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Blending Top-Down Federalism with Bottom-Up Engagement to Reduce Inequality in Ethiopia

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Abstract

Donors increasingly fund interventions to counteract inequality in developing countries, where they fear it can foment instability and undermine nation-building efforts. To succeed, aid relies on the principle of upward accountability to donors. But federalism shifts the accountability of subnational officials downward to regional and local voters. What happens when aid agencies fund anti-inequality programs in federal countries? Does federalism undermine aid? Does aid undermine federalism? Or can the political and fiscal relations that define a federal system resolve the contradiction internally? We explore this paradox via the Promotion of Basic Services program in Ethiopia, the largest donor-financed investment program in the world. Using an original panel database comprising the universe of Ethiopian woredas (districts), the study finds that horizontal (geographic) inequality decreased substantially. Donor-financed block grants to woredas increased the availability of primary education and health care services in the bottom 20 percent of woredas. Weaker evidence from household surveys suggests that vertical inequality across wealth groups (within woredas) also declined, implying that individuals from the poorest households benefit disproportionately from increasing access to, and utilization of, such services. The evidence suggests that by combining strong upward accountability over public investment with enhanced citizen engagement on local issues, Ethiopia's federal system resolves the instrumental dissonance posed by aid-funded programs to combat inequality in a federation.

Keywords: Inequality, Federalism, Local government, Accountability, Aid, Ethiopia.

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Research Highlights

- Has the largest donor-financed anti-inequality program in the world lessened horizontal and vertical inequalities in Ethiopia?
- Horizontal inequality decreased substantially. Donor-financed block grants increased the availability of primary education and health services in the poorest districts.
- Weaker evidence implies vertical inequality also declined, and poorest households benefit disproportionately from public service investment.
- Combined strong upward accountability over public investment with developing citizen engagement on local issues seem to drive these results.
- We estimate for key education and health *output* indicators. Effects on *outcomes* are a topic for future research.

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1. Introduction

Inequality is a large and growing issue in policy debates across both developed and developing nations. One effect of the global financial crisis that began in 2008 was to exacerbate existing levels of inequality across countries as diverse as Brazil, China, France, Greece, India, Mexico, Mozambique, Spain, Uganda and the United States; another effect was to highlight the issue *per se* as not just an economic concern, but a potent threat to political and social stability in societies poor and rich alike. The United Nations' Sustainable Development Goals recently adopted by the international community commit to reducing inequality through various targets, and inequality is at the heart of SDG16. The debate around such issues in both the academic and non-academic literatures has been rich and often forceful (Boix 2008, Boix 2015, Galbraith 2012, Houle 2009, Houle 2015, Krugman 2013, Piketty 2014, Stiglitz 2012, Stiglitz 2015, and Wade 2014a, among many others).

In developed countries, the inequality debate is conducted mainly in terms of taxation, welfare, and wage policy. Anglo-Saxon countries stress *ex-post* redistribution more, meaning taxes, transfers and public investments that reduce the inequality of market outcomes (Meade 1964, Mueller 2003, O'Neill and Williamson 2012, Pontusson and Clayton 1998). Some continental European countries, by contrast, focus modestly more on the pre-tax income distribution, which Wade terms "pre-distribution", via tax, labor market, and other regulatory policies that seek to attenuate extreme market outcomes before they occur (Atkinson 2015, OECD 2012, Wade 2014b). But in both cases the question of inequality has been treated mainly as an issue of incomes policy, with consequences that are important but not fundamental.

The stakes are much higher in developing countries that are poorer and institutionally weaker. Where fiscal resources are scarce, public services fewer and of lower quality, and

poverty far deeper, public investment in infrastructure and primary services takes on a primary role among policy responses to inequality. This is attractive for two strong reasons: (i) There is a broad consensus in the political science and economics literatures about the importance of investing in education, health, and basic infrastructure to accelerate economic growth and human development; and (ii) Expanding primary service and infrastructure networks can not only improve government responsiveness to citizens' needs, but also bolster social cohesion and expand the spatial presence of the state in a country, facilitating citizens' identification with their nation, and decreasing the risk of political instability and violence (Atkinson 2015, Barro 1997, Barro, Caselli and Lee 2013, Landa and Kapstein 2001, Lipset 1959, Przeworski and Limongi 1997, Przeworski, Alvarez, Cheibub and Limongi 2000, Sen 1999, Shorrocks and van der Hoeven 2004, World Bank 2004).

Investment programs that extend primary services and infrastructure networks to poorer, underserved areas of developing countries are thus seen as potential "sweet spot" interventions, capable of combating poverty, decreasing inequality, and underpinning young countries' nation-building efforts. Donors and international development agencies, concerned as they are with inequality and stability, are increasingly eager to add such projects to their diverse portfolios of interventions.

As Blair (2000), Faguet (2012, 2014a), Rodden et al. (2003), Treisman (2007) and many others have noted, decentralization is widely recommended as a reform that can help extend public services to areas previously underserved by centralized government, and make the state more responsive to local demand, thereby increasing both public sector effectiveness and political stability in the highly diverse societies typical of many developing countries. Partly as a result, decentralization has moved from a policy fashion in the 1980s to a broad international

movement today, happening in all of the world's regions and most of its countries (Faguet and Pöschl 2015, Rodden 2006, World Bank 1999).

Federal systems can also extend the reach of public services and make the state more responsive to demand, as Rodden (2006) and Pöschl and Weingast (2015) point out, although through subtly different legal and fiscal means in a non-unitary context. For this reason, the policy literature often treats decentralization and federalism as functional substitutes. But it is important to note that the two are different concepts with quite different origins. Decentralized systems typically locate more power at the local level (3rd tier), while federal systems tend to concentrate power at the regional level (2nd tier), which often have significant authority over 3rd-tier administrations. Different levels imply different economies of scale and scope, and hence different distributions of subnational powers and responsibilities between federal vs. decentralized systems. But both federalism and decentralization denote highly diverse sets of systems, and it is important not to exaggerate the differences.

Decentralization is a policy process and popular reform in (often but not necessarily) unitary constitutional systems. It typically involves devolving power and resources from the central state to elected local administrations, which thereby inherit responsibility for the provision of specific public services. Federalism, by contrast, is a constitutional and fiscal arrangement typically dating to the founding of a nation and/or the design of the state. Examples include the USA, West Germany (inherited by united Germany), Canada and Australia. It typically involves a decision by pre-existing (soon-to-be-regional) units to come together to form a nation with strong retained subnational (i.e. federal) political and fiscal powers and responsibilities. For this reason, 'federalization' is a much more difficult policy choice than decentralization, and accordingly less common.

The necessary implication of these two trends is that a number of externally-funded programs to reduce inequality are being undertaken in federal or decentralizing countries. This raises the worrying but interesting prospect of instrumental dissonance, as fiscal theory strongly suggests that greater *centralization* is required if the sorts of tax-and-transfer policies necessary for equalization are to succeed. Much the same is true of most externally-funded interventions, in which donors hold host governments to account for the use of aid funds. The sorts of upward accountability that connects the ultimate uses of funds to the foreign source of those funds is facilitated not by a decentralized or federal structure, with functional and political independence at multiple levels of government, but rather by centralization.

What we see across many countries thus amounts to a mostly unnoticed, probably unplanned, and as far as we know unexplored natural experiment in institutions and incentives. If theory is correct, either federalism will undermine aid programs focusing on inequality, or anti-inequality aid programs will undermine developing countries' fiscal federal relations. Either way, the mismatch between intervention and federal structure will prevent such programs from achieving the impacts that might otherwise have been expected. But it is also possible that aid programs have taken this into account, and are designed to overcome this contradiction. Some donors, for example, focus explicitly on building institutions, rather than attaining results, and have proved tolerant of the long lags involved in strengthening developing countries' capacity. Or perhaps federal institutions somehow resolve this tension internally. Alternatively, the theory could simply be wrong. These are intriguing empirical questions with important implications for institutional theory and development policy, about which much evidence is available from a broad range of countries, but which as far as we know are unexplored in the academic literature.

This paper asks: Can an aid-funded program succeed in reducing inequality in a federation? This is an empirically subtle question with interesting implications not just for inequality, but for development more broadly. We seek to answer it with evidence from Ethiopia's Promotion of Basic Services (PBS) program. Jointly financed by the Ethiopian government (50%), and donors (50%) led by the World Bank and the UK Department for International Development, PBS finances basic services in education, health, agriculture, water supply and rural roads. As primary responsibility for such services lies with the country's regional, city and *woreda* (district) governments, PBS funds are channeled through Ethiopia's intergovernmental fiscal transfer mechanism to subnational governments, where they are invested. Its main effect is to pump about $1 billion per year, mostly through woredas, into social investment in Ethiopia, making it the largest donor-supported program in the world.

