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Discretionary Maize Policy Interventions in Malawi

An Impact Analysis of Export Bans and Minimum Farm Gate Prices

Brent Edelman

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

This study assesses the efficacy of maize export bans in improving food security in Malawi and of minimum farm gate prices in increasing the incomes of Malawian smallholder farmers. It relies primarily on price and trade flow analysis using secondary data. In brief, the analysis shows that neither tool has been particularly effective in recent years in achieving their stated policy objectives. On the contrary, both maize export bans and minimum farm gate prices have been mostly non-binding or even counterproductive in their effects.

The government of Malawi employs export bans on maize to maintain or improve consumer access to the grain by blocking outflows. In blocking maize exports, it hopes to lower or at least stabilize the domestic maize price relative to international prices. For Malawi and other countries in the region, maize is central to "the implicit and sometimes explicit 'social contract' that the post-independence governments made with the African majority to redress the neglect of smallholder agriculture and infrastructural development during the former colonial period" (Jayne and Jones 1997, 1516). More recently, the legitimacy of politicians has become closely linked to maize access and availability (Harrigan 2003). As a result, government bans maize exports in order to fulfill its end of this social contract and "fend off any perception of food scarcity as well as unaffordability to the majority of smallholder farmers and consumers" (Chirwa and Chinsinga 2013, 24). In Malawi, the Farm Input Subsidy Program (FISP) provides an additional dimension to how government fulfills this social contract. According to the Minister of Agriculture, Irrigation and Water Development, the April 2013 "[maize export] ban was due to the huge investment that government was making in the agricultural sector" (*Face of Malawi* 2013), investments that are primarily direct to FISP.

Government uses minimum farm gate prices to improve farmers' access to market information, to encourage agricultural commodity traders to pay farmers higher prices for their crops, and to improve the incomes and, thereby, the welfare of smallholder farmers. For example, in justifying minimum producer prices for maize and cotton, government stated that:

> The "*price will protect farmers from traders who are perceived to be taking advantage of farmers' desperation and need for cash in the immediate post-harvest period by buying their maize at very low prices and then selling it back to farmers later in the year at high prices.*" (FEWSNET Malawi 2006, 1)

Minimum prices therefore are ostensibly designed to motivate traders to pay farmers fair prices for their produce. In addition, the prices are intended to be a tool to help farmers understand their costs of production and the value of the commodities they produce.[1]

The objective of the study described in this paper is to determine whether these discretionary policies on maize, in particular—export bans and minimum farm gate prices—have been effective in achieving their goals. Through exploring maize price changes and trade flows, we further determine whether these policies have had unintended consequences. Results and analyses of the impact of export bans and minimum farm gate prices are presented in sections 2 and 3, respectively, while section 4 summarizes the main findings.

2. MAIZE EXPORT BANS

2.1 Have export bans limited maize exports

The immediate purpose of an export ban is to stop the flow of a commodity out of a country, often when a country experiences poor production or regional prices increase relative to domestic prices.[2] Figure 2.1 shows monthly official maize exports[3] from Malawi over the period May 2004 to February 2015.[4]

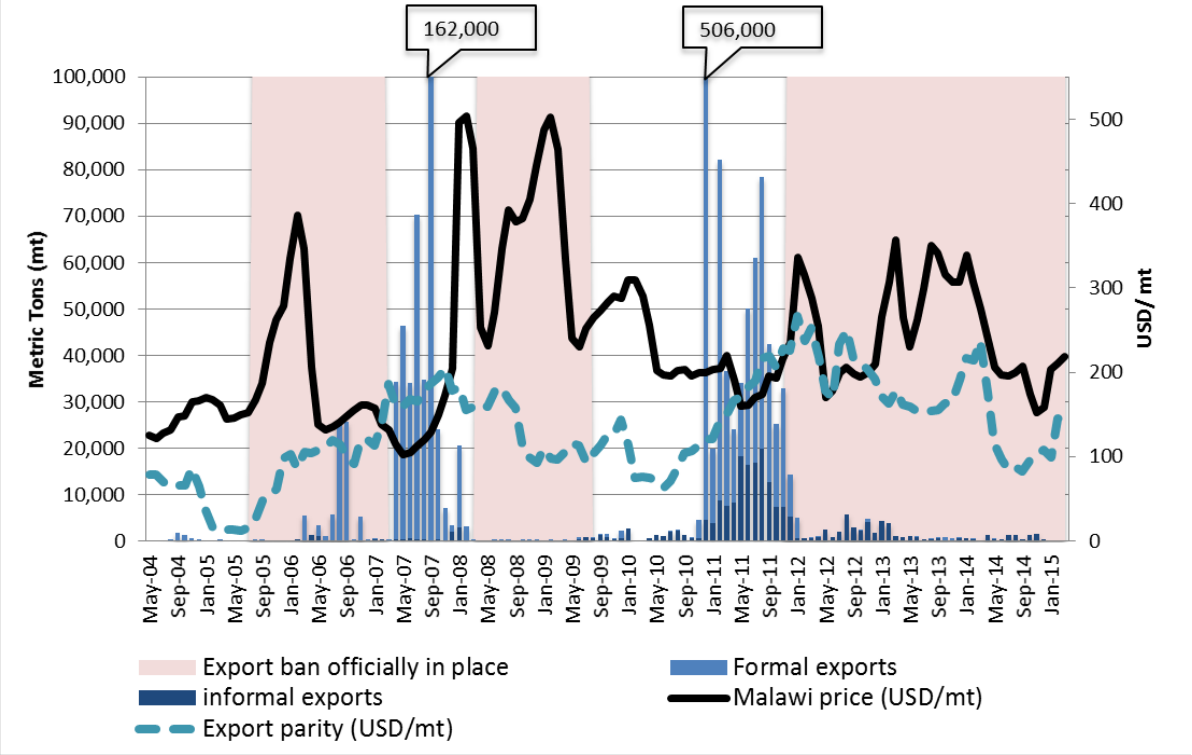
[1] Source: Interview with Ministry of Agriculture official.

[2] Since Malawi does not collect wholesale prices for maize, we use the retail maize price to represent the Malawi maize price. As Manda (2010) finds that the retail maize price represents 97.4 percent of the wholesale price, differences between these prices are negligible.

[3] As reported by the International Trade Centre, which receives its trade data from Malawi's National Statistical Office (ITC 2015).

[4] May 2004 is the first month for which monthly trade data is available. From 2001 to 2003, Malawi exported approximately 136,000 mt of maize and imported 442,000 mt (ITC 2015). As export bans are applied to maize and all maize-related products (Government of Malawi 2015, Porteous 2014), trade volumes are reported for HS Code 1005, which includes maize and maize seed. Maize seed accounted for 12 percent of overall maize exports from 2004 to 2014 (ITC 2015).

Figure 2.1—Monthly maize exports (mt) from Malawi and prices (USD/mt), May 2004 to Feb 2015



Source: Author's calculations based on ITC (2015), Johannesburg Stock Exchange (2015), and MoAIWD (2015b)

Note: Some values truncated for display purposes.

