahi, Dina Pomeranz and Monica Singhal, "Firm Networks and Intra-Country Trade: How Do Economic Shocks Get Propagated through the Network?"

Lorenzo Casaburi and Dina Pomeranz, "Timing of Taxation and Firm Cash Flow Constraints: Randomized Experiment in Kenya"

Paul Carrillo, Dave Donaldson, Dina Pomeranz and Monica Singhal, "Firm Spillovers in Public Procurement: Evidence from Randomized Procurement Lotteries in Ecuador"

Op-Eds and Practitioner-Oriented Writing:

Dina Pomeranz, "Angus Deaton – ein Pionier der Erforschung von Armut und Ungleichheit" (Angus Deaton – A Pioneer in Research on Poverty and Inequality), *Neue Zürcher Zeitung*, 2015.

Dina Pomeranz, "Microfinance and Women's Empowerment: What Does the Evidence Say?" EY Thought Leadership Paper, 2014. Featured by *The Guardian*.

Sebastian Bustos, Fernando Irarrazaval and Dina Pomeranz, "Investigaciones en Políticas Tributarias" (Research in Tax Policy), *La Tercera*, 2014.

Connie Chen, Felipe Kast and Dina Pomeranz, "Shedding Light on the Gender Gap through Randomized Field Studies," *Insights: Closing the Global Gender Gap*. Harvard Kennedy School Women and Public Policy Program, 2009.

Dina Pomeranz, "Wirtschaftswissenschaft im Dienste der Armen: Ökonomen propagieren neue Evaluationsmethoden in der Entwicklungshilfe" (Economics in Service of the Poor:

Economists Promote New Methods of Evaluation in Development Aid), *Neue Zürcher Zeitung*, 2008.

Dina Pomeranz, "Forschungsfonds garantiert die Abnahme" (Advanced purchase commitments for tropical diseases), *Tages-Anzeiger*, 2004.

Dina Pomeranz, "Chance für die armen Länder" (Impact of international trade negotiations on developing countries). *Tages-Anzeiger*, 2004.

Harvard Business School Cases and Teaching Material:

Dina Pomeranz, Samik Adhikari and Juan Ignacio Elorrieta, "Some Tips on Navigating Common Pitfalls when Working in Emerging Markets", HBS technical note, 2015

Dina Pomeranz and Bill Kerr, "IDinsight: Informing Decisions for Global Development," HBS case 814-103, 2014.

Lynda Applegate, Gustavo A. Herrero, Bill Kerr, Josh Lerner, Dina Pomeranz and Cintra Scott, "Start-Up Chile: April 2012," HBS case 812-158, 2012.

TEACHING

2013 – 2016	Ph.D. research group on "Public Finance in Developing Countries"
2015 – 2016	Business in Emerging Markets: Ghana. Harvard MBA Program
2013 – 2015	Harvard Business School Executive Education: - Strategic Perspectives in Nonprofit Management Program - Launching New Ventures - Advanced Global Leadership Program for Chief Income-Tax Commissioners
2015	Inter-American Center of Tax Administrations (CIAT) and Poverty Action Lab (J-PAL): Rigorous Impact Evaluation in Public Administration.
2012 – 2015	MBA Independent Projects, 9 teams
2011 – 2014	The Entrepreneurial Manager. Harvard Business School MBA Program
2012 – 2013	Guest Lectures in Doctoral Courses "Financial Decision Making" in Micro Topics in Organizational Behavior course "Taxation in Developing Countries" in Development Economics course
2012 – 2014	Ph.D. Student Orals Committees HBS Ph.D. Program in Business Economics (2 committees) Harvard Ph.D. Program in Public Policy (1 committee)
2006 – 2007	Teaching Fellow, Harvard University Economics Department How Do We Fight Poverty? (Alberto Alesina) Topics in Development Economics (Michael Kremer)
2006 – 2007	Senior Thesis Advisor, Harvard University Economics Department
2005 – 2007	Undergraduate Study Advisor, Harvard University Economics Department

AWARDS AND HONORS

2010 - 2011	Swiss National Science Foundation Post-Doctoral Fellowship
2009 - 2010	Pascucci Dissertation Fellowship
2008 - 2009	Janggen Poehn Scholarship
2007 - 2010	Center for International Development at Harvard University, Doctoral Fellowship
2007 - 2008	Project on Justice, Welfare and Economics at Harvard University, Dissertation Fellowship
2001 - 2010	Swiss Study Foundation Fellowship