In addition to hosting PBS, Ethiopia is a particularly good empirical context in which to study issues of accountability and inequality for three reasons. First, the country's size and recent development experience give it a natural prominence. Ethiopia has achieved significant improvements in basic service delivery indicators in recent years. The latest survey data show child mortality falling from 123 per thousand in 2005 to 88 in 2010, and primary net enrollment rates rising from 68 percent in 2004/2005 to 82 percent in 2009/2010. And economic growth has averaged 11 percent per year during 2004/5-2009/10, becoming more broad-based, with rising contributions from mining, services and manufacturing. As a result, the population in absolute poverty fell from 38.7 percent in 2004/2005 to 29.6 percent in 2011. Second, Ethiopia's geographic and socio-cultural diversity are among the highest in the world, providing natural sources of variation that we can exploit analytically. Ethiopia's vast system of mountains and highland plateaus is bisected by the Great Rift Valley, itself surrounded by lowland steppes and

semi-deserts. In the east are remote deserts containing some of the hottest human settlements on earth, while to the south there are tropical forests. With 93 officially recognized mother tongues and 98 ethnicities counted by the Ethiopian census, the country is also one of the most ethno-culturally diverse societies on earth. Third, the country's recent political history features dramatic changes in institutional structure and accountability, including the adoption of a unique federal system, which provide additional dimensions of interesting variation.

The rest of this paper is organized as follows. Section 2 discusses theories of accountability in the federalism and aid literatures, focusing on their implications for anti-inequality policies, before turning to empirical evidence on the same. Section 3 presents Ethiopia's fiscal context, our data, and methods used in this study. Section 4 discusses recent trends in horizontal and vertical equity in service delivery, and then analyzes the effects of aid-supported block grants to woredas on horizontal equity across woredas, and vertical equity by wealth group. Section 5 concludes.

2. Upward vs Downward Accountability: Theory and Literature Review

Theory

This paper is located at the confluence of two large academic literatures, on federalism and accountability, and aid and accountability. The size of each literature, and also the fact that many aid recipients are either federations or have recently implemented decentralization (Faguet and Pöschl 2015, Treisman 2007), both imply that we might expect to find a rich discussion taking place at this confluence. Oddly, this is not the case; the literatures acknowledge each other only infrequently and mostly in passing. In so (not) doing, they ignore the contradiction inherent in attempting to tackle inequality in a federation through international aid. This paper explores this relationship and provides new empirical evidence from an important case.

The theory of federalism and decentralization holds that devolving power and resources to subnational governments should increase the accountability of public officials to citizens, given certain minimum conditions. Most important amongst the latter are that subnational elections should be free and fair,[1] and information regarding public service demands and provision accurate and available (Channa and Faguet 2016, Faguet 2014b, Faguet and Sánchez 2013, Putnam 1993, Manor 1999).[2] Greater accountability happens via the re-orientation of public officials' incentives, from upward-looking, fixed on the objectives of higher-level superiors at the center, to downward-looking, fixed on the opinions and well-being of subnational voters (Faguet and Ali 2009, Faguet 2012). The end effect of this change is to increase the overall responsiveness of the state to citizens.

But as many scholars have pointed out, minimum conditions may not hold. The beneficial effects of decentralization can be undermined by elite capture of the local political process, and the distortions of political representation in small electoral environments (e.g. Bahiigwa, Rigby, and Woodhouse 2005, Crook and Sverrisson 1999, Ellis and Bahiigwa 2003, Ellis and Mdoe 2003, Francis and James 2003, Prud'homme 1995, Smith 1985, Treisman 2007 and Wong 2012). On the other hand, it is worth noting that elite capture is not an exclusively local phenomenon. As Hacker and Pierson (2011) show, the much greater rewards available to those who capture national government lead the richest interests to invest enormous sums in the attempt. National capture may be less frequent than local capture, but its effects are likely to be far more damaging (Faguet, Fox and Pöschl 2015).

By increasing the identification of citizens with their communities and regions, and increasing politicians' incentives to respond to smaller groups of voters, federalism might have the unfortunate consequence of increasing inequality in a society if it reduces the probability that

voters in richer districts choose to tax themselves and transfer revenues to poorer districts. Hence breaking down centralized government into a larger number of smaller subnational units might increase public-sector accountability and at the same time decrease social solidarity. This association of federalism and decentralization with lower redistribution and higher inequality is a well-established theoretical postulate (Oates 1972, Rodden 2006, Treisman 2007, Wildavsky 1984), although the empirical evidence is far less convincing (Parry 1997, Shankar and Shah 2003, Carreras 2015).

These basic propositions belong to what is now called First Generation Fiscal Federalism (FGFF), as distinct from the more recent, more nuanced Second Generation Fiscal Federalism (SGFF). FGFF is broadly normative, and tends to assume that public decision-makers are benevolent welfare maximizers (Oates 1972, Rubinfeld 1987). SGFF adds an additional, complicating layer to the model, assuming that public officials have self-interested goals, which they pursue under incentives set by political institutions, leading to behaviors that often diverge significantly from social optima (Pöschl and Weingast 2015, Weingast 2009). Under SGFF, certain functions and revenue sources are considered unsuitable for decentralization to subnational governments. And subnational governments will not have discretion over all functions and revenues that are devolved, as they may be subject to national controls and regulations in the name of, for example, ensuring common service standards, or mitigating subnational inequalities. SGFF can thus explain striking empirical regularities, such as the limited devolution of tax powers across developing countries, or the preponderance of formula-based revenue sharing with little or no local policy discretion. It follows that SGFF theory does not advocate radical decentralization, but rather the design of intergovernmental systems that

assign authority and tax powers according to the relative advantages of central vs. local governments, and balance upward against downward accountability.

Where aid is concerned, external interventions in developing countries often impose (a very particular form of) upward accountability to donors on developing country governments, often displacing whatever downward accountability to voters there may have been previously (Sachs 2005, Brett 2009, Williamson 2010, World Bank 1998, World Bank 2004). This is very widely held to be corrosive for developing democracies, with a logic that is intuitive and compelling (Easterly 2001, Wenar 2006). But it is not necessarily bad for inequality. How aid – and the upward accountability it usually implies – affects inequality and growth depends on recipient countries' previous quality of governance, as well as the objectives and level of engagement of donors (Burnside and Dollar 2000, Collier and Dollar 2002, Kanbur 2004, Kanbur 2005, Ravallion 2001).

It is easy to see how aid flows that undermine accountability can exacerbate inequality by insulating politicians from broad societal goals and inuring them to the fate of poorer citizens. In this case aid acts like a natural resource curse (Bauer 1981, Bauer 1991, Boone and Faguet 1998, Djankov et al. 2008, Easterly 2006, Morrison 2010), detaching government leaders from their citizens' welfare and focusing their attention on external actors' priorities.

But it is also likely that a developing country with poor governance may see improvements in inequality if donors target aid resources effectively and impose efficient *upward* accountability on government. For such results to obtain, two conditions are necessary: (i) donors fund effective interventions that lessen inequality, for example by expanding education or health services, or income opportunities, for the poor; and (ii) donors' level of engagement is sufficiently high and sustained that the upward accountability they impose

represents a binding constraint on public officials' behavior, in effect substituting for inadequate downward accountability. Where both conditions are met, aid programs may lead to investments or policy reforms that reduce inequality and spur growth, rather than disappear into clientelism, corruption, or unrelated public expenditure (Dalgaard and Hansen 2001).

How often these conditions are met is an empirical, not theoretical, question, on which researchers and practitioners sharply divide. Easterly and Bauer are among the most prominent voices arguing that donors' interventions are typically inefficient or ineffective, and their engagement too low and unsustained, to impose binding accountability on developing-country officials with interventions that achieve stated goals. As a result, aid money is often diverted, wasted or stolen, and progress towards development goals, including inequality, is absent. Others, most prominently Sachs, argue that forceful aid interventions achieved dramatic results under the post-war Marshall plan, and could do so again if properly structured and funded. It is fair to characterize this debate as unresolved, not least because the goals and modalities of aid are in practice so diverse, and its role in the development process so complex. It is also fair to note that if conditions (i) and (ii) are individually demanding, they are jointly more demanding still.

Where does this leave us? Federal governments are effective when they nurture strong downward accountability of public officials to voters in local and regional sub-units of the state. But combating inequality requires stronger central government institutions with efficient nationwide tax collection that can redistribute resources from richer to poorer districts. This implies not just technical competence, but comparatively stronger upward accountability of subnational officials to a center that is in effect undermining the resource base, and hence power, they can deploy.

This contradiction is significantly compounded by aid that seeks to reduce inequality. For any aid intervention to succeed in a federation, downward ties of accountability must be replaced with upward accountability to donors, who specify goals, finance specific actions, and measure results; this is all the more so for anti-inequality aid programs. Can aid-funded programs to decrease inequality succeed in a federation? Will upward accountability succeed? Or will the internal logic of federalism be distorted by external demands and extraneous norms insufficient to constrain officials' behavior, undermining the institutional integrity of government and reducing accountability overall?

The Ethiopian Institutional Context

We argued above that Ethiopia is a particularly interesting empirical context in which to explore such issues. Its modern political and institutional history underline this further. Under the Ethiopian Empire (1941-1974), government was highly centralized, with all important decisions originating in Addis Ababa, little citizen participation, and a highly unbalanced pattern of regional development. The notion of downward accountability to citizens essentially did not exist (Noman et al. 2012). The empire was succeeded by the Dergue, a military regime (1975-1991) which retained subnational governments as appendages of the center (Word Bank 2013a).