Figure 2.1 provides several insights into how effectively export bans are imposed and the effects that they have on maize prices. First, there is evidence that exports have taken place in the presence of an export ban: During the export ban that was in place from July 2005 to January 2007, 71,000 mt of maize was exported through formal channels, the equivalent of 3,700 mt per month. Out of this volume, approximately 25,000 mt was exported to Zimbabwe, 22,000 mt to Zambia, and 12,000 mt to South Africa. (See Appendix Figures A.1 and A.2 for exports by country of destination.) However, significantly lower quantities of maize left the country using formal export channels during subsequent export bans. During the export ban from April 2008 to August 2009, only 1,600 mt in total was formally exported, while during the ban from December 2011 to December 2014, formal maize exports totalled 16,000 mt.

Maize is exported through informal channels while export bans have been in place: 5,000 mt of maize were exported informally during the July 2005 to January 2007 export ban and 2,300 mt from April 2008 to August 2009. From December 2011 to December 2014, 51,000 mt were exported informally, 1,400 mt per month on average, compared to average monthly informal exports of 200 mt per month during the previous two export bans. Informal exports were especially high from December 2011 to February 2013, averaging 2,500 mt per month.

Just looking at trade flows, however, ignores relative prices, which are an important determinant of exports. If the domestic price is greater than the export parity price (the international price minus freight, insurance, and other administrative costs), then a prospective exporter would earn more by selling their maize domestically. It is only when the domestic price for maize falls below the export parity price that one would expect exporters to seek out international markets in which to sell their maize.

From May 2004 to December 2014, the Malawi price mostly exceeded the export parity price, falling below the export parity price less than 20 percent of the time (23 out of 128 months). Of the 73 months over this period during which export bans were in place, there was a price incentive to export – the price of maize in Malawi was lower than the export parity price – just 10 percent of the time (7 months). This implies that, from a pure price perspective, the export ban was rarely binding. During most of the time when the export ban was in place, it was superfluous, because there was little incentive for traders to export in the first place. It was more lucrative for traders to sell to the domestic market.[5]

In order to better understand the necessity of imposing an export ban to block maize outflows, we also look at individual months in which we see significant exports, defined as months in which exports exceed 5,000 mt (Table 2.1).[6] If

[5] One caveat is that the basis for the export parity price, SAFEX, does not necessarily track all regional prices perfectly; there are times when prices in Kenya or Zimbabwe, for example, deviate from the SAFEX price and could generate incentives for exporters that are not captured here.

[6] Eighty percent of the months from 2004 to 2014 had exports less than 5,000 mt. See Appendix Figure A.3 for further details.

we observe significant exports in months when there is no price incentive to export, i.e., the Malawi price is higher than export parity, then using relative prices is perhaps not an appropriate way to understand the necessity or relevance of export bans. If, however, significant exports track relative price differences, then examining the Malawi price compared to export parity price could be an appropriate tool for understanding the efficacy of export bans as a tool to block maize outflows.

Table 2.1—Maize exports from Malawi and export parity prices during periods with and without maize export bans, May 2004 to December 2014

	Price incentive to export	Months	Months with exports of more than 5,000 mt	Estimated value of exported maize (USD/mt)	Malawi price (USD/mt)	SAFEX price (USD/mt)
Export ban	Yes	7	0	n/a	188	272
	No	66	6	95	186	187
No export ban	Yes	16	15	254	152	264
	No	39	6	54	252	223

Source: Author's calculations based on ITC (2015), Johannesburg Stock Exchange (2015), and MoAIWD (2015b)

First, we observe in Table 2.1 that during export bans, there were no significant formal exports during the seven months during which there was a price incentive to export.[7] In the 66 months during which the export ban was in place and there was no price incentive to export, formal exports exceeded 5,000 mt only six times. Of these, five took place during the July 2005 to February 2007 export ban and the other just as the December 2011 ban went into effect. The average value of these exports was USD 95/mt,[8] well below the Malawi (USD 186/mt) and SAFEX (USD 187/mt) prices during that time period, suggesting that a majority of these exports could have been government to government humanitarian assistance and, hence, not responsive to relative prices.

Over the 58 months between May 2004 and December 2014 when an export ban was not in place, there was a price incentive to export during 16 months. In 15 of those months, formal exports exceeded 5,000 mt. The average valuation of these exports was USD 254/mt. This price is more in line with SAFEX during the same time period (USD 264/mt) and well above the Malawi price (USD 152/mt), indicating that these export flows were a response to relative prices. Of the exports that took place during the six months when there was no price incentive to export (January 2008, December 2010 to April 2011), 97 percent of these exports by volume went to Zimbabwe. Based on that fact that the average valuation of these exports, USD 54/mt, was much lower than the average SAFEX price of USD 223/mt and the Malawi domestic market price of USD 252/mt at the time, a large proportion of these exports likely were humanitarian in nature.

This examination of months with significant maize exports, price incentives, and export valuations shows that commercial (versus humanitarian) trade flows of maize out of Malawi for the most part are responsive to relative price incentives. During the more than six years that maize export bans have been in place since 2005, the Malawi domestic price for maize has fallen below the regional export parity price just seven times. However, during these seven months, the price premium for exporting (USD 84/mt) was only just marginally higher than the costs incurred by exporters to export (USD 75/mt). As such, it appears that the maize export ban has largely been unnecessary. Rather, the high domestic price of Malawi maize relative to the regional maize price appears to have sufficiently deterred maize exports. Typically, maize exports are not a significant drain on Malawi's national maize stocks.

2.2 Have export bans lowered prices?

In comparing the Malawi domestic price for maize to the import and export parity prices that Malawi faces for maize trade within the southern Africa region, it is not evident that export bans have lowered prices for consumers (Figure 2.2). Shortly after the announcement of the July 2005 export ban, domestic prices rose rapidly and even exceeded import parity prices from January to March 2006.[9] As domestic prices fell to export parity prices in May 2006,[10] it is understandable that traders

[7] A similar analysis was conducted for informal exports. Informal exports exceeded 5,000 mt in 12 out of 128 months, twice during export bans (once when the domestic price was less than export parity) and ten times outside of the export ban periods (seven times when the domestic price was less than the export parity price). As the export ban is not designed to limit informal exports, however, we have omitted informal exports from our analysis. Further information is available upon request.

