



OPEN ACCESS

Tobacco farming and current debt status among smallholder farmers in Manicaland province in Zimbabwe

Rutendo Chingosho,¹ Chengetai Dare ,² Corné van Walbeek ²

¹School of Economics, University of Cape Town, Rondebosch, South Africa

²Research Unit on the Economics of Excisable Products (REEP), School of Economics, University of Cape Town, Rondebosch, Cape Town, South Africa

Correspondence to

Dr Chengetai Dare, School of Economics, University of Cape Town, Rondebosch 7700, South Africa; cdarejam@yahoo.com

Received 7 April 2020
Revised 27 June 2020
Accepted 14 July 2020

ABSTRACT

Introduction Zimbabwe is the largest producer of tobacco leaf in Africa and the sixth largest globally. Tobacco leaf is a mainstay of the economy, accounting for about 10% of the country's GDP in 2018.

Methods We use descriptive and regression analyses from a face-to-face survey of 381 smallholder farmers in three major tobacco-farming areas in Manicaland province to determine the prevalence of tobacco-related debt and some of its covariates. The survey was conducted in June and July 2019.

Results 74% of respondents are contract farmers and 26% are independent farmers. 57% of respondents indicated that they were in tobacco-related debt. The likelihood of being in tobacco-related debt is significantly more than average for farmers with the following characteristics (holding other characteristics constant): being a contract farmer, having a larger farm, employing only family labour and not recording expenses (as a proxy for financial sophistication). 91% of contract farmers would prefer to be independent farmers, while 63% of independent farmers would prefer to be contract farmers.

Conclusion There is no evidence to suggest that tobacco growing, in its current state, has benefited the tobacco farmers in Manicaland province. Tobacco farmers are largely victims, rather than beneficiaries, of the sector. There is a strong case for government intervention to improve the conditions of tobacco farmers, either through direct intervention in the tobacco-growing sector, or by encouraging and promoting crop substitution.

INTRODUCTION

In 2014, Zimbabwe ratified WHO's Framework Convention on Tobacco Control (FCTC), becoming the 181st party to the treaty. However, the decision to accede to the FCTC does not appear to represent a softening of its historical opposition to the treaty.¹ Its status as a party creates opportunities for it to undermine ongoing efforts to implement and strengthen the treaty.¹ Currently, Zimbabwe is the largest producer of tobacco leaf in Africa and the sixth largest in the world, after China, Brazil, India, the USA and Indonesia.² In 2018, Zimbabwe produced about 25% of the African and 2.8% of the global tobacco crop.³ The leaf forms a mainstay of the economy, accounting for about 10% of Zimbabwe's Gross Domestic Product (GDP) since 2018.^{4,5}

Zimbabwe has faced major economic challenges since 2000. The Land Reform Programme, initiated

in 2000, was aimed at redistributing agricultural land from about 4000 white commercial farmers to large numbers of local small-scale farmers.⁶ The programme reduced tobacco production by more than 65% within 2 years. The disruption caused by the Land Reform Programme, together with fiscal mismanagement and political turmoil, led to hyperinflation, with month-on-month inflation peaking at 500 billion per cent in mid-2008, which resulted in the abandonment of the Zimbabwean dollar in April 2009.⁷ Between 1999 and 2008, per capita GDP decreased by more than 50%.⁸ The period 2009–2012 saw some improvement in the economic situation but since 2013 the economy has stagnated. There are severe shortages of everyday products and by April 2020 the inflation rate had again increased to more than 750%.⁹

Since 2010, there has been a substantial recovery in tobacco-leaf production, and in 2018 total production was back at its 2000 levels (see figure 1). The current structure of tobacco production is very different from that of the pre-2000 period. The Land Reform Programme offers two 'models' for the resettlement farms: A1 farms (smallholder family farms), limited in size to 37 hectares, and A2 farms (medium to large-scale commercial farms). The Land Reform Programme resulted in the transfer of over 10 million hectares of land to more than 146 000 smallholder-farm families.^{10 11} Of these, about 29% grow tobacco.⁴ Small-scale tobacco farming continues to expand. For instance, the number of smallholder farmers increased by 42% between 2016 and 2018, contributing to the 29% increase in tobacco leaf production over that period.⁵