The overthrow of the Dergue in 1991 by the Ethiopian People's Revolutionary Democratic Front (EPRDF) saw the reversal of over a hundred years of ethnic homogenization. More than the collapse of a particular regime, this marked the end of a project, dating back to 1889, of creating a 'modern', centralized Ethiopian state around a highland ethnic core (Clapham 1994). The EPRDF began as a federation of regional, ethnically based guerrilla movements that came together to depose the Dergue. Some were stronger than others, but none was predominant, so rebel leaders quickly opted for a federal structure to their new government, explicitly

acknowledging a right to self-determination for Ethiopia's different "nations and nationalities". The country was divided along ethno-linguistic lines into nine regional states, with extensive, constitutionally guaranteed devolution of political, administrative, and fiscal authority to regional and local governments, and systematic affirmative action towards historically disadvantaged regions. This strategy gelled in two waves of decentralization. The first wave, during the transition period (1991-1994), devolved power and resources mainly to regions. A second wave in 2002 pushed decentralization further downwards to woredas, which became primarily responsible for service delivery in education, agriculture, health, water, and roads, paid for out of Woreda Block Grants. Thousands of civil servants were deployed from the center to the regions and woredas.

The new government embarked upon a long-term strategy of economic and state transformation founded in what the political leadership claimed was a vision of a strong "developmental state" (Noman et al. 2012), which intervened extensively in markets and guided the country's development trajectory with a firm hand. The official logic underpinning this strategy is that in a poor, backward country like Ethiopia, the economy will tend to be dominated by rent seeking activity, and electoral competition by patronage and clientelism. Significant investments in the activities required for 'value creation' that lead to high and sustained growth require 'an ideologically committed state that rules in the interests of the collectivity', rather than specific interests, and maintains a long time horizon (de Waal 2013). This strategy is expressed in the Growth and Transformation Plan (GTP), which sets explicit, detailed targets, actions, and goals for national, regional, and local-level officials.

Such a developmental state could draw on entrenched traditions of respect for authority, and social relations of command and subordination in Ethiopia (Lefort 2013), greatly facilitating

the government's task. For example, the logic of voting in rural areas is often about correctly identifying the candidate who will win, and demonstrating loyalty by casting one's vote accordingly (Lefort 2007 cited in de Waal 2013). This is analytically and sociologically very different from the logic of preference revelation and grass-roots organization that underpins western notions of voting, with entirely different consequences.[3] Similarly, the Ethiopian concept of *mengist*, which elides notions of authority, government, regime, and stability within a single term, reflects Ethiopia's heritage of absolutism. This has strong implications for citizens' conceptions of citizenship and individual agency, and undermines the possibility of leaders' downward accountability to voters (Poluha 2010, World Bank 2013b).

In practice, note Yilmaz and Venugopal (2008), "The progressive features of fiscal federalism in Ethiopia are not accompanied by similar political arrangements. Ethiopian local governments have a high degree of upward accountability mechanisms without the accompanying discretion and downward accountability mechanisms." Decentralization is designed to maximize hierarchical controls over local government finances and administrations, and minimize substantive political competition. The main channel for central control is not constitutional nor legal, but rather the political party structure. The party thus plays a "vanguard" role, maintaining strong revolutionary leadership, mobilizing the "often backward, uneducated" peasantry, keeping them out of the nets of anti-democratic rent seekers, and coordinating their march towards development (Lefort 2013).

This dynamic is most vividly illustrated in the establishment of Ethiopia's Development Army, which reaches down to the family level to organize communities into small groups charged with implementing local elements of the GTP 'in a harmonized manner'. Rural households are grouped into development teams consisting of 20-25 families. These are further

divided into groups of 4-5 families, which are led by one 'model family' that leads the rest in the acquisition of skills and attitudes conducive to the implementation of official policy (World Bank 2013b). The ultimate aim, according to the regime, is popular mobilization for the transformation of Ethiopia's society and economy in an orderly manner.

The result is a uniquely Ethiopian version of federalism, distinct in both its origins and its blend of structure and incentives. The latter resolves the theoretical contradiction of aid-sponsored inequality programs discussed above in favor of upward accountability. Its formal institutions notwithstanding, it would be folly to conceive of Ethiopia as a de facto federation with strong downward accountability of subnational officials to regional and local voters. Though implied in Ethiopia's laws and constitution, in practice this simply does not exist. Hence for the Ethiopian case, there is no contradiction between external interventions and the internal logic of government. Both prioritize upward accountability. And the latter, at least, is not only observable but greatly refined.

Empirical Studies

A small but vibrant and growing empirical literature exploits the rich empirical setting that federal/decentralized countries provide to study why accountability varies across governments, and how this affects different aspects of development. Focusing on subnational variation among Mali's 703 communes, Gottlieb (2015) finds that political parties have a strategic interest in colluding among themselves, rather than competing, to quell opposition, weaken democratic accountability, and so divide public resources among themselves rather than providing public goods for citizens. One view of Ethiopia's ruling EPRDF is as a more advanced expression of this dynamic, where collusion among different – here regionally-based – parties has been institutionalized in a federal political party structure.

In a similar vein, Casson and Obidzinski (2002) find that decentralization in Indonesia facilitates collusion amongst bureaucratic actors, who then promote depredatory logging from which they benefit directly. And Chanie (2007) finds that clientelistic relations between regional and central political parties in Ethiopia, channeled via intergovernmental fiscal relations, undermine the downward accountability that subnational governments should have to voters, replacing it with upward obedience to national political masters. Likewise, Ishiyama's (2010) political analysis of federal disbursements in Ethiopia is consistent with a top-down strategy of buying off subnational opposition in order to maintain the control of a hegemonic ruling party. And lastly, Caeyers and Dercon (2007) find that poor households well connected to political leaders were significantly more likely to obtain food aid following the 2002-03 Ethiopian drought than villagers who were vertically unconnected.

3. Fiscal Context, Data and Methods

3.1 Fiscal Context

In 2003, the Ethiopian government instituted fiscal and administrative decentralization to the lowest tier of government, woredas. A large part of this decentralization is Intergovernmental Fiscal Transfers (IGFT), also known as block grants, which transfer funds from the center to regions, and from regions to woredas. IGFT allocations to regions are based on a formula that allocates resources according to "expenditure need" (measured by variables such as the poverty level, infrastructure gap, population, and degree of historical disadvantage), "revenue-raising capacity", and "cost of living". Transfers from regions to woredas are based on similar, regional formulae. At woreda level, funds are used to finance administrative and service delivery expenditures. IGFTs aim to distribute resources equitably and efficiently, and are a key element in the government's strategy to reach the MDGs.

On average, IGTFs account for over a third of total government expenditure. The remainder come largely from own-tax revenues, which are collected at all levels of government in Ethiopia (woreda, regional and national). IGTFs are large and growing. Over the past ten years, block grant allocations have grown from around ETB 7 billion in fiscal year 2005/06 to more than ETB 42.5 billion in fiscal year 2014/15, which implies an annual average growth rate of about 25%. In real terms, their value has increased by almost three-quarters (Table 1). At the regional level IGFTs account for about 80% of total budgetary resources, and more for woredas.

[Table 1 about here]

The fiscal transfer system has supported rapid increases in social sector investment over the past decade. Figure 1 shows the evolution of investment in education and health disaggregated by woreda, regional and national governments. Figures are upwardly cumulative, meaning that regional figures include investment by woredas, and national figures include investment by regions and woredas. The graphs show accelerating investment in education and health. Investment rises sharply in education after 2008/09, and more evenly in health. Investment in education is dominated by woredas and national government, while regional governments play a large role in health and the center adds relatively little. It is notable that woredas play an important role in both sectors, contributing between 32 and 70 percent of total national investment over the period.

[Figure 1 about here]

To better manage these increasing fiscal flows and service responsibilities, central government has mandated a number of strategies to enhance citizen engagement at woreda level. In Ethiopia, "citizen engagement" implies improving the accountability of woreda governments to citizens by boosting citizen participation in local decision-making, improving the financial

transparency of woredas, and implementing tools of "structured social accountability". The national government has also instituted a formal, two-part grievance redress mechanism, with one part anchored in Regional Grievance Handling Offices (part of regional governments) and the other in the Office of the Ombudsman. Formal impact evaluations of these initiatives conducted under PBS show positive results, while admitting that it is still too early to reach definitive conclusions.

Examples of structured social accountability tools include community score cards, citizen report cards, participatory budgeting, and interface meetings between local service providers and users. These have been implemented in hundreds of woredas. Grievance redress mechanisms allow an impartial third party to review complaints by citizens against woreda officials, typically concerning poor services or benefits withheld, and propose binding solutions. Financial transparency tools disclose information on regional and woreda budgets, service delivery targets, and performance.