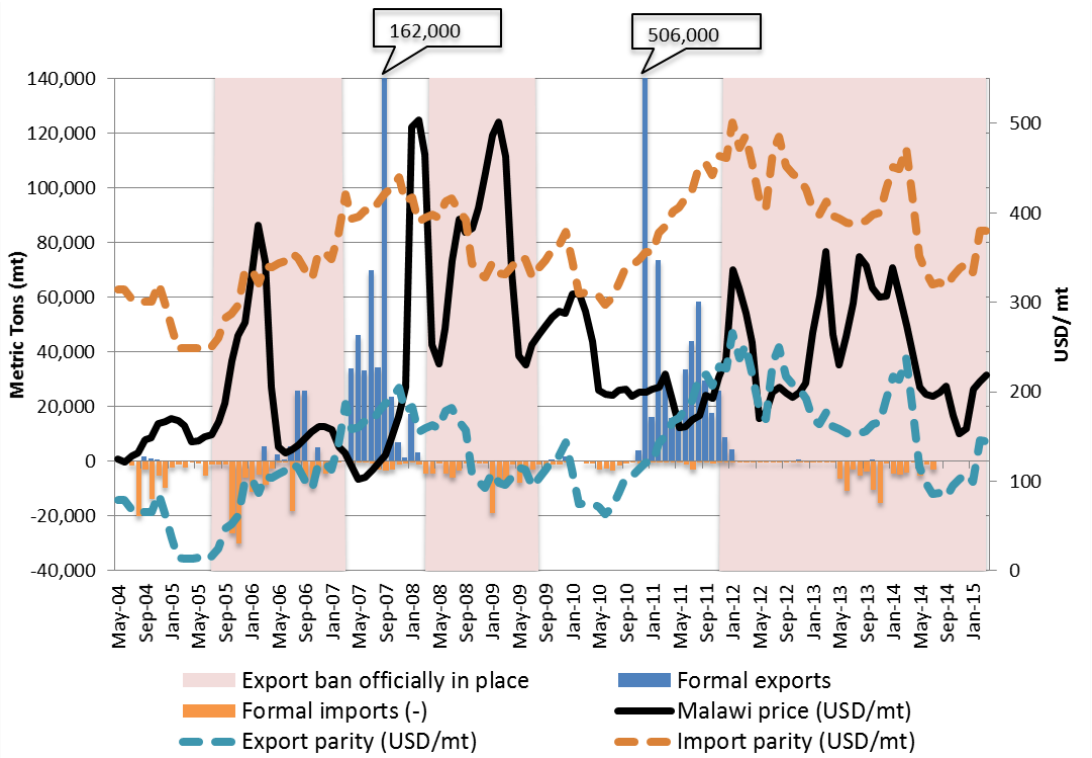
[8] Author's calculations based on ITC (2015).

[9] The import parity price is calculated as the SAFEX price plus USD 160/mt for transport, insurance, and other administrative costs (based on costs reported in interviews with transporters) to import from South Africa, from which Malawi imported the most maize from 2004 to 2014.

[10] The export parity price is calculated as the SAFEX price minus USD 75/mt for transport, insurance, and other administrative costs (based on costs reported in interviews with transporters) to export to Zimbabwe, to which Malawi exported the most maize from 2004 to 2014.

pushed to export, but it is not clear how or why export licenses were issued during an export ban. Once the ban was lifted in February 2007, prices had fallen well below the export parity price, bottoming out in June 2007 at USD 105/mt, USD 78 below export parity. Prices stayed below export parity through January 2008, by which point 97 percent of farmers would have sold a majority of their crop harvested in the 2007/08 season (Edelman et al. 2015), even though exports during that same time period totalled 349,000 mt, 11 percent of that season's total production.[11]

Figure 2.2—Formal maize trade flows, average maize price in Malawi, and import and export parity prices for maize, May 2004 to February 2015



Source: Author's calculations based on ITC (2015), Johannesburg Stock Exchange (2015), and MoAIWD (2015b)

Note: Some values truncated for display purposes.

Domestic prices then rose in January 2008, reaching USD 114 above the import parity price in February 2008. Government then re-imposed the maize export ban in April 2008; prices fell temporarily back to within the import/export parity price band, then jumped to over USD 500 in February 2009, USD 170 above import parity, further evidence to suggest that export bans fail to decrease prices relative to international price.

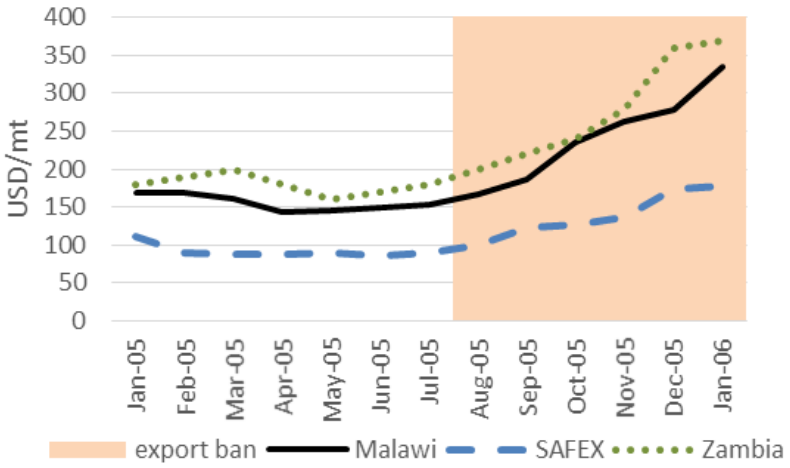
The export ban was lifted in August 2009. Prices then fell and exports increased rapidly, peaking at 506,000 mt in December 2010. Exports continued at a monthly average of approximately 36,000 mt per month between January and August 2011, then slowed until the ban was put back in place in December 2011. Maize prices again increased rapidly after the announcement of the ban, then briefly fell below export parity before rising back to within the import/export parity band until the end of the period of study in early-2015.

To better understand what happens to maize prices when export bans are put in place, we undertake a simple visual analysis of price movements before and through the initial months of an export ban. Specifically, we look at how prices from three markets – Malawi, Zambia, and SAFEX – behaved in the six months leading up to Malawi's export ban announcements and in the six months after the ban was put in place, tracking the three prices in USD terms to try to understand the extent to which export bans protect Malawi from external price movements. We select SAFEX as an indicative price for regional maize and Zambia as the partner with which Malawi has engaged in the most maize trade from 2004 to 2014.[12]

[11] Author's calculations based on MoAIWD(2015c).

[12] Author's calculations based on ITC (2015).

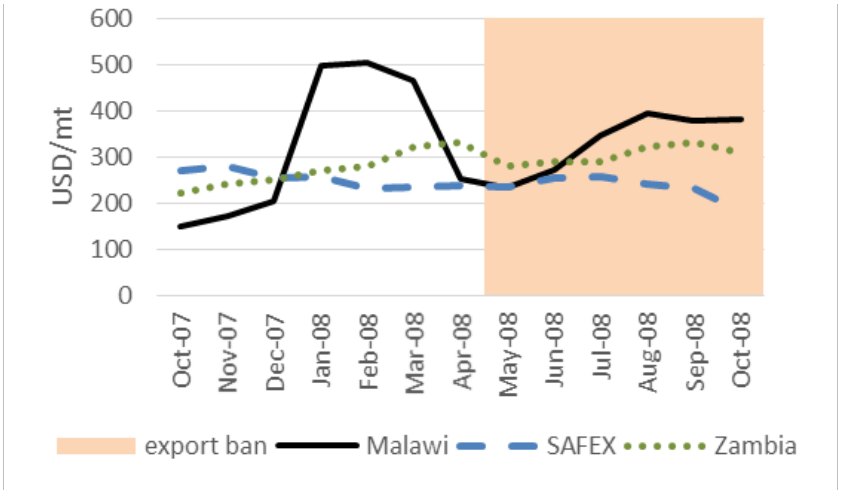
Figure 2.3—Maize prices before and after export ban in Malawi, 2005-06



Source: Author's calculations based on MoAIWD (2015b), Zambia Central Statistics Office (2015), and Johannesburg Stock Exchange (2015)

Figure 2.3 shows that the export ban in 2005 and 2006 does not appear to have insulated Malawi from regional price increases. In absolute terms, the Malawi price increased to 50 percent higher than the SAFEX price in the months following the export ban and moved closely with the Zambia price before and after the announcement of the export ban.[13] While is it difficult to say what would have happened without the ban, it does not appear that this ban lowered prices relative to regional prices.