The increase in leaf production in recent years is also associated with significant investment in the sector by the China National Tobacco Corporation, the world's largest tobacco company.¹² The company is involved in both contract farming and auction floor sales to procure tobacco leaf for export to China. It also sells tobacco to other transnational tobacco companies, including British American Tobacco.¹²

The expansion in tobacco farming in Zimbabwe is underpinned by claims by the tobacco industry and the government that tobacco growing is lucrative and has the potential to greatly improve the welfare of the farmers.^{13 14} As in many other countries, tobacco farming in Zimbabwe is supported by both the government and the tobacco companies. Although tobacco leaf is marketed as a lucrative crop that can enhance the economic welfare of farmers, there is substantial evidence that most smallholder



© Author(s) (or their employer(s)) 2020. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Chingosho R, Dare C, van Walbeek C. *Tob Control* Epub ahead of print: [please include Day Month Year]. doi:10.1136/tobaccocontrol-2020-055825

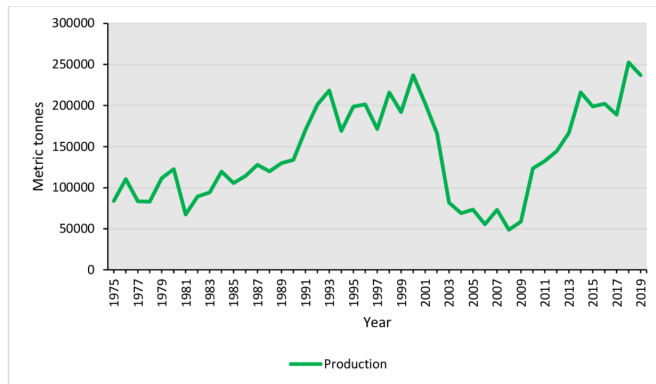


Figure 1 Tobacco leaf production in Zimbabwe. Source: Authors' own calculations derived from TIMB (2019).

farmers suffer losses over multiple years.^{15–18} Tobacco farming is also associated with detrimental effects on the environment and on the health of farm workers.^{19–22} Environmental harms include soil nutrient depletion and deforestation,²³ while health hazards include a range of occupational health risks, including green tobacco sickness and exposure to pesticides. Also, tobacco farming is criticised for promoting the use of child labour as the enterprise is associated with intensive family involvement.^{13 24}

Broadly, tobacco farmers sell their crops either through an auction or through a contract system. Farmers who sell their tobacco through the auction system independently acquire inputs for production and sell their produce to the highest bidder at auction floors. Independent farmers typically pay out of pocket for inputs. However, tobacco-farming inputs are out of reach of many smallholder farmers.^{16 18} The lack of capital, combined with the initial attractiveness of the inputs provided by tobacco companies, incentivises most farmers to choose the contract system.^{25 26} They enter into a credit agreement with a private company, where the company supplies the farmer with inputs (such as technical advice, pesticides and seeds) at the start of a growing season, and the farmers pay the company back after selling their produce.^{13 27} In most cases, contract farmers are required to sell their produce to the contracting company.

In 2018, approximately 80% of smallholder farmers in Zimbabwe had contracts with private companies.⁵ There is significant power asymmetry between the farmers and the buyers of the tobacco leaf.¹³ For instance, buyers grade the leaves and peg the price, which may mean that farmers receive a price lower than they would have received had they sold their tobacco in a competitive market. Also, contract farmers often purchase inputs from contracting companies at higher prices than on the competitive market.¹⁶ This can trap tobacco farmers in a cycle of poverty and indebtedness. The pay-outs they receive are not sufficient to pay off the loans, and do not adequately compensate them for their and their families' labour.¹³ Although the Zimbabwean government sets minimum prices for the leaf, the produce remains underpriced to the extent that growers withhold the leaf at the start of the selling season nearly every year.^{28 29}

Empirical evidence on the effect of tobacco farming on indebtedness is limited. This study uses descriptive and regression analyses from a survey of smallholder farmers in Manicaland province in Zimbabwe to investigate indebtedness among tobacco farmers. Tobacco growing is widely distributed over Zimbabwe. Of the 10 provinces in Zimbabwe, Manicaland is the fourth-largest producer of leaf tobacco, after Mashonaland West, Mashonaland Central and Mashonaland East.