GRANTS

2017	Swiss National Science Foundation (SNF) Project Grant for research on the role of firm networks for tax evasion in developing countries (CHF 398'800)
2016	International Growth Center (IGC) for research on firm networks in Ecuador (£47,416 GBP)
2016	Private Enterprise Development in Low-Income Countries (PEDL) firm networks in Ecuador (£196,584)
2015	International Growth Center (IGC) State Effectiveness Program, for research on taxation of multinational firms, based on a natural experiment in Chile (£65,563)
2015	IPA SME Initiative's Competitive Research Fund on Entrepreneurship and SME Growth, for research on firm networks with transaction-level tax data from Ecuador ($25,000)
2015	J-PAL Governance Initiative Grant for research on monitoring of contract awarding and execution in public procurement ($350,000)
2015	International Growth Center (IGC), for research on liquidity constraints, presumptive taxation and tax compliance in Kenya (£41,564, co-PI)
2015	Stanford SEED Innovation and Entrepreneurship in Developing Economies, for research on the transmission of shocks in firm networks ($35,000, co-PI)
2015	IPA SME Initiative's Competitive Research Fund on Entrepreneurship and SME Growth, for research on the impact of tax credits for SMEs ($25,000)
2015	Weatherhead Center, faculty grant for research on tax-based policies to reduce constraints for firm growth, investment and employment in developing countries ($25,000)
2015	Weiss Family Program Fund, grant for research on taxation of multinational firms in emerging countries and on regulation of international transfer pricing ($62,760)
2015	Stanford Global Development and Poverty Initiative, Capacity-Building and Exploratory Award for research on timing of taxation and cash flow constraints ($50,000, co-PI)
2014	J-PAL Governance Initiative Grant for pilot research on enforcing fair play in public procurement ($50,000)
2010	Lab for Economic Applications and Policy (LEAP) for research on access to savings for low-income micro-entrepreneurs ($10,000)
2010	Russell Sage Small Grants Program for research promoting savings for low-income micro-entrepreneurs ($5,000)
2009	Ford Foundation for survey to measure impact of access to savings for low-income micro-entrepreneurs ($50,000)
2008 - 2009	David Rockefeller Center of Latin American Studies Travel Grant ($3,000)
2008 - 2009	Women in Public Policy Program for research on gender and access to savings ($10,000)
2008	Banco CrediChile for research on access to formal savings accounts for low-income micro-entrepreneurs ($90,000)

2007 - 2008 Harvard Center of International Development ($3,000)
2007 Warburg Funds ($6,000)
2006 - 2008 Harvard Graduate School of Arts and Sciences Research Awards
2005 - 2007 Harvard Economics Department Travel Grant

PRESENTATIONS AND SEMINARS

2017 Berkeley (scheduled), University of Numar, Bocconi, ETH Zurich, University of Southern California (scheduled), International Food Policy Research Institute IPFRI (Washington, DC) (scheduled), George Washington University (scheduled), ResponsAbility (Zurch), University of St. Gallen (scheduled), Cour des comptes de l'Etat de Genève, (scheduled), University of Cologne (scheduled), Tinbergen Institute Amsterdam (scheduled), UK Department for International Development (DFID) (scheduled), Oxford (scheduled).

2016 Yale, PACDEV Conference, Georgetown, Harvard Development Economics Retreat, Harvard Applied Statistics Workshop, European Economic Association Conference Geneva, Institute d'Economia de Barcelona, National Tax Association Conference, NEUDC conference (MIT), Research Council of the Swiss National Science Foundation (*keynote)*, Graduate Institute of International and Development Studies Geneva, Berlin Applied Micro Seminar, Zurich Conference in Economic Development.

2015 Duke, Universidad Católica de Chile, Chilean National Comptroller Agency, Berkeley, Stanford, University of Southern California, NBER Conference on Economics of Field Experiments (*discussant),* Cornell, University of Zurich, Center for Global Development, Chilean Tax Administration, Harvard Development Economics Retreat, World Bank Research Department, University of Copenhagen, Inter-American Center for Tax Administration CIAT (*keynote)*, National Tax Association Conference, Berkeley Goldman School, Stanford GSB

2014 American Economic Association Meeting (Philadelphia), Williams College, PAC-DEV conference (UCLA), NBER Crime Working group, Pontificia Universidad Catolica de Chile, Chilean Comptroller Agency, Centro de Politicas Publicas, University College London & LSE, Tax Systems Conference at Oxford, Oxford University, Behavioral Public Economics Conference at Tulane, NEUDC Conference (Boston University), Chilean Public Procurement Agency, Harvard Economics Department, Swiss State Secretariat for Economic Affairs, Conference of Swiss Economists Abroad (Swiss National Bank)

2013 American Economic Association Meeting (San Diego), Pontificia Universidad Católica de Chile, Chilean National Comptroller Agency, Ecuadorian Tax Authority, Columbia University, NEUDC conference (Harvard), NBER Public Economics Meeting (discussant), University of Lugano, Conference of Swiss Economists Abroad (St. Gallen)