Figure 2.4—Maize prices before and after export ban in Malawi, 2007-08



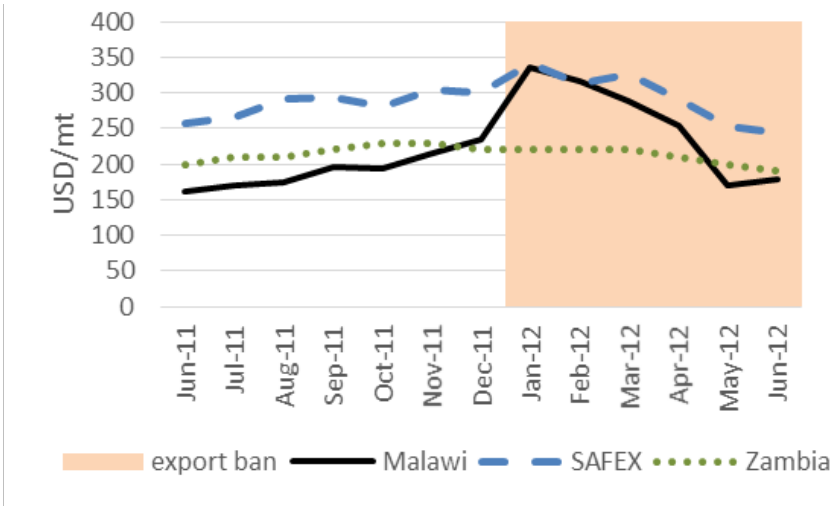
Source: Author's calculations based on MoAIWD (2015b), Zambia Central Statistics Office (2015), and Johannesburg Stock Exchange (2015)

In the months preceding the April 2008 ban, the Malawi price increased rapidly, peaking in February 2008 at USD 504, more than USD 350 higher than the October 2007 price (Figure 2.4).[14] The Malawi price then fell until the export ban was put in place in April 2008, before rising again through the harvest period, ending higher than both the SAFEX and Zambia prices. The SAFEX and Zambia prices, however, remained relatively stable throughout this time period. As with the earlier 2005 to 2006 ban, the April 2008 export ban was not associated with a price decrease compared to regional prices; on the contrary, domestic price increased more than regional prices during this time period.

[13] This could be attributed to relatively poor production in 2004/05 (1.2 million mt, down from 1.7 million mt in 2003/04) (MoAIWD 2015c); due to poor production, closing the borders was insufficient to shield Malawi from regional price increases.

[14] Production in 2006/07 was 3.1 million mt (MoAIWD 2015c), the highest production to date for Malawi, so it is surprising that prices increased rapidly going into the lean season. One potential explanation is that formal exports, which totalled 400,000 mt from April to October 2007, pushed up domestic prices from well below export parity during that time period (Figure 2.1).

Figure 2.5—Maize prices before and after export ban in Malawi, 2011-12



Source: Author's calculations based on MoAIWD (2015b), Zambia Central Statistics Office (2015), and Johannesburg Stock Exchange (2015)

In the months preceding the December 2011 export ban, the Malawi USD price closely tracked the Zambia price, but remained well below the SAFEX price (Figure 2.5). As the ban was implemented in December 2011, the domestic price increased rapidly, exceeding the Zambia price and reaching the historically high SAFEX price – the highest SAFEX price in the period from 2004 to 2015 – in the months following the ban announcement.[15] The domestic price remained at or near the SAFEX price and above the Zambia price until Malawi's harvest season in May-June 2012, when domestic price fell back to pre-export ban levels.

Visual analysis of price movements before and through the initial months of an export ban fails to demonstrate a clear relationship between export bans and lower domestic maize prices. The domestic maize price tracked regional prices before and after the July 2005 export ban announcement and remained well above the SAFEX price throughout the time period analysed. In the months following the April 2008 export ban announcement, the domestic price increased more than regional prices. The December 2011 export ban announcement is associated with domestic price at or near the SAFEX price and well above the Zambia price in the months following the announcement. As these visual depictions do not constitute econometric analysis, we cannot show or refute a causal relationship between export ban announcements and lower domestic price. However, econometric analysis of maize export bans similarly concludes that export bans do not lower domestic price compared to neighbouring markets. In a cross-country analysis of 12 countries in Eastern and Southern Africa, including Malawi, Porteous (2012) finds that export bans do not have an effect on price differences between neighbouring markets in different countries.

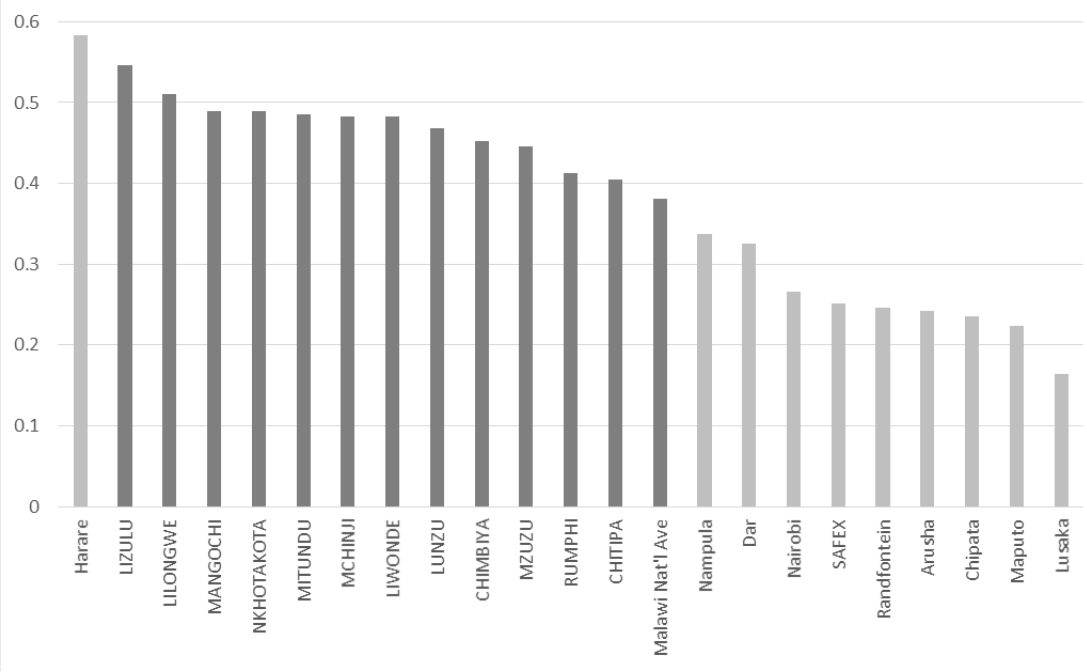
2.3 Have export bans stabilized prices?