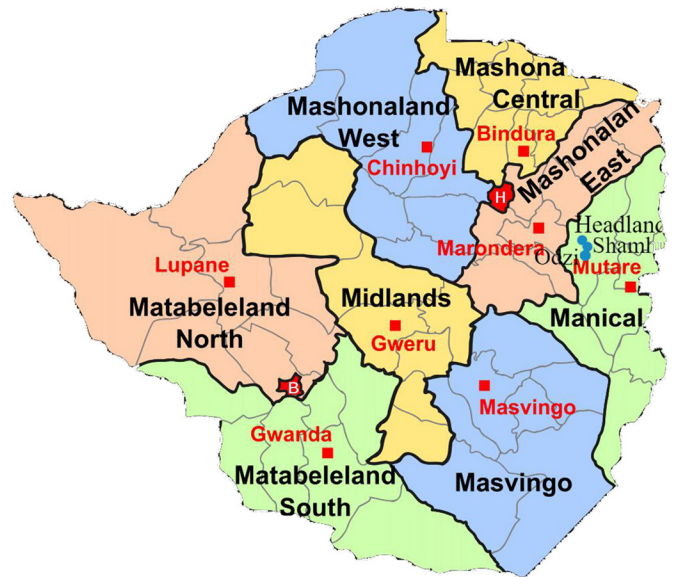


Figure 2 Map of Zimbabwe.

Data and methodology

We collected data from smallholder farmers in the districts of Odzi, Shamhu and Headlands, in Manicaland province in Zimbabwe, between 28 June and 12 July 2019. These areas are among the main tobacco-producing districts in Manicaland province. In Zimbabwe, the tobacco harvesting season is between December and January and the selling season is between February and April. The survey was conducted after the selling season had concluded and farmers had received their pay-outs. **Figure 2** shows the areas where the survey was conducted.

The sample consists of 381 farmers. Respondents were selected through a 'convenience sampling technique', based on availability and willingness to participate. The survey was conducted through face-to-face interviews based on a questionnaire, which can be found in Chingosho.³⁰ The questionnaire consisted of 39 questions, which considered the demographic and social characteristics of respondents and economic aspects related to tobacco farming. Apart from completing the questionnaire, fieldworkers summarised farmers' additional comments about their experiences of tobacco farming. In this study we used the Standards for Reporting Qualitative Research guidelines to analyse these comments.³¹

The focus of the study is on the current debt status of tobacco farmers. We present descriptive statistics and a standard logistic regression analyses in which we investigate the correlates of an individual tobacco farmer's current debt status related to tobacco growing. The regression model is specified as: $\log \frac{p(y=1)}{1-p(y=1)} = \beta_0 + \alpha\beta$, where the dependent variable y is derived from the question, 'Do you have any debt related to tobacco growing?'. As such, y is 1 if the farmer is indebted and zero otherwise. x is a matrix of explanatory variables that include demographics (gender and age), type of farmer (ie, contract or independent), level of education, type of workers employed (ie, family members or hired labour), farm size, primary occupation of the farmer, and whether or not the respondent records his/her expenses.

Gender is coded as 1 for male farmers and 0 for female farmers. 'Age' refers to farmers' age; 'age squared' is included to account for possible non-linearity between age and indebtedness. 'Type of farmer' is coded as 1 for a contract farmer and 0 for an independent farmer. The 'level of education' records

the farmer's highest level of education; the base category is 'no education', and the two other categories are 'primary level' and 'secondary level'. 'Type of workers employed' is coded as 1 if the farmer employs hired labour (usually in addition to family labour), and 0 if the farmer exclusively employs family labour. The 'farm size' is the size of the farm under tobacco cultivation, expressed in acres. 'Primary occupation' is coded as 1 for farmers whose primary occupation is tobacco farming, and 0 otherwise. 'Recording farming expenses' is a proxy for financial and/or managerial sophistication. The base category are farmers who recorded all their expenses; the other two categories were farmers who (1) did not record any of their expenses and (2) recorded some of their expenses.

