The political economy of progressive fiscal contracts in Africa and Latin America[1]

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Structured abstract

Motivation

How can poorer developing countries escape from the vicious circle in which, because the state is fragile, those countries cannot raise sufficient public revenue to be able to finance development, leading to the persistence of poverty and state fragility? We explore a new approach to this problem, which we call *progressive fiscal contracts*, in which government earmarks the proceeds of particular taxes to be spent on forms of expenditure which will have widespread benefits for lower income groups, such as health, education and social protection. Taxpayers are thus offered a *contractual* relationship with government (better-targeted delivery of public services in return for tax payments) in place of a *coercive* one (simply being ordered to pay taxes, with nothing being offered in exchange). We seek to examine whether this kind of contractual approach offers a way forward for developing countries.

Purpose

Across five countries (Bolivia, Ecuador, Venezuela, Ghana and Zambia) between 2000 and 2015, we seek to find out whether tax yields have improved following the introduction of progressive fiscal contracts, whether conflict and poverty have declined, and whether there have been countervailing costs in terms of reduced efficiency. We also examine the experience of two countries (Brazil and Chile) where there is no formal ear-marking but government has encouraged the public to think of particular taxes as being associated with particular forms of expenditure.

Approach and methods

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We assess the impact of changes in tax yields, welfare indicators and conflict indicators by means of panel-data regressions, tabular comparisons and, in Bolivia, qualitative interviews. Changes in efficiency are assessed through examination of changes in tax structure.

Findings

Across all of the countries surveyed, the introduction of progressive fiscal contracts has been associated with a reduction in headcount poverty between 2000 and 2015, and in Bolivia our qualitative evidence suggests that the relationship can be seen as a causal one. In three cases out of five (Ghana, Bolivia and Ecuador) tax yields have increased, and in two (Ecuador and Bolivia) there was a significant reduction in political violence. In the Latin American cases examined, but not the African ones, there was a shift from royalty-based taxation to income-based taxation of natural resources, suggesting the likelihood of an improvement in efficiency over the period in those countries only. In these cases, the stereotypical view that progressive fiscal contracts improve equity at the expense of efficiency is contradicted.

Policy implications (or conclusions)

'Progressive fiscal contracts', which originated as a device for making tax payments more palatable by offering social benefits in return, show promise as an innovative strategy for boosting tax ratios, reducing political violence and reducing poverty, which deserves further exploration.

Keywords: Africa, Latin America, political economy, public expenditure, redistribution, taxation

1.Introduction

In many poorer developing countries, development is thwarted by weakness in their fiscal systems, both on the taxation and the expenditure side. Often they are trapped in a circular process in which, not being able to raise taxes or impose new ones for fear of political instability or loss of power, they are consequently not able to develop public services to the point of being able to deliver a sustained improvement in living standards, which makes their governments continue to be fragile (Moore, 1999; Brautigam et al., 2008; Mosley, 2015).

One way of escaping from this trap, not to our knowledge previously analysed, consists of the introduction of what we call *progressive fiscal contracts*. In its essence this is taxing the rich explicitly to support the poor: for example, by increasing taxation on oil and mining multinationals or other higher-income tax bases, and then contractually tying this revenue to spending on social protection, human capital, or various kinds of labour-intensive expenditure. This idea, as we discuss below, has historical roots in Latin America but originated formally in the early twenty-first century

as part of the alternative to the neoliberal approach of the World Bank and IMF in that continent, and has now spread to various other parts of the developing world. In this article, we explore the merits and limitations of this approach to developing tax revenue.

The argument proceeds as follows. Section 2 explains how developing countries, rich and poor, have sought to escape from the tax trap, illustrates the historical role of export taxes, especially mineral export taxes, in these strategies, and shows how progressive fiscal contracts have broadened out of export taxation to embrace other tax bases. Building on this, we analyse evidence on the welfare impact of progressive fiscal contracts in five developing countries. In Section 3, we examine the possible negative efficiency impacts of these measures, and whether and how they can be mitigated. Section 4 draws the threads of the argument together.

2. Alternative forms of 'fiscal contract' in Latin America and Africa

During the inter-war depression of the 1920s and 1930s**,** the administrations of many developing as well as industrialised countries established or increased their systems of import and export taxation in an attempt to protect their home markets and their public revenue (Lewis, 1949; O'Rourke, 2016). Often, the motive was purely protectionist; but in the larger countries of Latin America (Mexico, Argentina and especially Brazil) we begin to see at this time national administrations committing some of the fiscal resources thus derived to programmes of industrialisation (Diaz-Alejandro, 1983; Cardoso & Helwege, 1995; Hilton, 1975) and land reform (Signet, 2010; Bulmer-Thomas, 2014). The idea of some kind of connection between export taxation and anti-poverty policy is present here, but only in embryonic form: the proceeds of trade taxation are certainly used to finance developmental expenditures, but there is no contractual linkage of the proceeds of specific taxes to development, to welfare programmes or to other redistributive measures.

In many parts of Latin America, policies of import-substituting industrialisation (ISI) and land reform, often supported by trade taxation and deficit financing, continued into the early 1980s; but were then interrupted by the global financial crisis of that time, which forced Mexico and Argentina into outright default and many other developing countries into programmes of liberalisation and privatisation under the aegis of the IMF and World Bank – including the liberalisation of tax policies aimed at opening up the economy and thereby boosting growth (Sachs & Warner, 1995). However, in many developing countries, the policy conditionality applied to these programmes was not

implemented (Mosley, Harrigan, & Toye, 1995), growth did not respond as planned, and by the millennium many Latin American countries were urgently arguing the case for, and implementing, a new economic model. This model like ISI would involve an increase in the level of state intervention in the economy, but by contrast with ISI would be committed to policies of fiscal rectitude and an increased measure of autonomy from the Washington institutions (Grugel & Riggirozzi, 2008). Such measures often involved the (re)imposition of price controls and export taxes, which had been the prime target for the World Bank's liberalisations. And socially, they often involved the design of new forms of social protection through the medium of targeted cash transfers, such as *Oportunidades* in Mexico, *Bolsa Familia* in Brazil, and the *Programa Jefes y Jefas de Familia* in Argentina, which during the decade of the 2000s enabled the social safety net to be extended beyond urban formal-sector employees to encompass low-income households in the informal and agricultural sectors (Barrientos, 2013). Typically, and certainly in these three cases, the processes of designing export tax measures and allocating cash transfers for the poor were kept administratively separate. However, beginning just after the millennium, they were brought together, by earmarking the welfare benefit to be paid out of the proceeds of the export tax only. The earliest cases of this, to our knowledge, are two Bolivian schemes: the universal old-age pension or *Renta Dignidad*, established in 2005, which generalises the old-age pension from employees of large, mostly urban, companies to all households, and the education subsidy for low income groups, the *Bono Juancito Pinto.*,Both of these are publicly advertised as being financed from the *Impuesto Directo en los Hidrocarburos* (IDH) or direct tax on petroleum revenue, with the intention of making clear to the *Movimiento al Socialismo* (MAS) ruling party's main support base, urban workers, that they are gaining twice, - not only through better social protection, but also through this being financed by hitherto untaxed multinationals.