Just as it is unclear that export bans lower domestic maize prices relative to regional prices, they also do not appear to coincide with a more stable domestic price relative to regional prices. Figure 2.6 shows the coefficients of variation (CVs) for average monthly maize USD prices from May 2005 to March 2015 for domestic and selected regional maize markets. As the time period considered includes years both when export bans were in place and when they were not, we later separate CV measures into months with and without bans. The markets selected for Malawi are those reporting price data most consistently during this time period, while regional markets are major markets in countries with which Malawi has conducted the most maize trade.[16]

[15] Author's calculations based on Johannesburg Stock Exchange (2015).

[16] Author's calculations based on ITC (2015).

Figure 2.6—Maize price uncertainty in regional markets, 2004-15, coefficient of variation



Sources: Author's calculations based on MoAIWD (2015b), Zambia Central Statistics Office (2015), Mozambique Ministry of Agriculture Agricultural (2015), Tanzania Ministry of Industry Trade and Marketing (2015), FEWSNET Zimbabwe (2015), Kenya Ministry of Agriculture and Livestock (2015), Statistical Agency of South Africa (2015).

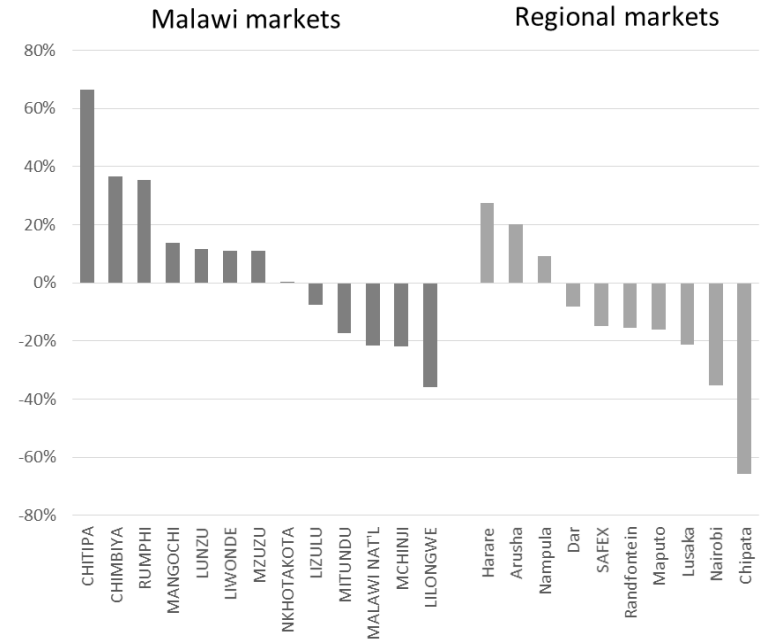
Note: Malawi markets are in all caps with darker grey bars. (SAFEX is also in all caps but with a lighter grey bar.)

Excepting for Harare, Malawi's markets exhibit the highest measures of maize price volatility in the region. This includes the variability observed in Malawi's national average maize price. In general, therefore, it does not appear that maize export bans are associated with increased price stability. These findings fit with other analyses of price volatility in the region, including work done by Chapoto and Jayne (2009), who find that Malawi had the highest staple food price variability from 1994 to 2009.

As the above analysis includes time periods during which export bans were both in force and not in force, it is possible that maize price volatility depends on whether or not an export ban is in place. For example, the 2007/08 export ban likely was a policy response to high prices, even though by the time it came into effect prices had dropped again. Nevertheless, it may still be possible that export bans either reduce or increase volatility by shielding the domestic market from international markets. We therefore calculate measures of volatility for two discrete periods for the time period from 2004 to 2015: (1) months during which Malawi did not have a maize export ban, and (2) the months when such a ban was in place. We then calculate the percentage by which the CVs change when the export ban is in place relative to when it is not (Figure 2.7). If the export ban decreases price volatility, i.e., increases price stability, then we would expect CVs to be lower when the export ban is in place and hence percentage changes to be negative.

We observe in Figure 2.7 that export bans are associated with lower price volatility in four out of 12 Malawi markets as well as for the overall Malawi national average price. In eight out of 12 Malawi markets, however, prices are actually more volatile when export bans are in place compared with when they are not. During these same time periods, prices are more volatile in just three regional markets and less volatile in seven of these markets. For Malawi, therefore, export bans are not strongly associated with more stable prices.

Figure 2.7—Maize export bans and changes in price volatility, 2004-15



Sources: Author's calculations based on MoAIWD (2015b), Zambia Central Statistics Office (2015), Mozambique Ministry of Agriculture Agricultural (2015), Tanzania Ministry of Industry Trade and Marketing (2015), FEWSNET Zimbabwe (2015), Kenya Ministry of Agriculture and Livestock (2015), Statistical Agency of South Africa (2015).

Note: Malawi markets are in all caps with darker grey bars. (SAFEX is also in all caps but with a lighter grey bar.)

2.4 Have export bans increased maize stocks?

Another factor to consider when trying to understand how effective export bans are in improving access to maize is maize stocks. To do so, we incorporate maize production into the analysis.[17] Since production is annual while prices move throughout the year, we build a monthly maize balance sheet. This balance sheet takes into consideration production, timing of harvest, net formal and informal trade, consumption, processing for value-addition, and post-harvest losses. The following are the assumptions and data sources used to develop the monthly maize balance sheet:

- Production: official production estimates (MoAIWD 2015c)
- Timing of harvest: for rain-fed maize, 20 percent in March, 30 percent in April, 40 percent in May, 10 percent in June; for irrigated maize, 40 percent in November, 60 percent in December (consultations with MoAIWD officials)
- Net formal inflows: monthly net formal imports (ITC 2015)
- Net informal inflows: monthly net informal imports (FEWSNET Malawi 2014)
- Consumption: 500 grams per person per day (author's calculations based on Malawi NSO 2008; MoAIWD 2015a)[18]
- Processing for value-addition: 0.5 grams per person per day (author's calculations based on NSO 2008; MoAIWD 2015a)
- Post-harvest losses: 1.3 percent per month of carryover stocks (author's calculations based on African Postharvest Losses Information System (2015))
- Zero lower-bound: monthly stocks are restricted from going below zero, i.e., negative maize stocks are not allowed. In months when maize stocks would otherwise be negative, we assume the gap is filled by humanitarian imports. Alternatively, negative stocks could be attributed to measurement error in the food balance sheet.