Results are computed using Stata V.16.

RESULTS

Descriptive statistics

The descriptive statistics are shown in table 1, while table 2 depicts the extent of the debt by value. Of the 368 respondents, 57% indicated that they were in tobacco-related debt. A total of 13 respondents did not provide sufficient information about their debt status, thereby reducing the sample size from the original 381 to 368. The prevalence of tobacco-related debt was higher than average among male farmers (59%), farmers with either no education (69%) or only primary education (64%), and whose farms were larger than the mean of 11.3 acres (70%). The prevalence of tobacco-related debt was lower than average among female farmers (43%) and for farmers with secondary education (51%).

Most farmers were 'not at all' (81%) or 'sometimes' (7%) satisfied with profits, and, of this group, 58% were in tobacco-related debt. Of the 12% of farmers that were 'always' satisfied with profits, 28% were in debt. Seventy per cent of farmers that exclusively employ family labour are in debt, compared with 45% of farmers who supplement their own labour with hired labour. Similarly, 70% of farmers that do not record their expenses are in debt, compared with 48% of farmers who sometimes record expenses and 29% of farmers who always record expenses.

Among the 263 contract farmers in the sample, 66% were in tobacco-related debt, compared with only 31% of the 84 independent farmers in the sample. Ninety-one per cent of contract farmers indicated a (likely or highly likely) desire to switch to an auction system, whereas 63% of independent farmers have a (likely or highly likely) desire to switch to contract farming.

Regression results

We ran a logistic regression model to establish associations between farmers' current debt status and the variables discussed above. Table 3 shows the marginal effects and ORs. The first two columns include educational level as a covariate. Many respondents did not declare their educational levels, which resulted in a significant reduction in the number of observations. To solve this, we excluded the educational level in columns 3 and 4. While excluding the education variables may result in some model misspecification, the results are qualitatively similar.

The ORs are indicated in the table but are not described in this section. The marginal effects commented on below are taken from columns 1 and 3. The results show that contract farmers are 15%–20% points more likely to be in debt than independent farmers, depending on the specification and holding all other factors constant. A one-acre increase in the size of the farm increases the probability of the farmer being in debt by 1.6%–1.8% points. Farmers who rely solely on family labour are

Table 1 Descriptive statistics

	Population percentage	Percentage of this category that are in tobacco-related debt
Farmers in tobacco-related debt (n=368):	57	100
Age (n=381):		
Below 40 years	52	51
40+ years	48	63
Gender (n=379):		
Female	12	43
Male	88	59
Farmers' educational level (n=253):		
No education	6	69
Primary education	34	64
Secondary education	59	51
Size of farm (n=370)		
Less than or equal to 11.3 acres (4.57 hectares)	47	42
More than 11.3 acres (4.57 hectares)	53	70
Tobacco farming (n=381):		
Tobacco farming as the primary occupation	86	59
Tobacco farming as the secondary occupation	14	42
Type of farmer (n=380):		
Contract farmers	74	66
Independent farmers	26	31
Satisfaction with profit (n=333):		
Always	12	28
Sometimes	7	65
Not at all	81	57
Type of labour (n=373):		
Employ exclusively family labour	46	70
Employ hired labour	54	45
Record expenses (n=332):		
Always	23	29
Sometimes	32	48
Not at all	46	70
Desire to shift to contract farming (n=84):		
Highly unlikely	18	13
Unlikely	12	0
Neutral	7	50
Likely	17	21
Highly likely	46	46
Desire to shift to independent farming (n=263):		
Highly unlikely	4	40
Unlikely	2	25
Neutral	3	75
Likely	38	82
Highly likely	53	55

Source, Authors' own calculations

10%–13% points more likely to be in debt than those who use both hired and family labour. Also, farmers who do not record their farming expenses are 24%–27% points more likely to be in a debt than those who record their expenses. Other variables such as gender, age, and level of education, were statistically insignificant in explaining the likelihood of a farmer being in debt.