Around the same time, a portion of the Ecuadorian corporate income tax was also designated to be spent on earmarked allowances for social protection, expenditure in low-income provinces, and universities, and in Venezuela, a doubling of the petroleum income tax, the *Impuesto sobre la Renta* (ISLR) was used to fund the *Misiones* social welfare initiatives of the Chávez government from 2003 onwards. After 2008, these revenues were then supplemented by a new tax on windfall incomes from hydrocarbons. These three governments, as pointed out by Eaton (2013) have much in common politically, being not only left-leaning but also committed to a reversal of the policies of decentralisation and regional devolution introduced with the support of the Washington financial institutions as part of the liberalising reforms of the 1990s (Eaton, 2013).

In Africa, the use of import and export taxes also expanded rapidly during the inter-war global depression, but in a quite different form, deriving from the fact that nearly all of those administrations were at that time under colonial rule. From the 1930s onward, farmers were typically paid a fixed producer price by the government marketing board for their crop, which was typically set well below the export realisation and thus amounted to an implicit export tax on primary producers (Bates, 1981)[3]. This export tax was typically presented by governments as a contribution to a 'development fund'; however, with one distinguished exception, Mauritius[4], there is little evidence from the colonial or even the first thirty years of the post-colonial period of these surpluses being effectively channelled into the development of local industries or even of the local export-based agriculture which provided the financing. However, during the liberalisation of the 1990s, under pressure from the World Bank and other donors, many African marketing boards were either dissolved or reformed so as to provide higher incentives to export producers and greater transparency in the process by which export surpluses were channelled into developmental services. We can however find no evidence of explicit earmarking of commodity tax proceeds for social protection.

When progressive fiscal contracts eventually arrived in Africa, they were attached to tax bases other than crop exports. In Zambia in 2006, Levy Mwanawasa's MMD (Movement for Multi-party Democracy) dominant-party government like Bolivia's MNR[5] ruling elite was faced with a challenge to the privileges of the mining corporations particularly from the urban poorest[6]. Mwanawasa explicitly decided, following the strategy of Morales in Bolivia, to link a subsidy for that group with fairer taxation of the multinationals. He imposed a windfall tax at a rate of 25% on gross proceeds, with 40% of the revenue earmarked for education and health spending and other local council expenditures in the poorest districts. This windfall tax was removed in 2009 by Mwanawasa's successor, nominally reintroduced in 2011 (although there is currently no sign of the proceeds being linked to social protection as in 2008), and in that year complemented by a doubling of the rate of mineral royalty from 3% to 6%[7]. Thus the target for progressive fiscal contracts in Zambia, as in the

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[3] In respect of eight crops (palm kernels, palm oil, groundnuts, wattle bark, pyrethrum, coffee, cocoa and cotton) for which Bates was able to obtain data between 1945 and 1977, the price paid to the farmer was 54% of the export realisation; in other words, there was an average implicit tax rate of 46% for those crops over that period. Bates, 1981, appendix B, pages 137ff.

[4] On Mauritius see Mosley (2018).

[5] *Movimiento Nacional Revolucionario* (National Revolutionary Movement)

[6] Specifically, in the words of Cheeseman and Hinfelaar, from 'not so much those in full-time wage employment, but more radical mineworkers and the unemployed in Zambia's poorest urban compounds' (Cheeseman and Hinfelaar, 2009, p. 77)

[7] There was a further attempt to raise the royalty paid by the most profitable mines in January 2015, but this was abandoned after the mining corporations concerned, First Quantum and Barrick Gold, threatened to leave the country.

Latin American cases considered above, was the large mining corporations; but from 2011 onward Zambian governments, under the stress of falling minerals prices, have felt decreasingly able to challenge the large mining corporations to contribute their fair share of tax revenue[8], and as a consequence government's appetite for progressive fiscal contracts has diminished. There is some evidence that the design of the 2008 windfall tax was influenced by discussions during that year with the Chilean state copper-mining corporation CODELCO, which for many decades has contributed substantially to public revenue in a way which has been widely publicised in Chilean tax enforcement campaigns (Bergman, 2003).

The other case where 'progressive fiscal contracts' have been attempted in Africa, namely Ghana, is quite different: here, the tax base for these contracts is much broader, consisting not only of mining corporations but also user charges and VAT, and the idea travelled not by way of Latin America, but via the IMF, with whom the Ghana government has since the liberalising reforms of the 1980s had a surprisingly comfortable, even an indulgent, relationship[9].

In Ghana, windfall taxation of mining has been repeatedly experimented with, between 1986 and 2006 and again between 2011 and 2014, but not linked to specific forms of public expenditure (Abdulai, 2017; Bebbington et al., 2018). Rather, the taxes which have been linked to social protection are, first of all, a 'talk tax' on mobile phone usage imposed in 2004 (Prichard, 2009, pp. 25-27) and used to finance expenditures on reducing youth unemployment; and much more substantially, national health insurance. Initially, in the late 1980s, the Ghana government financed health insurance payments, under an IMF/World Bank Enhanced Structural Adjustment Facility, out of user charges on patients, but this scheme thereafter became increasingly unpopular, because of its regressive impact. Under this system where patients were required to pay for their health needs at the point of service delivery, many people either failed to seek medical attention or delayed doing so because of the intended charges that they were likely to face (Abdulai, 2019). This 'cash and carry system' was eventually replaced in 2004 by the then ruling NPP (New Patriotic Party) with a mandatory National Health Insurance Scheme (NHIS), which covers 95% of the disease burden in Ghana, and is principally financed by a 2.5% levy added to the value-added tax on goods and services. In principle VAT, as a tax base, is not as progressive as income tax, but like most developing

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[8] In particular, only the two most profitable mining companies in Zambia (the opencast mines at Kansanshi and Lumwana) pay corporate income tax or royalties on income, all other deep mines being exempted. See Mosley (2017, chapter 4).
[9] Since the reforms of the 1980s, Ghana has barely been able to control its budget deficit or, as a consequence, its inflation rate. Its macro-economic performance was classified by Adam and O' Connell in 2006 as being within the 'pre-stabilisation' category, with inflation over 20% at the beginning of the 2000s (Adam & O'Connell, 2006, table 5.1).

countries Ghana does not yet have a wide-coverage income tax system, and VAT is certainly much more progressive than the previous mainstay of Ghana's public revenue[10], the heavy implicit taxes (deductions from the price paid to the farmer) on the export of cocoa, a largely smallholder crop, under which Ghana laboured from their establishment in the 1930s to their partial abolition in 1992. The NHIS has had a major role in making politically feasible what one commentator describes as 'the most dramatic, and prolonged improvement in tax collection of any country in Africa' (Prichard, 2009, p. 8). The key point about both of these reforms is that, like the Latin American cases previously examined, they were advertised to the public as a process by which citizens, instead of being coerced into paying their taxes, were encouraged to do so by the provision of better and fairer public services – a process which the formal linking of those operations helped to highlight. However, in the Ghanaian case the group paying the tax (and expected to benefit from the associated social expenditure) is expected to be broader and more stable than in the other four cases, where revenue is derived purely from extractive and mining operations.