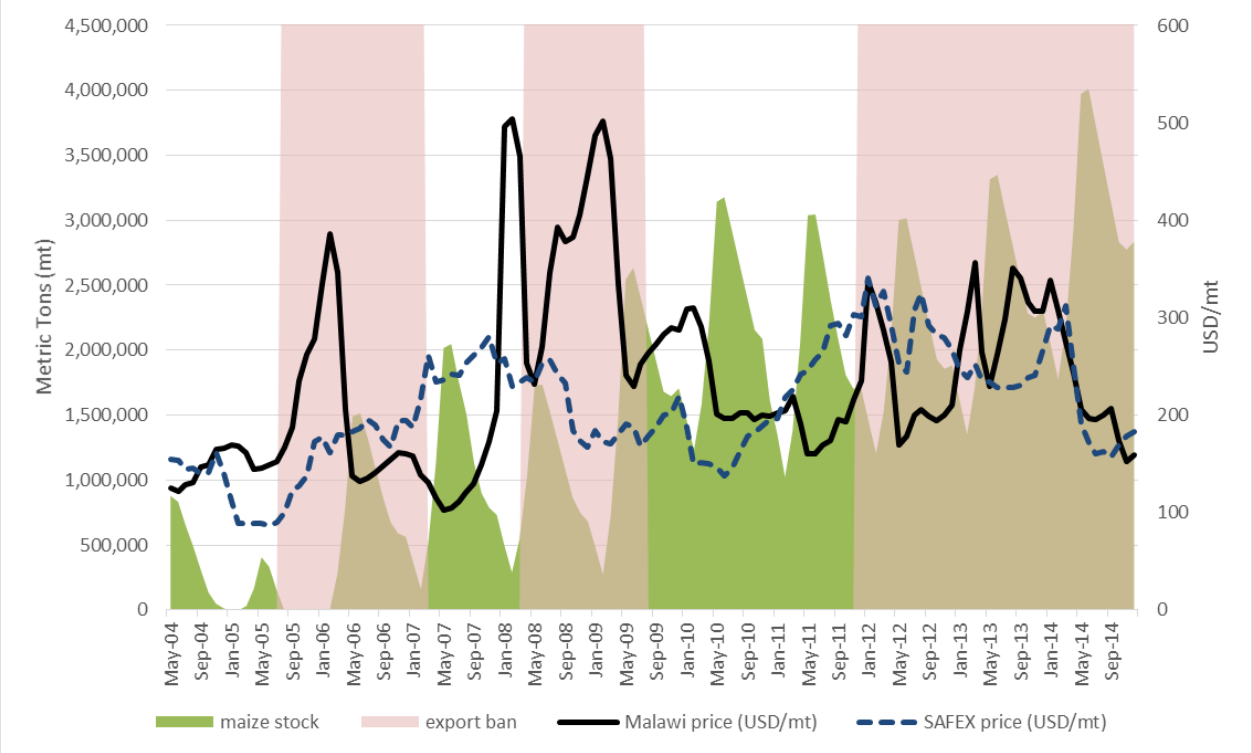
Based on these assumptions, ending stocks going into 2015 should have been just below 3 million mt (Figure 2.8). With such domestic stocks, the current maize export ban would have been largely unnecessary from a maize access perspective, since domestic supplies would have been more than sufficient for national consumption and processing requirements. This simple analysis highlights how sensitive a balance sheet approach is to its assumptions. First, the balance

[17] Another aspect to consider is whether or not maize export bans have affected production, either directly through limiting access to export markets or indirectly through price or price volatility. A forthcoming paper on uncertainty in assessing the economic impact of export bans and minimum farm gate prices in Malawi will address some of these issues.

[18] Author's estimates from Third Malawi Integrated Household Survey put maize consumption per person per day at 450 grams (NSO 2012). For the purposes of this study, we use 500 grams, which matches with MoAIWD's 2015/16 Food Balance Sheet figures (MoAIWD 2015a).

sheet clearly depends on assumptions regarding consumption but, even if consumption is increased by 20 percent to 600 grams per person per day, ending stocks would still be near 1 million mt. Furthermore, the price spikes in 2008 and 2009 are difficult to explain from a maize supply perspective, as there appear to have been significant maize stocks in the country during these price increases.

Figure 2.8—Monthly maize balance sheet for Malawi, based on reported maize production estimates and consumption requirements, 2004 to 2014



Sources: Author's calculations based on MoAIWD (2015b), Johannesburg Stock Exchange (2015), and other sources listed above.

The balance sheet calculations are highly dependent on maize production estimates, which some observers suggest may have been inflated since the introduction of FISP (Chirwa and Dorward 2013; SOAS et al. 2008).[19] Specifically, the approach taken by SOAS et al. (2008) suggests using a +/- 20 percent range for maize production since 2005/06 to allow for potential over- or under-estimation. We therefore also present one maize balance sheet scenario in which production estimates are revised downward by 20 percent from the 2005/06 production season onward (Figure 2.9).

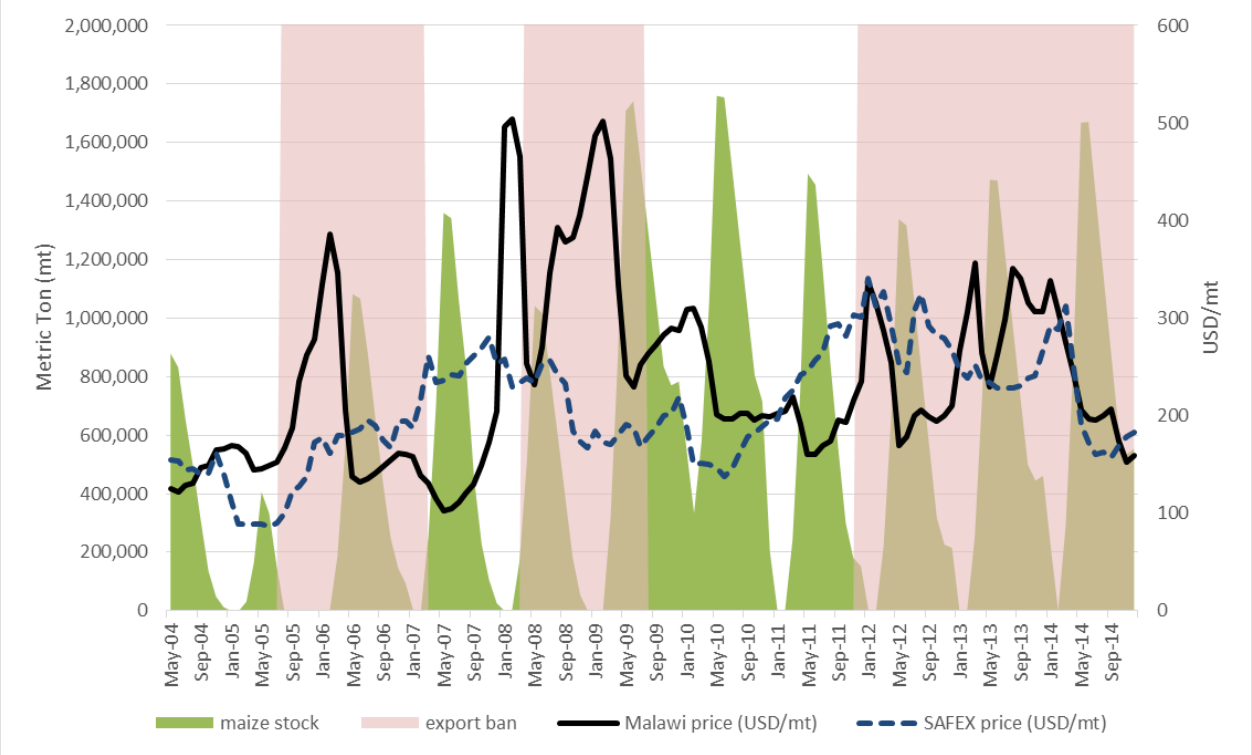
With the revised production estimates in place, there are at least three findings of note. First, there is no perceptible difference in monthly maize stocks when the export bans are in place versus when they are not. Rather, maize stocks run out in every lean season except for 2010/11, when a ban was not in place. This trend roughly matches past humanitarian emergency food assistance responses in Malawi.