Table 2 Distribution of debt by value

Debt amount	Frequency	Per cent	Cumulative
Less than or equal to US\$1000	26	7	7
US\$1001–US\$2000	20	5	12
US\$2001–US\$3000	32	9	21
US\$3001–US\$4000	23	6	27
US\$4001–US\$5000	73	20	47
More than US\$5000	36	10	57
No debt	158	43	100

Authors' own calculations.

Table 3 Logit regression results (dependent variable=1 if currently indebted, 0 otherwise)

	(1)	(2)	(3)	(4)
Variables	Marginal effects	ORs	Marginal effects	ORs
Age	0.015 (0.014)	1.088 (0.088)	0.008 (0.011)	1.044 (0.062)
Age squared	−0.000 (0.000)	0.999 (0.001)	−0.000 (0.000)	1.000 (0.001)
Male	−0.144 (0.088)	0.416 (0.240)	−0.046 (0.077)	0.783 (0.327)
Independent farmer (base)	0.000	1.000	0.000	1.000
Contract farmer	0.201** (0.087)	2.911** (1.317)	0.154** (0.070)	2.144** (0.728)
Farm size	0.016*** (0.005)	1.098*** (0.035)	0.018*** (0.004)	1.099*** (0.027)
No education (base)	0.000	1.000		
Primary education	−0.141 (0.122)	0.435 (0.327)		
Secondary education	−0.123 (0.117)	0.482 (0.345)		
Family labour	0.107 (0.074)	1.810 (0.721)	0.123** (0.060)	1.871** (0.566)
Recording expenses (base)	0.000	1.000	0.000	1.000
Not recording expenses	0.268*** (0.094)	4.065*** (1.964)	0.239*** (0.076)	3.222*** (1.175)
Sometimes record expenses	0.123 (0.099)	1.879 (0.949)	0.055 (0.083)	1.301 (0.515)
Primary occupation	0.000	1.000	0.000	1.000
Secondary occupation	0.003 (0.096)	1.020 (0.570)	−0.012 (0.076)	0.939 (0.374)
Constant		0.027* (0.054)		0.038** (0.052)
Observations	214	214	316	316
Pseudo R squared		0.245		0.187

SEs in parentheses.

*P<0.05, **P<0.01, ***P<0.001.

Source, Authors' own calculations.

DISCUSSION

The majority of tobacco farmers are in debt, and tobacco-related indebtedness is concentrated among contract farmers. Extensive discussions with farmers in the course of conducting the survey indicated that most contract farmers incur losses, which perpetuates their indebtedness to the contracting company. The debt compels them to grow tobacco in the following farming season, in an often-vain attempt to repay the debt. The cycle is usually repeated, making tobacco growing a debt trap, leading to a vicious cycle of poverty. This is in line with the findings by Drope *et al*,¹⁷ Appau *et al*,¹⁵ Magati *et al*¹⁶ and Makoka *et al*¹⁸ who found that most tobacco farmers experience losses over multiple years. Fang *et al*¹² found that there have been several reported suicides in Zimbabwe as farmers were unable to pay back debts at the end of the growing season.

Contract farmers constituted the majority (74%) of the respondents in our survey, which aligns closely with the Tobacco Industry and Marketing Board's claim that contract tobacco-farmers constitute about 80% of all tobacco farmers in Zimbabwe.⁵ In many instances, inputs for tobacco-leaf growing are beyond the reach of most of the tobacco farmers, which pushes them into contractual agreements with private companies in order to access farming implements on credit. The lure of cash loans, that are often provided by the contracting companies, also attracts farmers into contract farming.¹² However, as in many other lower-income countries, contract farmers are overcharged for these inputs and there is a lack of clarity in the contracts themselves. Their produce is often underpriced. As such, contract farmers are almost always in precarious position, which is exacerbated by their lack of control over in the grading/pricing of the leaf. The result is that they tend to make losses on their produce, which ultimately ends in a cycle of indebtedness.