These five cases are the only administrations which, to our knowledge, formally earmark specific tax revenues for redistributive purposes by means of a statutory legal instrument. However, as noted by Barrientos (2013) there are a number of administrations including Chile, Brazil and Argentina which although not engaging in formal earmarking nonetheless make a point of referring to specific tax initiatives as being explicitly for the purpose of social protection, and therefore supportive of the overall cause of poverty reduction. The logic of this approach was to reinforce political support for the state's expenditure plans, often in fragile states, by illustrating that their financing derived from a precious, non-renewable natural resource –oil and gas reserves - which historically had been undertaxed because of being controlled by foreign (typically North American) interests (Grugel & Riggirozzi, 2009). Governments which went this route were, in effect, sending a signal that the linkage between taxation and progressive expenditure made the country a fairer place to live, and proposing a *redistributive* (i.e. progressive) *fiscal contract*, consisting of greater compliance with tax demands in exchange for fairer and better-targeted delivery of public services[11].

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[10] It has been made more progressive especially by widespread exemptions granted especially to expectant mothers (Jehu-Appiah et al., 2011). However, there is also evidence here of the working of 'Director's Law' (Stigler, 1970), according to which expenditures intended to benefit lower income groups are appropriated by the middle classes: the Ghana Trades Union Congress and the Ghana National Association of Teachers (GNAT) have been able to lobby successfully for exemption from paying workers' contributions to the Social Security and National Insurance Trust, even though informal-sector workers who have no access to trade union leverage still have to pay in contributions to the trust.

[11] Both theoretical and survey-based evidence (e.g. Buchanan & Tullock (1962) and Scholz & Lubell (1998) for the US, and more recently Bodea & Le Bas (2013) and Ali et al (2014) for African countries), now suggests that evidence of better-targeted public spending and more effective service delivery helps to generate a feeling of mutual obligation between taxpayers and the tax authority, which can form the basis for a fiscal social contract between taxpayers and government. Lenton, Masiye, & Mosley (2017, table 4) have shown that, across a

Whether or not this kind of signal 'works', and actually delivers the political or economic benefits it claims to deliver, is obviously key to its effectiveness, and is the main thing which this paper seeks to discover.

To this end, we now explore these five cases, three Latin American and two African, on a comparative basis, taking into account also the cases of 'informal linkage' mentioned by Barrientos. Table 1 presents evidence on the form which these initiatives have taken and the apparent impact which they have had.

sample of 61 less developed countries, greater equity and effectiveness in public spending are associated with, and appear to cause, higher ratios of tax revenue to national income.

Table 1. Progressive fiscal contracts and their estimated effects

1.Country	2.Political 'trigger' for contractual relationship between tax and public and expenditure	3.Type of tax involved in contract			4.Nature of contractual tax-expenditure linkage	5.Benefits from linkage(and sources):	
		Tax	Royalty	Other		Informal (qualitative) measures	Quantitative measures: poverty, inequality, political violence and tax yield
(1) Countries which formally link, or have linked, some elements of mineral taxation to social protection							
Bolivia	Protests against extension of personal income tax, March 2003 (c.30 deaths) and breaking of blockade in El Alto, October 2003 (c.80 deaths)	Company profits tax (*Impuesto sobre las Utilidades de las Empresas*, or IUE): 25% (paid only by large mining companies and not by cooperatives or small mines)	Regional-level royalty: 11% National royalty: 6%	*Impuesto Directo en los Hidrocarburos*(IDH, or Direct Tax on Petroleum Revenue): 16% (increased to 32% in 2005)	81% of *Renta Dignidad* (universal old-age pension) financed from IDH corporate income tax in 2014 (initially 100%); remainder financed by privatised corporations. 81% of *Bono Juancito Pinto* (subsidy for school expenses, including textbooks and lunches) financed from IDH proceeds in 2014, remainder from privatised corporations and national treasury.	Many respondents reported a significant impacts of the *bonos* (and especially the *Renta Dignidad*) on the well-being of their own household; others remarked that their impact on the government's wellbeing was greater than the impact on members of the public.(see Table A2 below).	*Poverty headcount* fell from 65% to 39%, and inequality from 62% to 47%, between 2000 and 2014.Evaluation by Escobar Loza et al (2010) finds a significant impact of *bonos* on consumption of lower income groups *Political violence* declined from 'intermediate' to 'minor' between 2005 and 2015, and we find a(weakly)significant effect of the *bonos* on the reduction of political instability in

							Bolivia (see Table A3 below). *Tax ratio* rose from 19.9% to 28.3% between 2005 and 2013.
Ecuador	Presidents Jamil Mahuad and Lucio Gutierrez overthrown by political unrest in 2000 and 2005	Tax on net profits: 23%	12.5-18.5% (of gross value of petroleum production) (since 2005)	Tax on extraordinary incomes: 70% (since 2005)	(i)Elements of petroleum income earmarked for universities, social protection and expenditure in 'backward', especially Amazonian, provinces in 2006 (Almeida, 2009) (ii)Tax-revenue-financed bonds used to finance conditional cash transfers via human development bond in 2006 (*Bono de Desarollo Humano*) (Montúfar, 2009).		*Poverty headcount* fell from 34 to 12% between 2003 and 2015, and Gini index of inequality from 55 to 48% between 2000 and 2015. *Political violence* fell from 'intermediate' to 'low'between 2005 and 2015. *Tax ratio* rose from 18% in 2005 to 23% in 2015.
Venezuela	President Hugo Chavez defeated Salas Romer in peaceful election in 1998. Since then political violence has been minor until Chavez' death in 2013; escalating political violence since then.	*Impuesto sobre la Renta Petrolera* (ISLR): increased from 25% to 50% in 2003	30% of value of production (20% for natural gas)	Tax on 'exceptional' prices	Tax-linked bonds, funded from the ISLR increase and after 2008 by windfall taxes, used to finance conditional cash transfers (Montúfar, 2009). These transfers, under Chavez after 2004, included the *Misiones* – targeted welfare services in the fields of primary health care, housing, literacy and food subsidy.	Percentage living in extreme poverty fell from 24% in 1990 to 9.4% by 2007. There was also 'a growing body of evidence that the *Misiones* and community councils had a transformative [motivational]	*Percentage in poverty* fell from 60 to 35% between 2000 and 2015, and Gini index of inequality from 53% to 50% between 1990 and 2015 (using national poverty measures); but poverty doubled over this period according to the