2012 World Bank, Center for Global Development, International Growth Week (LSE), NBER Household Finance Group Meeting (discussant), Columbia University Tax Policy Colloquium, National Tax Association, NEUDC conference (Dartmouth), Conference of Swiss Economists Abroad (Luzern)

2011 Institute for International Economic Studies (IIES) Stockholm, CREI Barcelona, Sciences Po Paris, Toulouse School of Economics, Bocconi Milan, Harvard Business School, Chicago Booth, Wharton, Center for Global Development, George Washington University,

	Columbia Business School, CEMFI Madrid, University of Lausanne, Chilean Tax Administration, Ecuadorian Tax Administration, NBER Summer Institute Economics of Crime Meeting, NBER Summer Institute Entrepreneurship Meeting (discussant), Harvard Kennedy School, Conference on Advances with Field Experiments (Chicago University), NBER Public Economics Meeting, National Tax Association Conference, Conference of Swiss Economists Abroad (ETH Zurich)
2010	Conference on Advances with Field Experiments (Wharton University), IDRC Conference on Enforcement, Evasion and Informality (University of Michigan), Universidad Católica (Santiago de Chile), Chilean Tax Administration, NEUDC Conference (MIT)
2009	National Tax Association Conference, NEUDC Conference (Tufts University), University of Mainz, Conference of Swiss Economists Abroad (University of Basel), Swiss Development Agency

OTHER PROFESSIONAL ACTIVITIES

Service in the Academic Department:

2013 – 2016	Member, HBS Social Enterprise Core Group
2012 – 2016	Founder and Co-organizer, Cross-Harvard Development Economics Faculty Retreat
2012 – 2015	Co-organizer, HBS Entrepreneurial Management Unit Seminar
2012 – 2015	Faculty Recruiting Committee Member, HBS Entrepreneurial Management Unit
2006 – 2008	Coordinator, Harvard Development Economics Student Research Lunch
2005 – 2007	Co-founder, Academic Development Committee, Harvard Economics Department
2005 – 2007	Research Assistant to Profs. M. Kremer, A. Alesina and N. Fuchs-Schündeln, Harvard
2004	Research Assistant to Prof. Bruno S. Frey, University of Zurich

Refereeing Activities:

Journals:	American Economic Journal: Applied Economics, American Economic Journal: Economic Policy, American Economic Review, B.E. Journal of Economic Analysis & Policy, Econometrica, Economic Development and Cultural Change, Economic Inquiry, Economic Journal, Journal of Development Economics, Journal of Economic Geography, Journal of the European Economic Association, Journal of Health Economics, Journal of Human Resources, Journal of Public Economics, Management Science, Quarterly Journal of Economics, Review of Economic Studies
Proposals:	FONDECYT (Chilean NSF), Jameel Abdul Latif Poverty Action Lab

Conferences:

Organizer:	Zurich Conference on Public Finance and Development 2016-2017, Swiss Economists Abroad Conference, cofounder & organizer, annually 2006-2011
Program Committee:	European Economic Association Annual Conference 2016, Conference of the National Tax Association 2015, NEUDC Conference 2013.

Session chair: Conference of the National Tax Association 2012 & 2015, American Economic Association Meeting 2013, NEUDC Conference 2013, Swiss-US Energy Innovation Days 2014, PACDEV Conference 2016.

Keynotes: Inter-American Center for Tax Administration Annual Meeting, Research Council of the Swiss National Science Foundation

Board and Advisory Board Memberships

2014 – Peak Investment Capital, Ghana, Advisory Board: Private equity for African SMEs
2012 – Evidence Action, Board of Directors: scale-up of evidence-based development solutions
2012 – Instiglio, Advisory Board: social impact bonds in developing countries
2011 – IDinsight, Advisory Board: randomized evaluations for development organizations
2009 – TamTam - Together Against Malaria, Board of Directors: malaria prevention

Selected Consulting Engagements:

2014 – present Chilean Tax Authority on impact evaluation of recent tax reforms
2013 – 2015 Chilean National Comptroller Agency on audits and public procurement
2014 Ernst & Young, on microfinance and women's empowerment
2013 World Bank, on tax enforcement strategies towards SMEs in Tajikistan
2011 Ecuadorian Tax Authority, on effective policy evaluations
2008 – 2011 Chilean Tax Authority, on optimizing audit strategies
2004 Centre pour l'Environnement et le Développement (Cameroon), on oil pipeline construction
2003 Swiss Forum for Migration Studies, on immigrants' wage differentials
2001 Swiss State Secretariat for Economic Affairs, on Regional Development Banks
2001 United Nations High Commissioner for Refugees (UNHCR), on refugee camp management