A very large percentage of contract farmers (91%) indicated a desire to become independent, selling their tobacco at auctions. At the same time, most of the independent farmers (63%) indicated a desire to switch to contract farming, suggesting that, in the minds of farmers, 'the grass is greener on the other side'. Both groups of farmers face challenges that they presume can be minimised by shifting the mode of selling their product, an indication that neither contract farming, nor independent farming, provides a satisfactory livelihood. Under such circumstances, it seems rational for tobacco farmers to shift to other crops. However, discussions with the respondents in our sample, and research papers in the published literature indicates that often tobacco farmers regard tobacco as the only viable crop.^{15 25 26} This is largely attributed to the fact that there are few, if any, alternatives to tobacco. Tobacco growing provides a robust and well-organised supply chain, and ancillary support in the form of physical inputs, loans, transport to market and a guaranteed market.^{15 25 26} Thus, even if farmers may want to shift to other crops, they have limited options.

The results also indicate that farmers with larger farms are more likely to be in debt, as larger farms require more inputs, compelling farmers to obtain additional resources from creditors. Less sophisticated farmers are more likely to be in debt. This is borne out by the fact that farmers with less education, who do not (or only partially) record their expenses, and who only make use of family labour, are more likely to be indebted than farmers who are not in these positions.

The results from this study are in line with the findings of Bobak *et al*³² and Otanez³³ who found that tobacco farming impoverishes farmers in developing countries. They are also in

line with Goma *et al*,¹⁴ who found that tobacco growing has failed to transform the lives of contract farmers in Zambia (yet most of the tobacco farmers in Zambia are contract farmers).

Limitations of the study

The sample is not nationally representative (and possibly not even provincially representative). It is possible that results from this study are biased, as participants were selected through a convenience sampling method, which may compromise the generalisability of the results. However, considering that 74% of the sample are contract farmers, compared with the Tobacco Industry Marketing Board's claim that 80% of tobacco farmers in Zimbabwe operate under the contract system, the sampling is likely to be broadly reliable.

A large proportion of the participants were functionally illiterate. As such, most of the questions were read out and explained to the farmers and the responses were recorded by fieldworkers on their behalf. The questionnaires were in both English and Shona (the native language). However, it is possible that there were some misinterpretations of the questionnaire, both among the respondents who had their responses filled out by the fieldworkers and among those who decided to fill out the questionnaires by themselves. It is also possible that those who were in the greatest debt left tobacco farming resulting in selection bias.

CONCLUSION

The results of our study indicate that while most farmers in Manicaland province in Zimbabwe operate under the contract system, an overwhelming majority of them are unhappy with the returns that they get from producing tobacco. Nearly 60% of farmers indicated that they are in debt. There is no evidence from this study that suggests that tobacco growing, in its current state, benefit tobacco farmers.

The obvious policy implication of this study is that the government should intervene to improve the economic conditions of tobacco farmers. For example, imposing some 'meaningful' price control on tobacco leaf would allow farmers to get more revenue for their tobacco crops and would improve their chances of breaking out of the cycle of poverty. A second approach, aligned with Article 17 of the FCTC, is to encourage crop substitution away from tobacco growing. The government could encourage and support tobacco growers (financially and technically) to diversify into other cash crops such as cotton, paprika, peas, wheat and maize. Since most tobacco farmers have limited options to shift to other crops, government

support may include facilitating improvements in the markets for these alternative crops. Considering that Manicaland province (particularly Odzi, Shamhu and Headlands) has large swathes of arable land, which are suitable for a variety of crops, farmers are likely to improve their livelihoods by switching to other crops.

Changing the structure of the Zimbabwean agricultural sector will require political will and resources. Sadly, both are missing in Zimbabwe at present. The fact that China plays an increasingly important role in Zimbabwe, also in the tobacco sector, makes it politically difficult to reduce the country's dependence on tobacco production. Also, the country is in a dire economic situation and considers tobacco-leaf growing an important economic sector. What this paper has shown is that the tobacco farmers in Manicaland province are, largely, the victims, rather than the beneficiaries, of this sector.

Twitter Chengetai Dare @C_J_Dare

Acknowledgements Special thanks to Nicole Vellios and Elizabeth Baldwin who reviewed earlier drafts. We would also like to extend gratitude to the three anonymous referees for their constructive comments.

Contributors RC and CvW conceptualised the study. RC collected the data; CD conducted the data analysis and wrote the first draft of the manuscript under the supervision of CvW. All authors contributed to the drafting and revision of the manuscript, and have approved the final article.