						effect on marginalised and excluded groups' (Buxton, 2009:223, quoting Bravo-Escobar 2007 and Garcia-Guadilla, 2007)	World Bank's POVCAL ($1.90/day) measure. *Political violence* increased from 'low' to 'intermediate' between 2005 and 2015 (and to 'high' after 2017). *Tax ratio* fell from 15 to 11% between 2005 and 2015.
Zambia	Gradual erosion of dominant- party political system between 2000 and 2006. In 2006 election, no serious political violence, but notable rise in support for Patriotic Front (PF) opposition party, especially among radicalised mineworkers and the unemployed, to which the copper windfall tax was a response.	Corporate income tax:30%	Royalty on sales of minerals:6% (doubled from 3% in 2011)	10% duty on unprocessed copper concentrate (also windfall tax 2008-9)	*Shift from:* Agricultural subsidies: initiated in 2006 on maize and other cereal crops. Criticised as biased towards large farmers by Mofya-Mukuka et al (2013) *To:* Conditional cash transfers: introduced experimentally by government in 2010 and then scaled up dramatically in 2014 under World Bank pressure (see Zambia Government 2014)	Positive effect of linkage alleged by stratified sample of respondents in Lusaka and Copperbelt in January 2014. But a majority of respondents felt that minerals tax rates were still not high enough.	*Percentage in poverty* (extreme poverty) fell from 71%(52%) to 61%(42%) between 2001 and 2012. *Political violence* remained statistically 'insignificant' between 2005 and 2015 (but increased to 'minor' during the election the following year). *Tax ratio* fell from 18.5% to 16.1% between 2005 and 2015.

Country							
Ghana	Riots in all major cities surrounding attempted introduction of VAT in 1995 (c.10 deaths) which was then temporarily withdrawn.	Corporation tax: 35% (25% between 2007 and 2011)	Royalty rate 5% (up from 3% before 2009)	Windfall profits tax 15%, 2000-06). VAT increase (2.5 percentage points, linked to National Health Insurance Scheme): initiated 2004. 'Talk tax' on mobile phone calls, committed to expenditures to reduce youth unemployment: initiated 2004.	Conditional cash transfers: multiple schemes mostly financed by NGOs (for a review see World Bank(2011) and Wodon(2012)).		*Percentage in poverty* halved (from 51% to 25%) between 1990 and 2010. *Political violence* remained insignificant and static between 2005 and 2015. *Tax ratio* increased from 13% to 21% between 2005 and 2015.
(2) Countries which informally link some elements of mineral or other taxation to social protection							
Chile		Tax on 'first-category' incomes, 20% (will be gradually raised to 25% in 2018)	None	Tax on utility profits 35% and dividends (4%) for public enterprises; special tax 40% on private utility companies	Expanded social protection programmes after return to democracy in 1990s and early 2000s (e.g. *Chile Solidario*, launched under Lagos administration in 2002, financed by increase of 2% in tax burden, distributed across increase in corporate taxes, personal income taxation and value-added tax). 'In particular, a 2% rise in the value-added tax rate, from 16 to 18%, was explicitly linked to the financing of (these) poverty reduction	'The *Chile Solidario* programme "was a reaction to the fact that before 2002, all surveys were showing a fast reduction in public support for Lagos…The programme was a tremendous political hit" (Puentes 2009: 210,229)	*Poverty and inequality* : $2-a-day poverty fell from 20% to 8% between 2003-15.

				programmes.'(Barrientos 2013: 192)		
Brazil	Standard rate 15%, plus 10% surcharge on incomes in excess of R$240,000 per annum	10% of value of production (may be reduced to 5% in cases of high geological risk)	Utility tax 15%	1988 constitution created a new social contract, with explicit recognition of the right to social protection as a key principle, financed principally by a 2% tax on agricultural sales (with the balance from social insurance funds) (Barrientos 2013: 193)		*Poverty and inequality :* $2 a day poverty fell from 21% to 4% between 2003 and 2015.

Sources : data for Ghana, Zambia and Bolivia from Mosley (2017), chapters 3-5; for Venezuela from essay by Buxton in Grugel and Riggirozzi (2009); for Ecuador from World Bank Country Economic Reports. Tax data in cols. 3-5 supplemented by data from Gomez Sabaini et al. (2015), table 2, p.36; data on Chile and Brazil in bottom two rows of table also from Barrientos (2013, pp. 191-194).

Initial findings from Table 1 are as follows:

(i) Of the five cases of formal progressive social contracts of which we are aware, four have survived from the time of their introduction in the early 2000s to the present. The exception is Zambia, where the linkage between the mineral windfall tax and social protection expenditures lasted only from 2006 to 2008, and since 2011 has been restored in name only.

(ii) Across all of the five cases of formal linkage between 2003 and 2015, the introduction of progressive social contracts is associated with a reduction in headcount poverty, measured by the national poverty line. In Bolivia and (more ambiguously) in Ghana, there is evidence to suggest this can be seen as a causal relationship[12]. Poverty also declined sharply between 2003-15 in the cases of 'informal linkage' (Chile and Brazil). However, in Venezuela headcount poverty is falling only according to the national poverty line and has been rising since the early 2000s according to the World Bank's $1.90 a day measure. There is no evidence that poverty has declined any less in Ghana, where a high proportion of the population is involved in paying contributions to the National Health Insurance Scheme, than in the other sample countries where progressive fiscal contracts are imposed only on mineral-exporting companies. However, tax revenue has been more unstable in the four mineral-exporting countries (and in Zambia and Venezuela has become smaller as a proportion of income) than in Ghana.

(iii) Across three of the five cases of formal linkage between 2003 and 2015 (Bolivia, Ghana, and Ecuador) the introduction of 'progressive fiscal contracts' is associated with an increase in tax yields over time; and estimating the relationship across the entire sample and controlling for endogeneity and confounders, the 'progressive fiscal contracts' dummy variable has a significant (at the 5% level) impact on overall tax yields (see Appendix table A3). However, this tendency does not apply across all

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[12] A regression-based study by the Bolivian Unit for the Analysis of Economic Policy (UDAPE), Escobar Loza et al. (2013), finds that the *Renta Dignidad*, the universal old-age pension linked to revenue from the IDH petroleum tax, increased household per capita consumption by 154 bolivianos per month ($22) or 15.4% of average income, and reduced headcount extreme poverty by 156 bolivianos per month ($22) or 16.1%. UDAPE's report (2015) on the *Bonos Juancito Pinto* (a conditional cash transfer related to primary education) and *Juana Azurduy* (a similar transfer related to maternal and child health) between them, managed to lower extreme poverty by 1.5% - 2% between 2006 and 2012. In Ghana, a 2011 study of the National Health Insurance Scheme (Dixon et al. 2011) found that in Northern Ghana, the poorest part of the country, households were significantly more likely to enrol in the National Health Insurance Scheme than in other parts of the country; however, the scheme, according to this same study, showed a tendency to exclude the very poorest.

countries: as illustrated by Table 1, tax yields are falling rapidly over time in Venezuela and slowly in Zambia, in defiance of the stimulus which progressive fiscal contracts are is expected to provide. This points to the need for finance ministries to establish complementary strategies, such as diversification of tax bases and the establishment of commodity stabilisation funds which will enable tax yields to hold up in periods when commodity prices are falling, such as 2013-16.