Both roll-out by the center and take-up by regional and local governments have been impressive. More than 90 percent of woredas and city administrations now post financial information publicly, and further disseminate it via, for example, radio, television, brochures, and printed t-shirts (Khan et al 2014). Social accountability programs are currently being implemented in 25 percent of all woredas nationwide, whereas financial transparency and grievance redress mechanisms have already reached all woredas.

These actions have expanded local transparency significantly, as financial and operational information on woreda activities was not released to the public before 2006 (Khan et al 2014). Theory predicts that improving such engagement will enhance accountability across different levels of government. While a lack of detailed data prevents us from exploring this

question quantitatively, impact evaluations and participant surveys carried out by NGOs, the government, and donors, plus much anecdotal evidence, suggest that accountability and service delivery are indeed improving in many woredas.

Since 2006, external donors have supported the IGFT system through the PBS program. During these periods, donors contributed about half the budget of PBS, with the government financing the rest. Donor finance amounted to some 20-30% of the cost of the total block grant system during this period, and is conditioned on transfers meeting key criteria, including equity, additionality, and efficiency, all of which are actively monitored. As envisaged at its design, PBS has contributed to large increases in certain types of staff financed through regional and especially woreda budgets, which has in turn led to substantial improvements in access to basic services. Table 2 shows changes in some key indicators since 2006. Starting from a very low base, Ethiopia's improvements over the past decade represent a significant achievement.

[Table 2 about here]

3.2 Data

Our data source for horizontal or geographic equity analysis is the Poverty and Social Impact Assessment (PSIA) database (Khan et al. 2014), which combines data from the 2007 census and the 2010/11 Household Consumption and Expenditure Survey, with data from five federal government ministries and agencies (Health, Education, Agriculture, Water and Energy, Finance and Economic Development) and the Central Statistical Agency (CSA). Woreda-level poverty rates are based on small area estimation of poverty levels. Our "sample" is the universe of Ethiopian woredas, as listed in the 2007 census.[4] The database includes information on expenditures by sector and year (2008/09-2011/12) from the Ministry of Finance and Economic Development; key service outcomes in education (enrollment, 2007/08-2012/13) and health

(contraceptive acceptance, antenatal care, deliveries by skilled attendants, 2008/09-2011/12) from woreda-level sectoral administrative data; and information on ethnicity, the frequency of droughts, and other control variables. In addition, regional data on capital expenditures and zonal data on crop yields have been linked to woreda data.

An important caveat is that our horizontal equity analysis is based on woreda-level administrative data. The capacity of regional governments to collect this data varies, and as a result the overall quality of administrative data is modest. For example, simple inspection reveals suspiciously high and low outlier values. Accordingly, we exclude those woredas reporting health care coverage levels above 100 percent (e.g. antenatal care). For education, we additionally exclude bottom outliers. We do not trim bottom outliers for health indicators as zero or small values are possibilities.

Discrepancies between administrative data and more reliable household survey data – which do exist – affect means and not trends over time. The Ethiopia Demographic Health Survey (DHS), and other internationally accepted surveys, show time trends similar to those shown by administrative data, albeit with lower means. Hence the direction of our findings, which uses both DHS survey data and administrative data, are reliable.[5] Another limitation of administrative data is its scope. There is no information at the local level for the years before decentralization to woredas, limiting the time scale we can analyze.

By contrast, our vertical equity analysis focuses on households and individuals, and so uses available DHS data, from 2000, 2005, 2011 and 2014. The 2000-2011 surveys are from the DHS program, and the 2014 survey is a mini-DHS implemented by the Central Statistical Agency. These are far more reliable, representative data, generated according to internationally-recognized household survey standards.

One reason an analysis of this sort has not been undertaken for Ethiopia until now is the absence of woreda-level data on local economic, demographic, fiscal and other characteristics. Indeed, it is difficult to overstate the difficulty of doing subnational empirical work on Ethiopia. When we began this project, relatively little subnational data was collected, the data was often of poor quality, and few attempts were made to systematize the results into any obviously comparable framework. Building the database on which the following analysis is based was a huge job, and is itself an important contribution of this research.[6]

3.3 Estimation Strategy

The econometric analysis explores the following four propositions. Three of the propositions establish a link between block grants and spatial or horizontal equity in service delivery. The last proposition focuses on vertical equity.

Proposition 1: Woreda block grant allocations are pro-poor, implying that $\beta_1>0$ in the following specification:

$$\Delta G_i = \alpha + \beta_1 Poverty_i + \gamma Region_i + \delta_t + \varepsilon_i \quad (1)$$

where ΔG is the deviation of the per capita block grant allocation from the mean (in percent), *Poverty* is woreda-level poverty based on the Ethiopia poverty map, and *Region* and δ are region and year dummies respectively, for woreda i and year t. We estimate using pooled OLS. If $\beta>0$, then the higher the woreda poverty level the higher its allocation, and the proposition holds. This proposition is obvious by the program's design. However, other factors are also taken into consideration. In addition, the woreda level poverty rate, which is obtained from the small area estimation, was not used in the allocation of block grants. Therefore, validating the program's intent is a necessary step in establishing the association between poverty rate and resources transferred, to increases in access, to basic service delivery in woredas.

Proposition 2: There is a negative correlation between a woreda's headcount poverty rate and indicators of service delivery in that woreda.

Proposition 3: Following propositions 1 and 2, a block grant system that allocates proportionally more resources to the poorest woredas will also improve spatial equity in service delivery outcomes. We estimate this using the same approach as Khan et al. (2014), which showed that per capita block grant allocations were directly linked to service delivery outcomes, using the following equation:

$$Outcome_i = \alpha + \beta_1 Recurrent\ Expenditure_i + \beta_2 Capital\ Expenditure_i + \varepsilon_i \quad (2)$$

where *Outcome* is various outcome variables for woreda *i*: for education, net primary enrollment rate; and for health, contraceptive use, antenatal care utilization, and births by skilled birth attendant; *Recurrent Expenditure* is yearly expenditure per capita in the relevant sector; and *Capital Expenditure* is capital expenditure per capita. We additionally control for year, percentage of rural population, and percentage of certain historically disadvantaged ethnic groups, the latter two indexed by woreda. We estimate using pooled OLS.

Proposition 4: Increased coverage of services in poor woredas should widen access to, and utilization of services by, the poor. Availability of services in relevant areas should encourage poor households to use them, as distance becomes less of a constraint. The block grant system will thus promote not only horizontal, but also vertical, equity. All the dependent variables analyzed for vertical equity are binary, such as enrollment or non-enrollment, or utilization vs. non-utilization of health services. In our data, the dependent variable takes value 1 for enrollment or utilization, and 0 otherwise. We therefore estimate a logistic regression model to establish a relationship between the binary outcome dependent variable under consideration and a set of explanatory variables. The logistic regression estimated for each outcome is as follows. Let **y** be

the binary education or health outcome variable under consideration, with values of 0 (for non-enrollment or non-use of service) and 1 (for enrollment or use of service); let *p* be the probability that **y**=1, i.e. *p* = prob (**y**=1). Let $\mathbf{x_1, \ldots, x_k}$ be our explanatory variables. Then the maximum likelihood estimation of logistic regression of the outcome **y** on predictors $\mathbf{x_1}$, …, $\mathbf{x_k}$, estimates parameter values for $a_0, a_1, \ldots, a_k$. In probabilistic terms, the logistic regression model takes the form: $p_i = \exp(a_0 + a_1\mathbf{x_1} + \ldots + a_k\mathbf{x_k})/(1+\exp(a_0 + a_1\mathbf{x_1} + \ldots + a_k\mathbf{x_k}))$. Calculating the logit or log odds yields the following equation:

$$\text{logit}(p_i) = \log(p_i/(1-p_i)) = a_0 + a_1\mathbf{x_1} + \ldots + a_k\mathbf{x_k} \quad (3)$$

We examine the dynamics in the odds of receiving services over the 2000-2014 period, while controlling for other correlates. A decline in the odds ratio associated with the wealth index would imply narrowing wealth-related inequality. Separate regressions investigate trends in the bottom vs. top 20% of households.

4. Results

4.1 Trends in horizontal and vertical equity in service delivery

This section presents trends in horizontal and vertical equity in selected education and health services: net enrollment ratio (NER), contraceptive acceptance rate (CAR), antenatal care (ANC), and delivery by skilled birth attendants (SBA). We compare values in the poorest group (1st quintile, q1) to those of the richest group (5th quintile, q5) in absolute and relative terms. Absolute equity measures differences in values for the top vs. bottom 20% (q5-q1), while relative equity measures their ratio (q1/q5). For horizontal equity analysis, 'groups' refers to the poorest vs. richest woredas. For vertical equity analysis, by contrast, 'groups' are the poorest vs. richest households.

Table 3a and 3b present trends in horizontal and vertical equity in education and health services in Ethiopia, in both absolute and relative terms. Horizontal equity is for 2008-2013, while vertical equity is for 2000-2014.[7] In education (NER), no considerable horizontal inequality is observed between the poorest and richest woredas. But there is vertical inequality, with household-level data showing a much lower net attendance rate for children from the poorest households vs. children from the richest households. But the data also show progress over time towards vertical equity. Relative inequalities improved from 0.31 in 2000 to 0.58 in 2014. Likewise, the absolute difference between richest and poorest declined by 13 percent, from 47 percent to 34 percent. Both relative and absolute inequalities show a narrowing vertical gap in primary enrollment rates between the poorest and the richest groups.