Funding This study was supported by the African Capacity Building Foundation (grant number 334), which in turn is supported by the Bill & Melinda Gates Foundation, and by UK Research and Innovation (UKRI) with funding from the Global Challenges Research Fund (MR/P027946/2), as part of the Tobacco Control Capacity Programme (TCCP).

Map disclaimer The depiction of boundaries on this map does not imply the expression of any opinion whatsoever on the part of BMJ (or any member of its group) concerning the legal status of any country, territory, jurisdiction or area or of its authorities. This map is provided without any warranty of any kind, either express or implied.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval University of Cape Town Ethics Research Committee (approval number 2019/04).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available in a public, open access repository. Data are publicly available on <https://doi.org/10.25828/CHV2-ZF14>.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Chengetai Dare <http://orcid.org/0000-0001-5001-8768>
Corné van Walbeek <http://orcid.org/0000-0003-0933-435X>

REFERENCES

- 1 Lown EA, McDaniel PA, Malone RE. Tobacco is "our industry and we must support it": Exploring the potential implications of Zimbabwe's accession to the Framework Convention on Tobacco Control. *Global Health* 2016;12:2.
- 2 FAO. Countries by commodity, 2020. Available: http://www.fao.org/faostat/en/#rankings/countries_by_commodity [Accessed 14 Mar 2020].
- 3 United Nations. UNdata: tobacco, unmanufactured, 2020. Available: <http://data.un.org/Data.aspx?d=FAO&f=itemCode%3a826> [Accessed 14 Mar 2020].
- 4 TIMB. Tobacco sales report, 2019. Available: <https://www.timb.co.zw/storage/app/media/2019%20Weekly%20Report/weekly-bulletin-30-week-ending-26-july.pdf> [Accessed 02 Mar 2020].
- 5 TIMB. Tobacco industry and marketing board annual statistical report'. tobacco industry and marketing board 2018.
- 6 Moyo S, Chambati W. Introduction: roots of the fast track land reform in Zimbabwe. *Moyo & Chambati* 2013:1–27.

What this paper adds

Since 2009, there has been a substantial increase in tobacco leaf production in Zimbabwe as many small-scale farmers have started growing tobacco leaf. Both the Zimbabwean government and the tobacco industry argue that tobacco farming is lucrative and benefits farmers. This study investigates the prevalence of tobacco-related indebtedness among smallholder farmers, and the most important correlates of such indebtedness in Zimbabwe. This paper finds that most of the small-scale farmers are unhappy with the financial returns on tobacco farming and most are in tobacco-related debt. The government should intervene to improve the welfare of farmers, either by setting higher floor prices or by creating alternative markets. However, given the parlous state of the Zimbabwean economy, such interventions seem unlikely.