(iv)   In Ecuador and Bolivia, the introduction of progressive fiscal contracts is associated with a decline in political violence since the early 2000s (according to the Stockholm International Peace Research Institute's measure). In Bolivia there is weak econometric evidence (see Appendix A1) but also qualitative evidence, presented in Appendix table A2, to suggest that this decline in political violence may be causally related to the introduction of the *Renta Dignidad* and the *Bono Juancito Pinto*. However, in Venezuela political violence has been on the increase, especially since the death of Chavez in 2013. Across the sample as a whole, there is a weak (significant at the 10% level) negative influence of the 'progressive fiscal contracts' dummy variable on the incidence of conflict (Appendix table A3). Indeed, there appears, and this is the heart of our story, to be a two-way relationship between political instability and the introduction of progressive fiscal contracts. In all cases except Venezuela, as discussed above and also in column 2 of Table 1, political instability in the late 1990s and early 2000s provided the rationale for introducing a tax system based on a more contractual and equitable relationship between government and taxpayer, which in turn has been associated (except in Venezuela and arguably in Zambia), as noted above, with a diminution in political tensions over time.

3.The political economy of progressive fiscal contracts: ways forward

The development/efficiency trade-off

Our basic working hypothesis, then, is that as the incidence of 'progressive fiscal contracts' increases, that will provide opportunities to reduce poverty, by focussing public expenditure on the universalisation of health, education and social protection, which then provides an opportunity to increase the political stability of fragile incumbent governments; in addition, it can enable them over the medium term to increase their tax ratios, which then enables development expenditures to be expanded. Table 1 has provided some support for this hypothesis, and illustrated how, in Bolivia,

Ecuador and Ghana, the opportunities presented by the device of progressive fiscal contracts have been taken advantage of; but it has also illustrated how those opportunities may be wasted, either by antagonising the mineral corporations (as in Zambia), or, as in Venezuela, through mismanagement of the oil monopoly (PDVSA) and the entire economy.

However, these results only present the benefit side of the equation. If we are to get a more complete picture of how to make progressive fiscal contracts work, we need to take account of a factor so far excluded from the analysis, namely the efficiency cost imposed by taxation on output and productivity. All taxation, of course, reduces the incentive to work and is in that sense inefficient; but earmarking specific headings of tax revenue to specific items of public expenditure, as progressive fiscal contracts do, runs the risk of preventing tax revenue from being spent on the public expenditure items with highest productivity (rate of return). Because of this, the theoretical public finance literature tends to advise against earmarking and engaging in 'fiscal contracts' of any sort (Musgrave, 1961 and later editions).

However, the efficiency cost inflicted by the introduction of progressive fiscal contracts is not a constant, but varies according to the way such contracts are designed. Other things being equal, that cost will be higher:

- the more taxation is imposed on production (e.g. in the form of a royalty) rather than on net income or profits, as royalty-type taxes provide more of a disincentive to productivity and competitiveness in the taxed sector;

- the further the rate of taxation on natural resource incomes gets out of line with the rate of taxation on other forms of income, as any kind of tax imposes a distortion, but, other things being equal, the distortion is minimised if tax rates can be kept uniform;

- and the more rigid is the linkage from natural resource taxation to public expenditure, since in times of falling export prices for oil and other natural resources (such as 2008-9 and 2014-16) a rigid link between a particular form of social protection expenditure implies that such pro-poor expenditure must fall when the designated revenue source falls, which has an obvious social cost.

Thus, we are faced with a trade-off: certainly, progressive fiscal contracts inflict efficiency costs, but as we have seen, they also have multiple other potential benefits. We represent this trade-off in Figure 1 as a straight line, from A_1 to A_2 to A_3. As the proportion of taxation which is linked to specific forms of public expenditure by means of a fiscal contract increases, we move

northeastward up that line. Public preferences as between the political and social benefits associated with progressive fiscal contracts are represented by the preference function B_1, B_2, etc. Welfare improves as we move north-westward on the diagram.

Figure 1. Costs and benefits of 'progressive fiscal contracts'

Benefits associated with linkage of expenditure to specific taxes ('progressive fiscal contracts')

Welfare optimum (maximum social and political benefit, minimum resource cost)

A^*_3

Trade-off between social and political benefit and resource cost

A^*_2

B_2

A_3

A_2

B_1

A_1

Resource costs associated with 'progressive fiscal contracts'
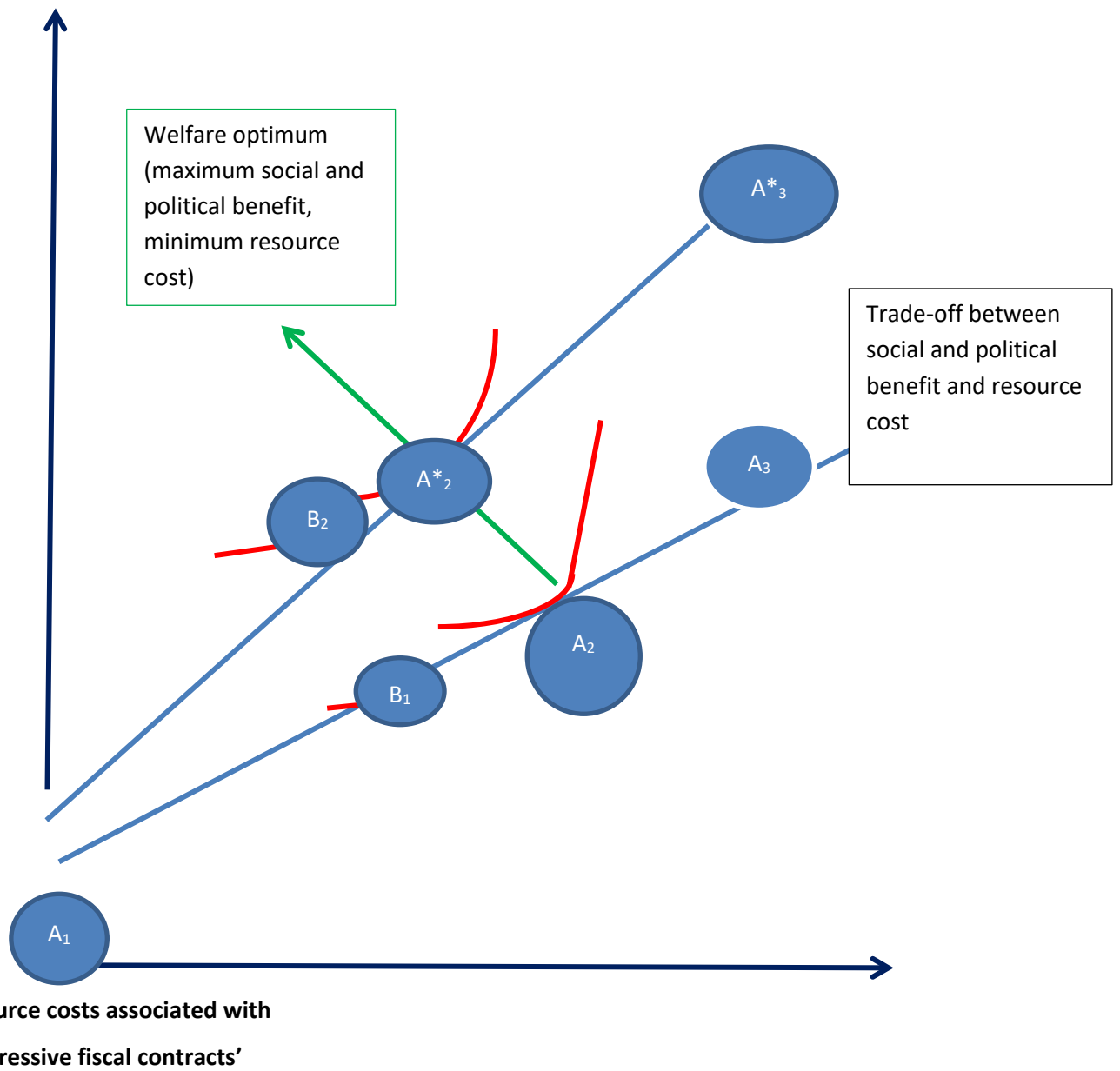
From this equilibrium, things can get better or worse as a consequence of 'technical change'. For example, if the incumbent government discovers forms of public expenditure which deliver