[Tables 3a & 3b about here]

Health service indicators (CAR, ANC and SBA) are slightly more spatially differentiated than education. Coverage of these services in the poorest woredas ranges between 2 and 9 percentage points lower than the richest woredas. Differences are more pronounced at the household level. The difference between ANC utilization by women from the richest vs. poorest households in 2000, for example, was 26 percent. This increased to 46 percent in 2014. Similarly, the gap in SBA rates increased from 20 to 51 percentage points. In relative terms, however, the evidence shows progress towards health equity. The ratio of contraceptive acceptance rate in the poorest vs. richest groups improved steadily from 0.13 to 0.54 between 2000 and 2014. Similarly, relative equity in ANC utilization improved slightly during the same period: from 0.14 to 0.16, as for SBA: from 0.04 to 0.08.

Absolute and relative measures show mixed results for some health service indicators. Moreover the two measures are somewhat limited, presenting only inequalities between the

poorest vs. richest extremes. A more comprehensive trend in inequality of service outcomes is presented in Figure 2. The figure shows concentration curves for selected education and health services in 2000 and 2014. The vertical axis shows the cumulative proportion of beneficiaries receiving a service, while the horizontal axis shows the corresponding cumulative total of the relevant population. In each graph of Figure 2, the 45-degree line from the origin is the equality line. Any deviation from this line shows inequality; a line below the equality line shows pro-rich inequality. Our evidence shows that women in better off households benefit disproportionately from public health services in Ethiopia. Likewise, primary school attendance is higher for children from better off households. While these results are not surprising, the trends are worth noting. For both education and health, the 2014 lines are all much closer to the equity line than those of 2000. In health services this is clearest for contraceptive use, but also visible in ANC and SBA. All cases thus show a progression towards equality.

[Figure 2 about here]

In sum, all indicators of horizontal equity point to improved access to services across all quintiles. Levels data often show slightly higher levels of access for richer quintiles than poorer ones. The difference between these groups has remained constant or, in the case of health, slightly improved over the period examined. A similar trend is observed for vertical equity. Access has improved for all groups. Despite large absolute differences, relative inequality is narrowing. Although progress indicators in horizontal and vertical equity are substantially different, the overall evidence is clear and shows improvements in equity. In the next sections, we explore the propositions while controlling for confounding factors.

4.2 Does the block grant system promote geographic equity in service delivery?

We first estimate equation (1) to investigate whether woreda block grants are positively associated with the poverty headcount. We then examine whether woreda poverty rates are linked to poor service delivery outcomes. If both relations hold, we infer that the woreda block grant system promotes reductions in geographic inequity.

Are block grants pro-poor?

Table 4 presents results for equation (1). The dependent variable is the deviation from the mean in percent of per capita woreda block grants. The explanatory variable is the head count poverty rate, controlling for regional differences. The results show that the woreda head count poverty rate is significant in determining the per capita level of woreda block grants. A 1% increase in the poverty head count is associated with a 0.12% increase in per capita mean expenditure.[8] Aggregated to woreda level and over time, such differences can translate into significant improvements in access to basic services in poorer woredas.

[Table 4 about here]

Is poverty headcount linked to poor service delivery?

The second proposition concerns a possible inverse relationship between the poverty headcount and service delivery in a given area. Results are presented in Table 5. The results are based on a regression of the poverty rate of woredas and outcomes controlling for year and region. As expected, the results show clearly worsening service delivery as the poverty headcount increases, in the sense of lower enrollments and utilization of maternal health services.

[Table 5 about here]

Can block grants improve results in the bottom 20% of woredas?

Equations (2) and (3) were tested on the lowest quintile of woredas in terms of poverty headcount. We then compare these results to national level results. The results in Table 6 show that increases in per capita spending are associated with improved outcomes both nationwide and among the poorest woredas. Across the board, education expenditure is associated with higher enrollment rates, and the effect is large. Likewise, access to skilled birth attendants increases substantially as health expenditure increases. Even more strikingly, these associations are greater among the poorest 20% of woredas than in the national sample for both NER variables and SBA. The same trend holds in the national sample for CAR (when lagged by one year) and ANC, but disappears among the poorest woredas for ANC and turns negative and significant for CAR. Overall, these results paint a positive picture of block grant expenditures improving service delivery across Ethiopia and decreasing spatial inequality.

[Table 6 about here]

4.3 Does the block grant system promote vertical equity in service delivery?

This section presents multivariate analyses of vertical equity in education and health services. We extend the analyses from the bivariate trends presented earlier in Table 3b and the concentration curves (Figure 2) to control for compounding socioeconomic and geographic variables. We estimate equations for net current primary education enrollment, modern contraception use by married women, antenatal care visits, and skilled birth attendance. For each outcome, we estimate four specifications. Model 1 and Model 2 compare the odds of receiving a service in 2000 (earliest survey year) and 2014 (latest survey year) respectively. This comparison mirrors the concentration curve analysis presented earlier. Models 3 and 4 are restricted to the poorest and richest wealth groups in program areas. We focus on the odds of receiving the

service over time given the wealth index and time trend, controlling for other socioeconomic, demographic and regional variables.[9]

We estimate logistic regressions of enrollment and utilization of services and report the odds of utilization of the services. As the fitted models are correlational in nature, we refrain from a strict interpretation of the coefficients as causal relationships.

Net primary school attendance: Table 7 presents correlates of net primary attendance for school age children (7-14 years old). Among our main variables of interest, the time trend is a more important predictor of child enrollment than household wealth; the odds of enrollment have improved over the study period. Models 1 and 2 show that the odds of enrollment for children from the highest wealth quintile were much higher in 2000 than 2014. While socioeconomic status is still important, the results indicate a narrowing in wealth-related inequality over time. Results are similar in both full and restricted models, and hence robust to changes in specification. Other important determinants of primary school enrollment include place of residence, age, gender and mother's education, all with the expected signs. As expected, children from rural areas have a lower chance of being in school that those from urban areas. Boys are more likely than girls to be in school. Children whose mothers have some education are also more likely to be in school. Other controls in the model include a dummy for emerging regions historically disadvantaged in terms of the availability of health and education facilities. Taken together, the odds that a child from one of these four regions is enrolled is lower. However, as presented in Models 1 and 2, most of these determinants became less relevant as enrollment expanded over time.

[Table 7 about here]

Utilization of modern contraceptive methods: Table 8 presents the determinants of modern contraceptive use by currently married women aged 15-49 years. Our results show narrowing inequality in contraception use. A comparison of the two specifications shows narrowing wealth-related inequalities. Other correlates of contraceptive use are as expected: utilization is much higher in urban areas and among younger women with some education. It also appears limited in emerging regions.

[Table 8 about here]

Antenatal services from skilled health professionals: Our dependent variable is four or more antenatal care visits from a skilled health professional. In table 9, models 1 and 2 show a narrowing trend in inequality. This is also apparent in our results from separate specifications for the poorest and richest quintiles.

[Table 9 about here]

Delivery by a skilled birth attendance: In table 10, results from 2000 and 2014 show a tendency towards narrowing inequality, similar to other services. On the other hand, year dummies (models 3 and 4) show significant improvements over the past fifteen years. But these improvements are stronger for the richest quintile compared to the poorest. This suggests there has not been a strong catching-up tendency by poorer woredas.

[Table 10 about here]

Two broad conclusions can be drawn from our vertical equity results. First, there has been growth in the net attendance ratio, as well as access to and utilization of health services across the country. This is true across full models that compare progress over time, as well as restricted models for the poorest and richest wealth groups.

Second, the poorest benefited more from this progress. This is captured by the change in the odds of receiving these services from 2000 to 2014. Wealth differences were key in influencing service delivery in earlier years. This has, however, declined over time, implying narrowing wealth-related inequalities. Separate estimations for the poorest and richest quintiles produce similar results. In the latter, at least some trend dummies are significant in all outcomes. Coefficients and significance levels tend to be stronger for the lowest quintile. All of this implies pro-poor progress.

Analysis in this section has focused on how the poor fared in access to selected services over the study period (2000-2014). The results confirm evidence from our concentration curves. But it should be noted that these results are correlational in nature. They are not sufficient to claim causality from the allocation of resources by block grants to equity in access to services. The claim of association is based on a combination of results, starting with the horizontal or geographic equity analysis, which does find a role for block grants in decreasing inequalities between woredas, and the fact these services are primarily delivered through public facilities. On the vertical side, the geographic expansion of services created opportunities for more and more people to access these services, resulting in a decline in wealth-related inequalities of utilization of such services. These results thus suggest that increased resources through block grants that targeted these services have contributed to the decline in horizontal or geographic inequality that we detected, and thence to a fall in wealth-related vertical inequality.