Second, when looking at domestic maize prices and stocks, one gets a better sense of what is driving Malawi's maize price seasonality. The Malawi price reaches its seasonal low when domestic stocks are at their highest, usually in May and June. Prices then rise as stocks are depleted, to peak in January and February when maize stocks run out. While the absolute price lows and highs vary year to year and the seasonal price variations differ as well, it appears that the Malawi price is quite sensitive to domestic stocks, which is not surprising given that Malawi is relatively insulated from the regional maize market by trade restrictions and high transport costs. [20]

[19] Uncertainty about production estimates is one reason that government imposes export bans (Edelman and Pauw 2015).

[20] These observations support findings highlighted by Edelman and Pauw (2015) regarding maize price seasonality and unpredictability.

Figure 2.9— Monthly maize balance sheet for Malawi, 2004 to 2014, with maize production estimates adjusted downward by 20 percent



Sources: Author's calculations based on MoAIWD (2015b), Johannesburg Stock Exchange (2015), and other sources listed above.

Third, it appears that maize export bans are driven as much by production expectations as by prices. The 2005/06 ban was put in place just after the poor production season of 2004/05. It was then subsequently lifted after stronger production in 2005/06 and expectations of a strong harvest in 2006/07. The 2008/09 ban was imposed just after a large price spike, but also in anticipation of a weaker harvest in the 2007/08 production season. After strong production in 2008/09, the ban was again lifted and stayed lifted through both the 2009/10 and 2010/11 production seasons. The ban put in place in December 2011 is more difficult to explain, as production in 2011/12 was relatively good and prices were below the ten-year average (USD 232/mt). Subsequently, the ban remained in place through three relatively strong production seasons, including a record harvest of 3.9 million mt in 2014/15.

Because any findings using this historical monthly maize balance sheet approach are sensitive to underlying assumptions, especially on national maize production, it is not clear how valuable it is as a tool for food policy analysis. However, it can prove useful as a predictive tool with which policy makers can adjust assumptions to come up with best- and worst-case scenarios and simulate what impact policy could have on maize stocks, for example, through encouraging irrigated maize production or allowing commercial trade.[21]

3. MINIMUM FARM GATE PRICES FOR MAIZE

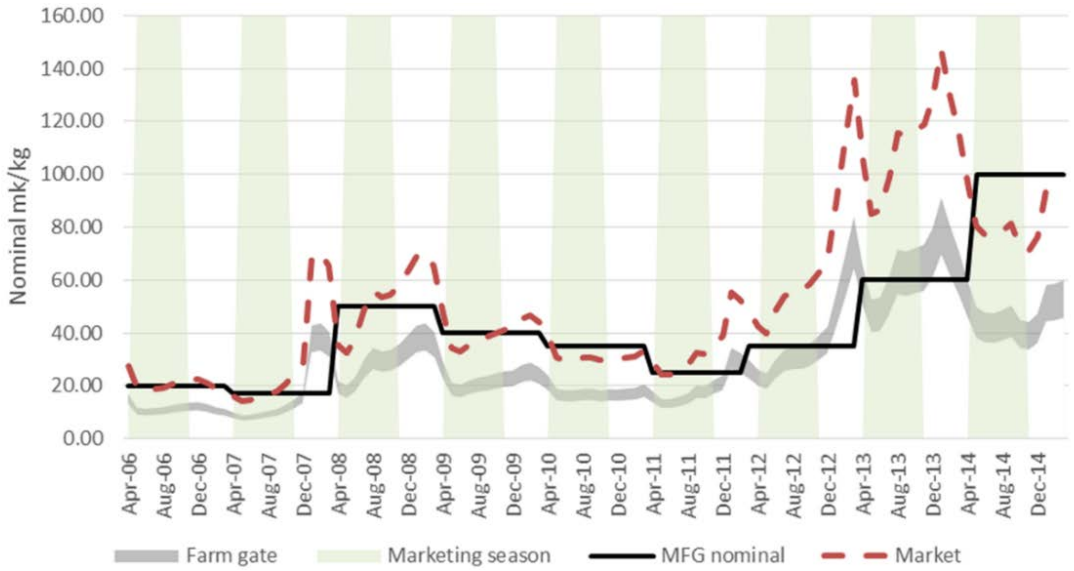
In this section, we assess relationships between government-announced minimum farm gate (MFG) prices and observed farm gate, market, and regional prices for maize, both in nominal MK and USD terms. MFG prices are collected from historical government gazettes and associated gross margin analyses. For observed farm gate prices, the government collects this data, but these prices were not available for the years 2010 to 2013. For the years in which the data are available, prices are only collected from a handful of markets. To estimate farm gates prices in the absence of official data, we construct a farm gate price band based on reported actual prices paid at the farm gate by major maize wholesalers; this band runs from 47 to 62 percent of observed market prices (Manda 2010).[22]

From 2006 to 2011, the MFG price remained above the farm gate price band in nominal MK terms with few exceptions (Figure 3.1). Several times over this period, the MFG price even exceeded officially-reported market prices for maize. In 2012 and 2013, by contrast, the MFG price was in or near the farm gate price band. In 2014 it was then again set above national market prices.

[21] Sensitivity analysis scenarios using the monthly maize balance sheet based on a variety of production estimate assumptions are available upon request.

[22] This approach follows that taken by Cameron, Gourichon, and Morales (2015).