additional social and fiscal benefits, for a given level of tax revenue, over and above those currently achieved, then the trade-off A_1A_3 will rise: the 'technology' of fiscal contract formation will have improved[13]. But in addition, it is possible for government to lower the efficiency cost associated with progressive fiscal contracts, by reducing the proportion of revenue which is derived from royalties and other taxes levied at a flat rate per ton (say), and contain no inbuilt incentive to increase efficiency, and increasing the proportion derived from income and profits taxes, which does contain such an incentive[14]. So, if the Peruvian government (to quote an actual empirical example) increases the share of taxation derived from income and profits taxes, as it did between 2000 and 2013, that will (cet.par.) reduce the efficiency costs associated with progressive fiscal contracts and lift the trade-off – as depicted in Figure 1 -, from A_1A_3 to $A^*_1 A^*_3$. The social optimum rises from A_2 to A^*_2: a lower resource (efficiency) cost is now inflicted by a given level of social benefit provided by the new fiscal contract.

Bearing in mind these possibilities, and these ambiguities in the definition of an optimal fiscal policy, what scope is there for using progressive fiscal contracts in a more effective way?

The economic losses from linked taxation, and how to mitigate them

Several studies of the losses to productivity from progressive taxation have been done, including two by ourselves, for Bolivia and Zambia (Mosley, 2014a, 2014b; see also Oporto et al (2012) for Bolivia, Oxford Policy Management (2014) for Zambia, etc). These estimates differ sharply by type of economy - in particular, countries such as Bolivia and Ghana which have a large artisanal, or co-operative, mining sector have tended to experience a larger fall in productivity over the last ten years than countries operating along a much more rigid production function, as is characteristic of oil-based economies such as Ecuador and Venezuela. (By contrast, the former type of economy has tended to generate larger increases in employment from its mining sector, and often greater improvements in equity as well.)[15]

However, as illustrated by Table 2, the fear that natural-resource intensive countries, in order to maximise revenue, would move away from 'efficient' forms of taxation (such as corporate

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[13] As a further example: the discovery of conditional cash transfers as a highly successful medium for providing social protection outside the formal sector of developing countries (Banerjee et al. (2015), as in the Bolivia and Zambia cases documented in this paper, has markedly increased the effectiveness of the progressive fiscal transfers instrument, and 'moved the trade-off upwards', in the notation of Figure 1 above.

[14] Exogenous shocks can also move the trade-off: for example, an increase in political instability will move the trade-off upwards (as in the Venezuela case in our study), and a decrease will move it down (as in the Bolivia and Ecuador cases).

[15] For example, the mining sector of Bolivia simply between 2011 and 2013 experienced an 18% fall in productivity, but a 13% increase in employment. See Mosley (2014b, figure 4, p.33).

income taxes) which tax profits rather than gross income, and thereby make taxation of mining and oil companies less efficient, is not borne out by the data. Between 2000-03 and 2010-13, the ratio of revenue derived from 'more distortive' royalties to total revenue declines, in the core 'progressive fiscal contract' cases, from 45% to 39%. In the 'informal linked taxation cases' such as Brazil and Chile, similarly, the proportion of total tax revenue derived from royalties declined from 56% to 45%. It therefore appears, prima facie, that that the hoped-for shift from 'less efficient' to 'more efficient' mineral taxes consequential on efforts to drive up revenue has in a modest way materialised.

Table 2. Hydrocarbon and mineral taxes: allocation of tax revenue between types of duties 2000-13

(percentages of total)

	Instrument	2000-2003	2005-2008	2010-2013
Core 'linked taxation' cases				
Bolivia	(1) Corporate income taxes (CITs)	**5.2**	**6.9**	**5.2**
	(2) Royalties	94.8	35.8	34.3
	(3) Other	0	57.3	60.4
Ecuador	Corporate income taxes (CITs)	**0**	**0**	**0**
	Royalties	0	0	0
	Other	100	100	100
Venezuela	Corporate income taxes (CITs)	**19.8**	**25.1**	**11.0**
	Royalties	53.2	68.8	36.6
	Other	27.0	6.0	52.4
Ghana	Corporate income taxes (CITs)	**24**	**15**	**22**
	Royalties	45	54	70
	Other, including windfall taxes	31	31	8
Zambia	Corporate income taxes (CITs)	**65**	**55**	**46**
	Royalties	35	25	54
	Other, including windfall taxes	0	20	0

Sub-group average	Corporate income taxes (CITs)	**23**	**21**	**17**
	Royalties	**45**	**36**	**39**
	Other, including windfall taxes	**32**	**43**	**44**
Informal 'linked taxation' cases				
Argentina	Corporate income taxes (CITs)	**29.7**	**34.3**	**23.9**
	Royalties	59.6	33.0	38.4
	Other	10.7	32.7	37.7
Brazil	Corporate income taxes (CITs)	**34.1**	**38.3**	**21.9**
	Royalties	27.4	24.8	34.0
	Other	38.5	36.9	44.1
Peru	Corporate income taxes (CITs)	**15.4**	**24.1**	**26.1**
	Royalties	84.6	75.9	73.9
	Other	0	0	0
Colombia	Corporate income taxes (CITs)	**19.6**	**21.3**	**29.0**
	Royalties	53.3	47.0	36.3
	Other	27.0	31.7	34.7
Sub-group average	Corporate income taxes (CITs)	**24**	**29**	**25**
	Royalties	**56**	**45**	**45**
	Other	**20**	**25**	**30**
Developing countries average	Corporate income taxes (CITs)	**24**	**25**	**21**
	Royalties	**50**	**40**	**42**
	Other	**26**	**35**	**37**

Source: All Latin American countries: Gomez Sabaini et al (2015, table 4, p. 47). Ghana: estimated from Mosley (2015b), table 2, page 8. Zambia: estimated from Mosley (2014a, table 3, p. 12).