Finally, it is important to note key limitations of this study. First, we examined the dynamics of equity based solely on changes in access to basic services. Obviously, access to basic services alone is a limited indicator of progress. While expansion of services is an important step in reaching more people, especially in marginalized or remote areas, we cannot

claim any concomitant improvements in the outcomes that these education and health services imply. Second, our study explored only two sectors: education and health, and even there examined only a few indicators. Availability of data that could be used for both geographical and vertical equity analyses dictated the choice of sectors and indicators. Third, we are limited by the quality of the administrative data we use for some of these exercises, which is not high.

5. Conclusions

We explore the institutional contradiction of implementing aid-financed programs to combat inequality in federal countries by analyzing results from the largest donor-financed program in the world: Ethiopia's Promotion of Basic Services Program. Aid largely relies on the principle of local officials' upward accountability to higher levels of government, and eventually to donors. But federalism shifts the accountability of subnational officials downwards to regional and local voters. What happens when aid agencies fund anti-inequality programs in federal countries? Does federalism undermine aid? Does aid undermine federalism? Or can the political and fiscal relations that define a federal system resolve this contradiction internally?

We present evidence showing that Ethiopia's woreda block grants system promotes geographic and vertical equity in health and education outcomes. Block grants are positively associated with the poverty level: more resources are transferred to woredas with higher poverty rates. Poverty is negatively associated with basic service sector outcomes: a higher poverty rate implies a lower level of outcomes. And spending at the woreda level improves outcomes for most basic service sector indicators. These results imply that Ethiopia's block grant system is helping narrow the gap between lagging and better-off woredas, and also between poorer and wealthier households. Ethiopia's health and education indicators have shown substantial improvement across the board since the 1990s. Poorer woredas and poorer households have

improved even faster. These results dominate other cultural and socioeconomic factors that push in the opposite direction.

Our results should be read with three important caveats. First, our evidence concerns service delivery outcomes, not ultimate outcomes, such as increases in students' knowledge or improvements in citizens' health, which cannot necessarily be assumed to follow. Second, decreasing inequality should not obscure the fact that the quality of public services still varies greatly across woredas and across regions. The administrative data we use do not permit the measurement of service quality. More generally, we are limited by poor data availability. The subject would benefit from more work with more outcome indicators. And third, Ethiopia's federal system is tied to its very particular history, and unlike those of other countries. Hence our findings are likely to be highly specific to Ethiopia.

What drives these results? Convergence in different health and education indicators, sustained over time and across Ethiopia's remarkably diverse regions and ethnic groups, implies a powerful process at work. Teasing out exactly how this process works remains a subject for future research with more detailed institutional data. But we can nonetheless hypothesize that such a process is unlikely to be driven either by upward or downward accountability alone, but rather by some form of synthesis of the two. As Eaton et al. (2011), Faguet (2012), Smoke (2001), and others point out, a well-designed decentralized system does not *replace* upward with downward accountability any more than it *replaces* central with local government. Decentralization, rather, combines the two in a more complex synthesis that is superior to either independently when it successfully blends central government's superior resources and technical expertise with local government's superior knowledge of the conditions, needs, and voter preferences of a particular locality.

Our evidence suggests that Ethiopia's federal system combines strong upward accountability for public service standards, outcomes, and broader development goals with robust local inputs of what Ostrom et al. (1993) call "time and place information"; this improves the effectiveness of centrally-directed public investment by both adapting services to local conditions, and mobilizing citizens for their use. Compared to other African countries, Ethiopia's system of accountability is notable in two ways. First, nested and cascading federal accountability appears to be strongly enforced and unusually effective, with central government holding regions responsible, and regions holding woredas responsible, for the use of public resources to meet the Growth and Transformation Plan's clearly-specified development targets, which cascade similarly through the federal structure.

Second and more interestingly, Ethiopian decentralization appears to have created space for citizen engagement on local service delivery issues, despite limited space for engagement with national decision-making. This has occurred both through the official channels discussed above, and in less mediated ways, as citizens spontaneously seek to influence local government decisions. It is implied in the success of centrally-defined health and education policies across very different woreda contexts, and also evident in the speed and frequency with which woreda officials are changed in response to local complaints of ineffectiveness or corruption. We speculate that this is because, much like China, the government's political legitimacy rests largely on sustaining development. Actively coopting citizens at the grass roots into the Growth and Transformation Plan can not only aid progress towards development targets, but also control the channels and agendas of citizens' engagement with politics in a way that is convenient for the ruling party. The Development Army, described above, provides one obvious example of how the government seeks to graft bottom-up engagement onto top-down accountability.

The suggestion is that Ethiopia's unusual blend of upward accountability with downward engagement might resolve the instrumental dissonance implicit in aid-funded programs to combat inequality in a federal context. In Ethiopia, donors are not undermining federalism because officials' incentives are not downward-looking, as theory predicts, but rather upward-looking, as the party demands. And yet local inputs do not go missing, but are instead provided by explicit mechanisms of grass-roots engagement. A federal system that is notably closed to citizens at the national level appears to have significantly opened at the local level. And local engagement has facilitated improvements and rising equality in primary service provision.

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Table 1. Growth in block grant transfers to regional governments (billions of ETB)

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Nominal	7.1	9.3	13.5	16.6	19.6	25.5	30.6	35.6	42.5
Real	22.2	25.4	29.3	26.3	30.2	33.4	29.8	30.6	33.8
Grant % of total expenditure	32.4	34.7	39.0	36.9	37.7	36.6	39.9	39.0	37.4

Source: Ministry of Finance and Economic Development (MoFED) and PBS Secretariat
Note: Real amounts based on 2011 prices

Table 2. Evolution of key indicators, 2006–2014

Indicator	Start of PBS (2006)	2014	Source
Child mortality 1-4 per 1,000	72	31	Demographic and Health Surveys (DHS)
Contraceptive acceptance rate (modern method)	14%	40%	DHS
Access to antenatal care	28%	41%	DHS
Net enrollment rate for grades 1–8	77.5%	90%	Education Management Information System (EMIS)
Gross gender parity index for grades 1–8	0.84	0.92	EMIS
Improved sanitation	38%	66%	DHS
Cereal productivity in quintals per hectare	15	20	Annual Agricultural Sample Surveys

Table 3a. Trends in horizontal equity in education and health services
(Woreda level data: 2009-2013)

Indicators	*Quintile groups, ratios & differences*	*2009*	*2012/13*	*Difference (Y2013/12-Y2009)*	*p-value*
NER (Grades 1 to 8)	All groups: % (N)	70.8 (493)	78.4 (472)	7.6***	0.000
	q5 Richest: % (N)	71.9 (96)	76.1 (85)	4.2*	0.091
	q1 Poorest: % (N)	68.5 (98)	76.1 (94)	7.6**	0.022
	q1/q5	0.95	1.00	0.05	0.394
	q5-q1 (%)	3.43	-0.03	-3.46	0.403
CAR	All groups: % (N)	45.2 (532)	59.4 (647)	14.3***	0.000
	q5 Richest: % (N)	46.4 (84)	60.8 (106)	14.3***	0.000
	q1 Poorest: % (N)	38.4 (113)	55.0 (132)	16.6***	0.000
	q1/q5	0.83	0.90	0.07	0.330
	q5-q1 (%)	8.0	5.8	-2.2	0.611
ANC (any visit)	All groups: % (N)	55.2 (522)	69.6 (578)	14.4***	0.000
	q5 Richest: % (N)	54.6 (82)	69.2 (98)	14.6***	0.000
	q1 Poorest: % (N)	54.1 (109)	68.2 (118)	14.1***	0.000
	q1/q5	0.99	0.99	0.0	0.957
	q5-q1 (%)	0.5	0.9	0.4	0.924
SBA	All groups: % (N)	14.4 (573)	20.2 (664)	5.8***	0.000
	q5 Richest: % (N)	17.2 (101)	24.4 (117)	7.2**	0.006
	q1 Poorest: % (N)	11.3 (103)	18.6 (132)	7.3***	0.000
	q1/q5	0.65	0.76	0.11	0.979
	q5-q1 (%)	5.95	5.86	-0.09	0.394

Source: Authors' computation from woreda-level administrative data.

Note: The data excludes Addis Ababa and Somali region. Addis Ababa is excluded to focus only on the program areas. Whereas data from Somali region is excluded because of unrealistic values. Relative inequality compares the bottom 20% to the top 20% of woredas. Absolute inequality is their difference. N is number of woredas included in the calculation of the indicator. The tests for the level differences are based on two sample t-tests by year. For the difference in differences we reported F-test of equality of differences in 2009 and 2012 and for the ratios, we

reported F test of equality of ratios in 2009 and 2012. For the most recent data, 2013 data is used for education and 2012 is used for all others.