- 7 Business Live. Why is Zimbabwe's inflation rate still climbing? 2019. Available: <https://www.businesslive.co.za/bd/world/africa/2019-07-18-why-is-zimbabwes-inflation-rate-still-climbing/> [Accessed 31 Mar 2020].
- 8 World Bank. World development indicators, 2020. Available: <https://data.worldbank.org/indicator/NY.GDP.PCAP.KD?locations=ZW> [Accessed 14 Mar 2020].
- 9 Trading Economics. Zimbabwe inflation rate, 2020. Available: <https://tradingeconomics.com/zimbabwe/inflation-cpi> [Accessed 16 Mar 2020].
- 10 Scoones I, Mavedzenge B, Murimbarimba F, et al. Tobacco, contract farming, and agrarian change in Zimbabwe. *Journal of Agrarian Change* 2018;18:22–42.
- 11 Mkodzongi G, Lawrence P. The fast-track land reform and agrarian change in Zimbabwe. *Rev Afr Polit Econ* 2019;46:1–13.
- 12 Fang J, De Souza L, Smith J, et al. "All Weather Friends": How China Transformed Zimbabwe's Tobacco Sector. *Int J Environ Res Public Health* 2020;17:723.
- 13 Hu T-wei, Lee AH. Commentary: tobacco control and tobacco farming in African countries. *J Public Health Policy* 2015;36:41–51.
- 14 Goma F, Jeffrey D, Zulu R, et al. The economics of tobacco farming in Zambia (revised version): University of Zambia school of medicine and the American cancer Society 2017.
- 15 Appau A, Drope J, Goma F, et al. Explaining why farmers grow tobacco: evidence from Malawi, Kenya, and Zambia. *Nicotine Tob Res* 2019;27.
- 16 Magati P, Lencucha R, Li Q, et al. Costs, contracts and the narrative of prosperity: an economic analysis of smallholder tobacco farming livelihoods in Kenya. *Tob Control* 2019;28:268–73.
- 17 Drope J, Li Q, Araujo E, et al. *The economics of tobacco farming in Indonesia*. Washington, DC, USA: World Bank Group, 2017.
- 18 Makoka D, Drope J, Appau A, et al. Costs, revenues and profits: an economic analysis of smallholder tobacco farmer livelihoods in Malawi. *Tob Control* 2017;26:634–40.
- 19 WHO. *WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco*. Geneva: World Health Organisation, 2015. http://www.who.int/tobacco/global_report/2015/en/
- 20 Giovino GA, Mirza SA, Samet JM, et al. Tobacco use in 3 billion individuals from 16 countries: an analysis of nationally representative cross-sectional household surveys. *The Lancet* 2012;380:668–79.
- 21 WHO. *Systematic review of the link between tobacco and poverty*. Geneva: World Health Organisation, 2014. <http://www.who.int/tobacco/publications/economics/9789241507820/en>
- 22 Palipudi KM, Gupta PC, Sinha DN, et al. Social determinants of health and tobacco use in thirteen low and middle income countries: evidence from global adult tobacco survey. *PLoS One* 2012;7:e33466.
- 23 Kenkel DS, Schmeiser MD, Urban C. Is smoking inferior?: evidence from variation in the earned income tax credit. *J Hum Resour* 2014;49:1094–120.
- 24 Kostova D, Tesche J, Perucic A-M, et al. Exploring the relationship between cigarette prices and smoking among adults: a Cross-Country study of low- and middle-income nations. *NICTOB* 2014;16:S10–15.
- 25 Clark M, Magati P, Drope J, et al. Understanding alternatives to tobacco production in Kenya: a qualitative analysis at the Sub-National level. *Int J Environ Res Public Health* 2020;17:2033.
- 26 Rahman MS, Ahmed NAMF, Ali M, et al. Determinants of tobacco cultivation in Bangladesh. *Tob Control* 2019;tobaccocontrol-2019-055167.
- 27 Leppan W, Lecours N, Buckles D. Tobacco control and tobacco farming: separating myth from reality: Anthem press 2014.
- 28 Nyoni M. Zimbabwe: bleak future for tobacco farming. The standard, 2019. Available: <https://www.thestandard.co.zw/2019/06/16/bleak-future-tobacco-farming/> [Accessed 20 Mar 2020].
- 29 Tafiranyika M. Tobacco farmers withhold crop. The daily news, 2020. Available: <https://dailynews.co.zw/tobacco-farmers-withhold-crop/> [Accessed 20 Jun 2020].
- 30 Chingosho. Survey of small-scale tobacco farmers 2019. research on economics of Excisable products (REEP), University of Cape town, 2020. Available: <https://www.datafirst.uct.ac.za/dataportal/index.php/catalog/788>
- 31 O'Brien BC, Harris IB, Beckman TJ, et al. Standards for reporting qualitative research: a synthesis of recommendations. *Academic Medicine* 2014;89:1245–51.
- 32 Bobak M, Jha P, Nguyen S, et al. Poverty and smoking. In: Jha P, Chaloupka F, eds. *Tobacco control in developing countries*. New York: Oxford University Press, 2000: 41–62.
- 33 Otanez M. Social disruption caused by tobacco growing. Study conducted for the Second meeting of the Study Group on Economically Sustainable Alternatives to Tobacco Growing - WHO Framework Convention on Tobacco Control, 2008. Available: <https://escholarship.org/uc/item/7ks4s9js> [Accessed 10 Jan 2020].