However, against this general trend, we may note a discrepancy between the behaviour of the Latin American and African 'progressive fiscal contract' cases. In Latin America, consistently with the general trend, the ratio of royalty income to total revenue declines, but in the two African cases, Ghana and Zambia, it goes up substantially (from 40% to 62%), in spite of an increase in corporate income tax rates in both countries. In both countries, also, there was a politically popular

experiment with windfall taxation of mineral exports in the mid-2000s (classed as 'other sources of revenue' in Table 2), which, however, was transient and failed to last.

4.Conclusions

The recent policy innovation of 'progressive fiscal contracts' has offered developing countries, especially fragile ones which have had difficulty in raising tax revenue, the attractive prospect of multiple political and economic benefits: less political violence, lower poverty, and an increase in tax yields, offering scope for developmental public expenditure. However, to a degree depending on the way they are designed, such programmes may also inflict resource costs caused by the restriction they impose on government's ability to select the highest-yielding public expenditure projects.

Our analysis has examined the experience of five developing countries which have introduced progressive fiscal contracts over the last twenty years, often in the hope of reaping political benefits and making the state more secure, plus a further two (Brazil and Chile) where politicians have made public statements of linkage between particular tax changes and particular expenditure headings but not converted these into law. In all of these countries, headcount poverty has fallen over the period 2003-2015, and in all except Zambia and Venezuela, tax ratios have risen also. Notably in Bolivia, and to a lesser extent in Ecuador and Ghana also, we have qualitative and quantitative evidence that these trends have not only been associated with, but also caused by, the advent of progressive fiscal contracts. In Ghana, however, these positive economic impacts are counteracted by an increase in the share of royalty income in total taxation, which increased the efficiency costs of taxation.

In Zambia and Venezuela, by contrast, the tax ratio did not increase over time, and there is no evidence that the introduction of progressive fiscal contracts yielded long-term benefits. The reasons differ as between the two cases. In Zambia, the introduction of local-level welfare benefits linked to windfall taxes on mineral exports lasted only from 2006 to 2008, and was then abandoned, because a middle-of the-road ruling party was replaced after the President's death by a right-wing populist party which feared that the mining companies would desert the country if the windfall tax (and indeed most corporate income taxes) were persisted with. In Venezuela, the abandonment of progressive fiscal contracts linked to oil taxation was never formally announced, but was made inevitable when, after the death of President Chàvez, his successor, Nicolás Maduro, embarked on an authoritarian path, leading to political conflict and eventually hyperinflation which made the implementation of a long-term 'fiscal contract', or indeed a social contract of any sort, impossible.

Our analysis, therefore, provides moderately strong evidence that linked progressive taxation can have a useful role in enabling poor countries to escape from the 'low tax–low public expenditure–low growth' trap—if the ruling regime has the stability and the will to sustain overall tax effort. Where it does not—as our Zambian and Venezuelan evidence shows—there is not much which fiscal contracts can do to paper over the underlying problems of governance.

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Appendix. Regressions and qualitative materials

Table A1 estimates the impact of the main anti-poverty measures (the *Renta Dignidad* and *Bono Juancito Pinto*) financed out of the IDH petroleum tax since 2005, on various measures of political instability, controlling for GDP growth, the Gini coefficient of inequality and military

centrality, over the period 1990-2015. It is likely that the selected measures of political instability determine as well as being determined by the anti-poverty measures mentioned, and so the estimation is mainly by three-stage least squares (3SLS), with OLS results presented in the final column for comparison.

Table A1. Determinants of political instability in Bolivia: regression-based estimates[16]

Equation	(1)	(2)	(3)	(4)	(5)	(6)
Estimation method	3SLS	3SLS	3SLS	3SLS	3SLS	OLS
Dependent variable	'Instability 1' = numbers killed in social conflicts	'Instability 1' = numbers killed in social conflicts	Social protection expenditure linked to a fiscal contract (*Renta Dignidad, Bono Juancito Pinto* and *Bono Juana Azurduy)* as % of total expenditure	'Instability 2' = number of working days lost in strikes, demonstrations, and other social conflicts	Social protection expenditure linked to a fiscal contract (*Renta Dignidad, Bono Juancito Pinto* and *Bono Juana Azurduy)* as % of total expenditure	'Instability 3' = number of conflicts
Regression coefficients on independent variables:						
Constant	-172.77* (1.87)	-188.5* (1.89)	0.49*** (9.47)		0.45*** (8.62)	55.50 (0.13)
GDP growth	-1.72 (0.54)	-3.60 (0.78)		-20.7 (1.28)		7.22 (0.35)
Gini coefficient of inequality (%)	3.17** (2.50)	3.44* (1.64)		69.0** (2.34)		3.54 (0.58)
Social protection expenditure (% of total public expenditure)		-3.10* (1.69)				22.86** (3.28)
Social protection expenditure linked to a fiscal contract (*Renta Dignidad,*	-24.4* (1.88)	-74.97 (1.02)		-411.5* (1.62)		

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[16] An earlier version of this table appeared in Chapter 5 of Mosley's book *Fiscal Policy and the Natural Resource Curse* (Mosley 2017). Reproduced by permission of Taylor and Francis Publishers through PLSclear.

Bono Juancito Pinto and ***Bono Juana Azurduy)*** **as % of total expenditure**						
Military centrality (share of military and police as % of total government expenditure)	5.80 (0.26)	21.39 (1.19)		0.82 (0.40)		-77.44 (0.84)
Polity 4 index of institutional capacity	-0.99 (0.85)			-1.05 (0.29)		
Budget surplus or deficit			0.084*** (7.57)		0.084*** (7.57)	
R²	0.33	0.26	0.26	0.37	0.39	0.63
Number of observations	23	23	23	23	23	23

Estimation method: 3SLS. Period of estimation: annual data 1990-2013. Student's t-statistics in parentheses underneath coefficients. ***denotes significance of a coefficient at the 1% level, ** at the 5% level and *** at the 1% level.

Sources: for *dependent variables* –

'Instability 1' (number of persons killed). From our own dataset for 1979-2007, updated by the author: available from www.poverty.group.shef.ac. uk or from the author.

'Instability 2' (days lost in conflicts). From our own dataset for 1979-2007, updated by the author: available from www.poverty.group.shef.ac.uk or from the author.

'Instability 3' (number of conflicts) Original data from CERES, *Observatorio de Conflictos.* Data from 1990-2004 are presented in Laserna (2011), and I am grateful to Roberto Laserna for discussions.

For *independent variables*, all data are from Bolivia, Instituto Nacional de Estadistica (INE), *Anuario Estadistico 2012,* and updates of these series from the INE website www. ine.gob.bo, except the data for 'social protection expenditure linked to a fiscal contract' (row 6) which are from Mosley (2017) Table 5.6, and the Polity index of institutional capacity, which is at www.systemicpeace.org.

Table A2 provides qualitative interview evidence concerning the effect of the *bonos*.

Table A2. Bolivia: Respondents' views on public spending and 'earmarked' social protection measures[17]

(sample = 48 randomly-selected respondents in La Paz and El Alto, stratified across social classes, interviewed in August 2014).