Table 3b. Trends in vertical equity in education and health service delivery
(2000-2014)

Indicators	*Quintile groups, ratios & differences*	*2000*	*2014*	*Difference (Y2014-Y2000)*	*p-value*
NER	All groups: % (N)	32.3 (14002)	65.0 (9540)	32.7***	0.000
	q5 Richest: % (N)	68.1 (2560)	82.7 (1528)	14.6***	0.000
	q1 Poorest: % (N)	20.8 (2899)	48.3 (3153)	27.5***	0.000
	q1/q5	0.31	0.58	0.27	0.119
	q5-q1	47.3	34.4	-12.9	0.104
CPR	All groups: % (N)	6.4 (8565)	44.7 (4542)	38.3***	0.000
	q5 Richest: % (N)	24.2 (1632)	56.7 (964)	32.5***	0.000
	q1 Poorest: % (N)	3.2 (1484)	30.9 (1371)	27.7***	0.000
	q1/q5	0.13	0.54	0.41*	0.066
	q5-q1	21.0	25.8	4.8	0.373
ANC	All groups: % (N)	9.2 (6777)	22.3 (3517)	13.1***	0.000
	q5 Richest: % (N)	30.1 (1258)	55.1 (641)	25.0***	0.000
	q1 Poorest: % (N)	4.1 (1206)	8.6 (1158)	4.5***	0.000
	q1/q5	0.14	0.16	0.02*	0.065
	q5-q1	26.0	46.5	20.5	0.012
SBA	All groups: % (N)	4.7 (10346)	15.5 (5357)	10.8***	0.000
	q5 Richest: % (N)	20.9 (1798)	55.6 (825)	34.7***	0.000
	q1 Poorest: % (N)	0.9 (1899)	4.5 (1901)	3.6***	0.000
	q1/q5	0.04	0.08	0.04	0.329
	q5-q1	20.0	51.1	31.1	0.182

Source: Authors' computation from 2000 and 2014 DHS data.
Note: Vertical equity data exclude Addis Ababa. Relative inequality compares the bottom 20% to the top 20% of households. Absolute inequality is their difference. N is number of individuals enrolled or utilizing the service. The tests for the level differences are based on two sample t-tests by year. For the difference in differences we reported F-test of equality of differences in 2000 and 2014 and for the ratios, we reported F test of equality of ratios in 2000 and 2014.

Table 4. Association of per capita woreda block grant recurrent expenditure and poverty rate (Pooled OLS)

	Coefficient (t-ratio)
Poverty rate	0.001***
	(3.38)
Region	
Emerging Regions	0.188***
	(9.06)
Year	
2008/09	Omitted
2009/10	-0.012
	(-0.78)
2010/11	-0.009
	(-0.57)
2011/12	-0.0080
	(-0.79)
Adjusted R Sq.	0.0376
Number of Observations	2,204

Note: SNNP is Southern Nations and Nationalities Region. Emerging Regions includes only 3 of the 4 of them. Data from Somali region is not included; t-statistics in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Table 5. Correlations of poverty rate and service outcomes

Indicator	Coefficient (t-ratio)
	-0.0111**
Net enrollment rate 1-8 (1-8NER)	(-2.39)
	-0.0119*
Net enrollment rate 5-8 (5-8NER)	(-1.76)
	-0.0852***
Contraceptive acceptance rate (CAR)	(-6.52)
	-0.0414***
Access to antenatal care services (ANC)	(-3.51)
	-0.0853***
Births assisted by skilled attendants (SBA)	(-5.39)

Note: The correlation results are controlling for region and year. *** p<0.01, ** p<0.05, * p<0.1.

Table 6. Impact of a one dollar increase in per capita woreda block grants on service outcomes

Indicators	National Pooled OLS Coeff (t-ratio)	Bottom 20% –Pooled OLS Coeff (t-ratio)
Net enrollment rate 1-8	0.3833*** (12.84)	0.4225*** (6.34)
Net enrollment rate 5-8	0.6630*** (17.71)	0.6413** (5.65)
Contraceptive acceptance rate	0.0281 (0.79)	-0.2482** (-2.37)
Contraceptive acceptance rate (lagged one year)	0.1321*** (3.11)	-0.2580** (-2.29)
Antenatal care	0.0776** (2.56)	-0.0878 (-1.47)
Proportion of births attended by SBAs	0.2533*** (4.00)	0.4732*** (2.65)

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 7. Logistic regression results of correlates of current net primary enrollment

	Model_1 (2000 Survey)		Model_2 (2014 Survey)		Model_3 (Poorest Quintile)		Model_4 (Richest Quintile)	
	OR	**t**	**OR**	**t**	**OR**	**t**	**OR**	**t**
Wealth Index	4.260***	12.43	1.000***	6.40	.	.	.	.
Survey Year								
2000 (Reference)	.	.	.	.				
2005	.	.	.	.	1.775***	4.49	1.498***	3.34
2011	.	.	.	.	4.733***	12.60	2.953***	6.97
2014	.	.	.	.	4.148***	8.77	2.720***	5.68
Sex: Male=1; Female=0	1.550***	7.16	0.863**	-2.19	1.137**	2.40	1.104	1.33
Age in years (log)	10.171***	16.68	8.549***	9.89	7.389***	13.92	10.317***	12.71
Rural resident	0.589***	-3.04	1.015	0.05	0.386***	-3.37	0.319***	-10.51
Emerging regions	0.626***	-4.06	0.772	-1.64	0.470***	-6.23	0.472***	-3.92
Constant	0.005***	-15.40	0.021***	-6.86	0.006***	-11.57	0.016***	-9.36
Number of observations	14,022		9,540		15,826		9,995	

Note: Odds Ratios (OR) are reported. *** p<0.01, ** p<0.05, * p<0.1

Table 8. Logistic regression results of correlates of contraceptive use

	Model_1 (2000 Survey)		Model_2 (2014 Survey)		Model_3 (Poorest Quintile)		Model_4 (Richest Quintile)	
	OR	**t**	**OR**	**t**	**OR**	**t**	**OR**	**t**
Wealth Index	1.872***	3.84	1.000***	3.00				
Survey Year								
2000 (Reference)	.	.	.	.	.	.	.	.
2005	.	.	.	.	1.712*	1.95	1.944***	4.60
2011	.	.	.	.	5.264***	6.79	2.893***	7.17
2014	.	.	.	.	13.072***	10.18	4.062***	6.22
Rural resident	0.318***	-3.26	0.860	-0.58	0.876	-0.17	0.443***	-6.33
Age in years (log)	2.089***	2.69	0.488***	-3.57	1.065	0.30	0.609**	-2.54
Number of children 5 and under	1.212**	2.39	0.827***	-3.79	0.837***	-2.72	1.159***	2.68
Education	2.512***	5.31	1.223	1.50	1.842***	3.55	1.699***	4.75
Emerging Regions	1.166	0.73	0.349***	-6.12	0.151***	-8.91	0.551***	-3.59
Constant	0.008***	-4.78	10.882***	3.26	0.031***	-3.07	1.253	0.32
Number of observations	8,565		4,542		7,480		6,010	

Note: Odds Ratios (OR) are reported. *** p<0.01, ** p<0.05, * p<0.1

Table 9. Logistic regression results of correlates of antenatal care visits

	Model_1 (2000 Survey)		Model_2 (2014 Survey)		Model_3 (Poorest Quintile)		Model_4 (Richest Quintile)	
	OR	**t**	**OR**	**t**	**OR**	**t**	**OR**	**t**
Wealth Index	2.229***	3.91	1.000***	5.70				
Survey Year	.	.	.	.	.	.	.	.
2000 (Reference)								
2005	.	.	.	.	1.120	0.36	1.311	1.36
2011	.	.	.	.	2.096***	2.95	1.135	0.65
2014	.	.	.	.	4.333***	5.81	2.888***	4.19
Rural resident	0.460**	-2.04	0.755	-1.07	0.593	-0.85	0.463***	-4.85
Age in years (log)	1.300	1.06	0.700	-1.20	0.993	-0.02	1.064	0.23
Number of children 5 and under	0.970	-0.35	0.918	-1.05	0.920	-0.67	0.868*	-1.93
Education	2.794***	6.25	1.697***	4.12	2.162***	4.59	2.950***	9.28
Emerging Regions	0.869	-0.71	0.539***	-3.17	0.307***	-7.06	0.744*	-1.79
Constant	0.077***	-2.92	2.126	0.76	0.077**	-2.09	0.336	-1.11
Number of observations	6,777		3,517		6,252		4,360	

Note: Odds Ratios (OR) are reported. *** p<0.01, ** p<0.05, * p<0.1

Table 10. Logistic regression results of correlates of assistance from a skilled birth attendant

	Model_1 (2000 Survey)		Model_2 (2014 Survey)		Model_3 (Poorest Quintile)		Model_4 (Richest Quintile)	
	OR	**t**	**OR**	**t**	**OR**	**t**	**OR**	**t**
Wealth Index	2.793***	4.02	1.000***	9.61				
Survey Year								
2000 (Reference)	.	.	.	.	.	.	.	.
2005	.	.	.	.	0.800	-0.53	1.333	1.48
2011	.	.	.	.	1.857	1.64	2.137***	3.97
2014	.	.	.	.	4.873***	4.34	3.961***	6.36
Age in years (log)	0.855	-0.43	0.237***	-4.02	0.599	-1.05	0.467***	-2.83
Education	3.261***	8.49	1.673***	2.80	1.618*	1.73	3.444***	8.32
Rural resident	0.377**	-2.17	0.464**	-2.57	0.419*	-1.68	0.191***	-10.26
Emerging Regions	2.039***	3.08	1.463	1.40	1.046	0.19	1.222	0.87
Constant	0.130	-1.59	32.451***	2.83	0.112	-1.22	2.714	1.09
Number of observations	10,346		5,357		9,935		6,011	

Note: Odds Ratios (OR) are reported. *** p<0.01, ** p<0.05, * p<0.1

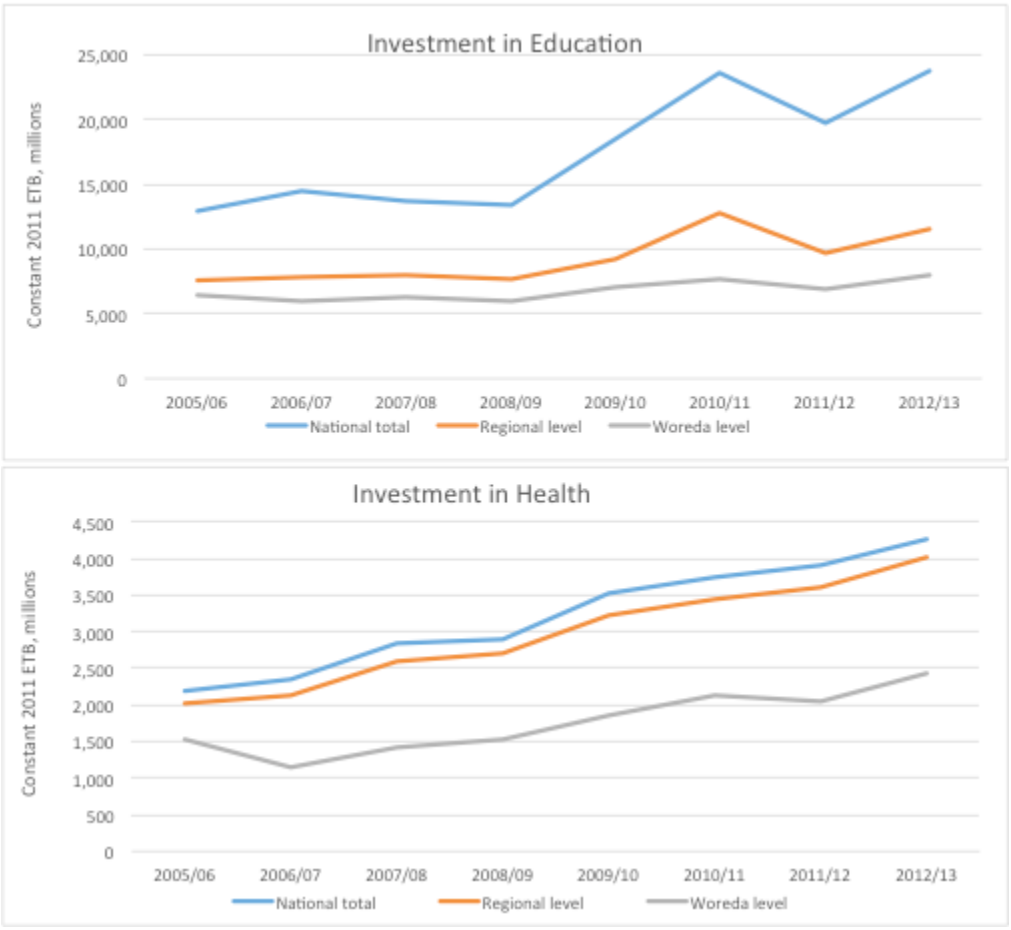

Figure 1: Evolution of education and health investment by level of government

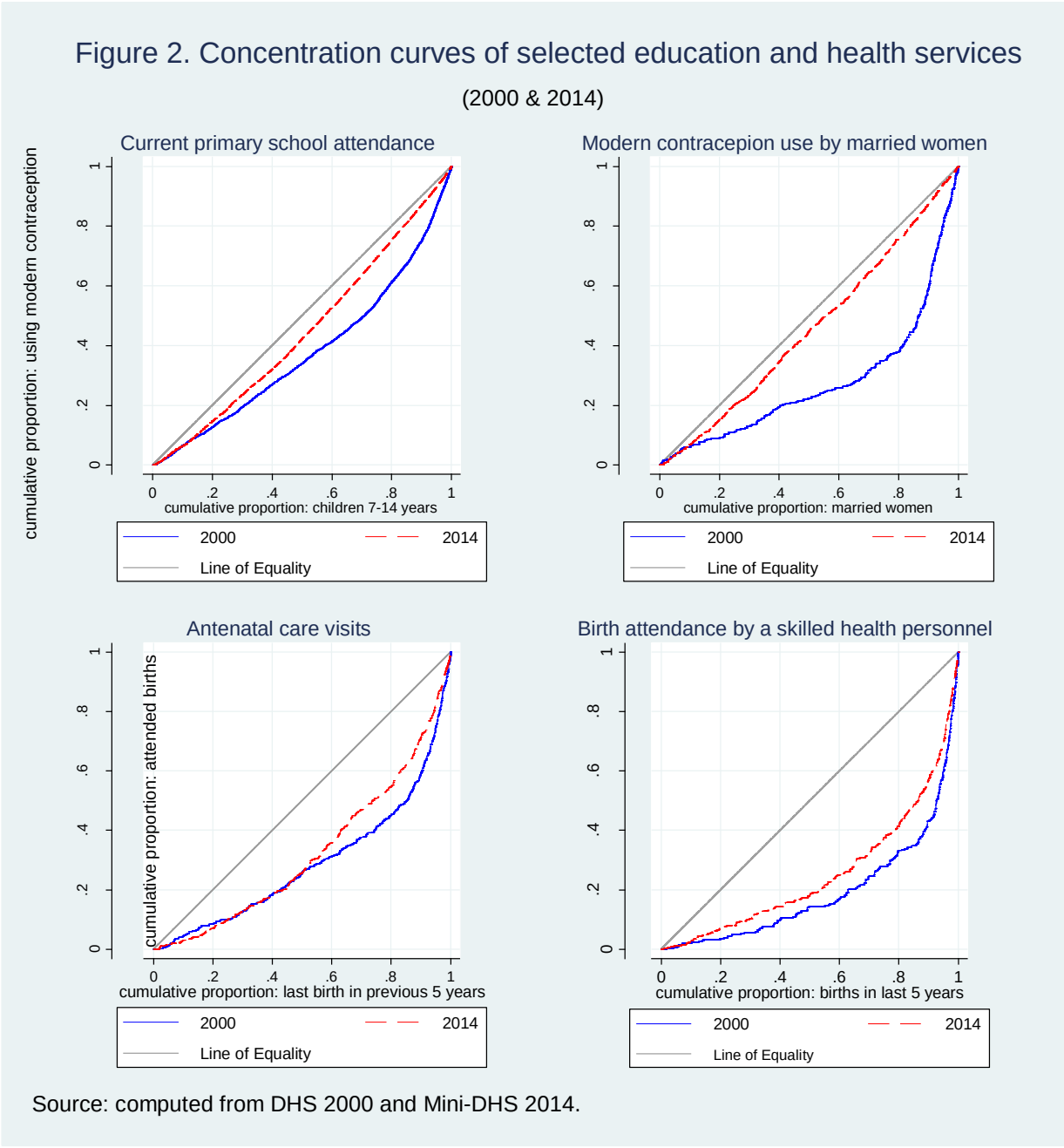

Figure 2: Concentration curves of selected education and health services (2000 & 2014)

[1] Accountability may obtain in non-democratic systems too if non-electoral mechanisms of accountability are binding on subnational officials.

[2] This refers to sincere, or 'real' decentralization, in which reforms are actually implemented. This is distinct from the partial or rhetorical decentralizations that characterize many countries, where decentralization may be declared and even passed into law, but is only partially put into practice, and in many countries not at all.

[3] Faguet 2004 explains the micro foundations of this logic.

[4] Our woreda-level dataset excludes two outliers which would bias results: Addis Ababa, by far the biggest city, and Somali region, which is very poor, ethno-religiously distinct from the rest of the country, and run much more directly from the center on account of ongoing violence.

[5] Discrepancies do exist between administrative data published by the independent CSA and line ministries. It is possible that the latter manipulate data. Some discrepancies can be explained by the way line ministries collect data through establishment reporting; also, in the case of the Ministry of Health, by the use of cluster surveys rather than household surveys using more representative census-based samples. Various initiatives have addressed such discrepancies. Recently, an inter-ministerial committee charged the CSA to carry out Data Quality Assessments (DQAs), funded by external donors, to assess data quality and make recommendations for improvement. Administrative data have seemed to improve since.

[6] The complete database is available at http://governancefrombelow.net

[7] Information is available for only these periods.

[8] Based on 2011/12 expenditure data; outliers are trimmed at 5% and 95%.

[9] To control for regional differences, we included a dummy variable for the most backward "emerging regions": Afar, Benshangul Gumuz, Gambella and Somali.