	Renta Dignidad (non-contributory state pension)	*Bono Juancito Pinto* (conditional cash transfers for schoolchildren)	*Bono Juana Azurduy* (conditional cash transfers for expectant mothers and mothers of newborns)
% of respondents with a beneficiary within the household	50	24	23
Impact on economic stability: summary of views of recipients	A majority of respondents felt the impact was positive. But some felt the impact was short-term only, and some felt that it was actually counter-productive, see discussion below. Others e.g.respondent 3 felt that the Renta should be made more progressive – e.g. that it should be increased in respect of the most vulnerable only.	Most felt the impact was on balance positive; but some felt the bond should be paid in cash rather than as an electronic transfer, and one respondent (respondent 3, see below) felt that the *Bono* was not successful at reducing truancy even in the short term.	Most felt that the effect was on balance positive; but some respondents reported perverse effects, for example respondent 1 suggested that women were incentivised to have additional children on account of the *Bono*, see below.
Relevance of linkage between hydrocarbons income and social protection: summary of views of recipients	Most respondents thought the link positive and was politically valuable.	Most respondents thought the link positive. But some respondents e.g.respondent 3 thought the link was 'purely symbolic'	

Source: Author's survey, August 2014[18].

In relation to all of the bonds, many recipients, especially in the professional group, backed up the quantitative evidence of Table A1 suggesting that the impact of the *Renta Dignidad* on political stability was positive (e.g. respondent 3 (professional, La Paz) who stated that the bonds

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[17] An earlier version of this table appeared in Chapter 5 of Mosley's book *Fiscal Policy and the Natural Resource Curse* (Mosley 2017). Reproduced by permission of Taylor and Francis Publishers through PLSclear.

[18] The surveys reported in Table 3 were carried out on a randomly chosen sample of 48 respondents, evenly divided between La Paz and El Alto on the western Bolivian *altiplano*. In each of the two cities, the sample was stratified between equal numbers of males and females and between four occupational groups: public and private sector professionals, manual formal-sector workers and informal-sector workers.

'have stabilised and calmed people' and respondent 4 (professional, La Paz), who stated that political stability in Bolivia had improved 'because the State is using natural resources to satisfy people's economic needs', thereby suggesting that it was the connection between natural resources taxation and social protection, rather than social protection on its own, which was helping to make the country more stable. However, a majority of respondents felt that in spite of this, the level of political stability in Bolivia had declined since 2009, which is in conflict with the quantitative evidence; and a number of respondents felt that the design of the bonds could be improved. Several of them, especially in the manual worker sub-group, suggested that the bonds were a short-term fix (in Spanish, *palliativo*) which was good for the government but not for the country: this actual phrase was used, unprompted, by respondents 25 (miner, El Alto), 31(retired pastrycook, La Paz) and 39 (student, El Alto). Some respondents suggested, probably correctly, that the motivation behind the programmes was principally political, for example respondent 13 (professional male, 40, El Alto) remarked: 'It has helped the government protect itself, but it has not tackled the problem at its root'[19].

Finally, table A3 presents panel-data regressions illustrating the effect of linked taxation on political stability and tax revenue compared across the five countries discussed in table 1 between 1990 and 2015 (linked export taxation is represented as a one-zero dummy covering the years when such taxation was in effect). In column 1 of the table, the impact of progressive fiscal contracts on political instability (measured as the degree of conflict in a country) , estimated by OLS, emerges as significant at the 10% level across this sample of countries. In column 2 of the table, we estimate the impact of linked taxation on the overall tax ratio both by OLS (in column 2 of the table) and, in columns 3 through 6, we trace, using 3SLS estimation, the entire chain of causation from linked progressive taxation through to the expenditure ratio to the growth and poverty outcome (as in Figure 1), using, in the last of those equations, population and lagged 1988 values of GNP per capita as instruments for overseas aid. In this equation system, a higher tax ratio increases public expenditure (eq.4), which (eq.5) increases growth and reduces poverty. Linked taxation is a significant and positive determinant of the tax ratio (at the 5% level) in both the OLS and 3SLS models and thus, in our interpretation, plays a part in state-building through its ability initially to build and diversify the tax base, thence public expenditure, and thence investment and growth.

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[19] Some respondents went further than this, and suggested that the bonds might have disincentive (or perverse) effects even in the short term. Respondent 3 (professional female, 28, El Alto), suggested that the *Bono Juancito Pinto* 'was not achieving its fundamental objective of reducing truancy' and respondent 1 (male, 38, informal sector, El Alto) suggested that women 'were having additional children' as a consequence of the incentive provided by the *Bono Juana Azurduy.* More vaguely, suggestions were made that the *Renta Dignidad* encouraged a 'beggar mentality' and 'involved a waste of resources' (e.g. respondents 6, 7 and 16).

Table A3. Impact of the tax ratio on political instability and tax capacity: regression-based estimates

Equation	(1)	(2)	(3)	(4)	(5)	(6)
Estimation Method	OLS	OLS	3SLS	3SLS	3SLS	3SLS
Dependent variable Regression coefficients on independent variables:	Incidence of conflict(3)	Tax/GDP ratio	Tax/GDP ratio	Total expenditure/GDP ratio	Poverty headcount	Aid/GNP
Constant	0.19 (1.28)	23.11*** (5.82)	25.14*** (5.98)	-3.46 (0.46)	-12.11 (0.64)	21.11*** (13.93)
'Progressive fiscal contract' dummy variable(1)	-0.037* (1.75)	2.38** (2.31)	2.12** (2.12)			
Gini coefficient of inequality(%)	-0.0027 (1.48)	-0.14 (1.72)				
Share of trade taxes to total revenue	-0.002 (1.33)					
Public expenditure on health and education (as % of total expenditure)		-0.19 (1.31)	-0.32** (2.27)			
Tax/GDP ratio				1.67*** (3.54)		
Aid/GDP ratio					2.61*** (9.40)	
GDP growth					-0.16** (2.25)	
Total expenditure/GDP ratio					-0.29* (1.74)	
Population						0.073*** (3.19)
GNP per capita in 1988						-0.016*** (7.94)
R^2	0.04	0.28	0.44	0.17	0.59	0.73
Number of observations	75	44	31	31	31	31

Source: World Bank, *Global Development Indicators* database.

Sample: Countries in which 'progressive fiscal contracts' have been used: Bolivia, Ecuador, Venezuela, Zambia, Ghana, Mauritius (see Table 1 above for more detail)

Notes: (1) 'Progressive fiscal contracts' is a one-zero dummy variable taking the value one during the years linked taxation was in force and zero at other times.

(2)***/**/* against a coefficient denote significance at the 1%/5%/10% levels.

(3)Incidence of conflict is measured by means of the World Bank ucdp_loc measure (see [www.qog.gu.se)](www.qog.gu.se) which allocates a value of 3 to situations of severe conflict, 2 to moderate conflict, 1 to minor conflict and 0 to no or insignificant conflict.