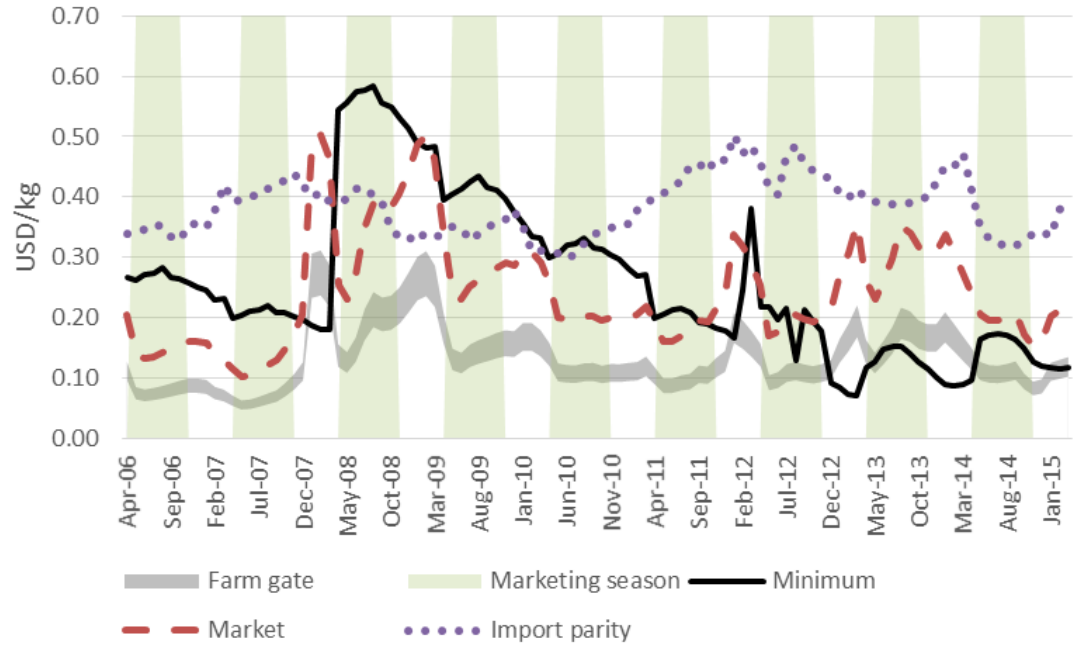
Figure 3.1—Farm gate price band, announced minimum farm gate price (MFG), and average market price for maize, April 2006 to Feb 2015, nominal prices in MK/kg



Source: Author's estimates based on MoAIWD (2015b) and Manda (2010)

Of note is the static nature of the MFG price. As it is announced only once per marketing season, it cannot adjust to macroeconomic factors like inflation, the value of the Malawi Kwacha, or price seasonality. The effect of this lack of flexibility is especially evident in late 2012, shortly after the devaluation of the kwacha, when market prices and the farm gate price band rose rapidly, but the MFG remained fixed. Moreover, in late 2014 the government itself bought maize for its National Food Reserve Agency at a price of MK 95/kg (inclusive of transport),[23] which was below its own recommended MFG price of MK 100/kg.[24] For that season, the MFG price was unrealistically high, not able to move with market trends, and not adhered to by government itself.[25]

Figure 3.2— Farm gate price band, announced minimum farm gate price, average market price for maize, and import parity price for maize in Malawi, April 2006 to Feb 2015, real prices in USD/kg



Source: Author's estimates based on MoAIWD (2015b) and Manda (2010)

In real USD prices (Figure 3.2), the MFG price exceeded market prices for most of the period from 2006 to 2011. From May 2008 to May 2010, the minimum farm gate price exceeded the import parity for maize – in other words, farmers

[23] Source: discussions with Agricultural Commodities Exchange Africa.

[24] While the extent to which the MFG price is legally binding is unclear (Edelman and Pauw 2015), the end of the 2014/15 announcement establishing the MFG for that season states that "[a]nyone violating these [prices] will be persecuted" (Government of Malawi 2014).

[25] Furthermore, as it is announced as a single price for the entire country, it does not allow for regional variations in production practices or costs associated with marketing, like transport (Edelman and Pauw 2015).

were advised to demand a price higher than what it would cost a wholesaler to import maize, thus putting Malawi's farmers at a disadvantage relative to other maize producers in the region from a price policy perspective. From late 2012 to early 2014, the MFG price fell below the farm gate price band, likely due to currency fluctuations. Again, the lack of flexibility in the MFG price means that the price cannot not adjust to shorter-run market factors, making it often an unrealistic price, reducing its effectiveness as a tool to help farmers make maize marketing decisions.

4. MAIN FINDINGS

There is no evidence from these analyses that maize export bans have increased the access of Malawi consumers to maize. Blocking maize outflows from the country has not resulted in lower or more stable domestic prices for maize consumers relative to regional maize prices. Moreover, we find significant maize exports, both formal and informal, while export bans were in place. During the export ban that lasted from July 2005 to January 2007, 71,000 mt of maize were exported through formal channels, the equivalent of 3,700 mt per month. In the months from December 2011 to February 2013, an average of 2,500 mt per month was exported through informal channels, the equivalent of more than eighty 30-mt truckloads per month.

We find that exports of maize from Malawi have been quite responsive to market price signals. In the 73 months that export bans were in place from May 2004 to December 2014, the Malawi price fell below export parity just seven times. When the export ban was not in place, almost all commercial exports of note took place in months when the Malawi price fell below export parity. One conclusion to draw from this pattern is that the export ban has rarely been binding from a relative price incentive perspective. This suggests that the export ban has been redundant, since high domestic prices relative to regional prices have sufficiently deterred commercial exports during times when the export ban has been in place.

The maize export ban has not lowered domestic prices relative to regional prices. In 2005-06, the domestic maize price tracked regional prices before and after the export ban announcement and remained well above the SAFEX price. In the months following the April 2008 export ban announcement, the domestic price more than doubled to levels exceeding both the SAFEX and the Zambia price. In 2011-12, the domestic price increased rapidly to the historically high SAFEX price shortly after the export ban announcement and remained well above the Zambia price in the months following the announcement. Econometric analysis of maize export bans similarly concludes that export bans have not lowered domestic price compared to neighbouring markets (Porteous 2012).

Just as it is unclear that export bans lower domestic maize prices relative to regional prices, they also do not stabilize domestic price relative to regional prices. Rather, these bans tend to coincide with higher levels of price uncertainty in domestic markets relative to regional markets. Except for Harare, Malawi's markets exhibited the highest measures of price volatility in the region from 2004 to 2015. And in eight out of twelve Malawi markets, prices were found to be more volatile in times where export bans were in place versus when they are not. This compares to increased price volatility in only three out of ten regional markets during the same time periods.

In order to incorporate maize production into the analysis of the impact of export bans on maize prices, we also developed a monthly maize balance sheet, which accounts for production, consumption, trade, losses, and other factors. While this balance sheet is sensitive to production estimates, it shows no perceptible difference in monthly maize stocks when the export bans are in place versus when they are not. Rather, maize stocks ran out in every lean season over the study period except for 2010/11, a season when a ban was not in place. The balance sheet also gives insight into maize price seasonality and variation across seasons. Finally, the balance sheet approach suggests that maize export bans are driven as much by production expectations as by price. Because any findings using a historical monthly maize balance sheet approach rely heavily on underlying assumptions, it is not clear how valuable the balance sheet is as a tool for analysis. However, it could be useful as a predictive tool with which policy makers can adjust assumptions to arrive at best- and worst-case scenarios and simulate maize policy interventions.

When looking at the imposition of minimum farm gate prices in Malawi, we find that the lack of flexibility of the policy intervention results in unrealistic prices for farmers to demand. In nominal terms, these prices often exceed government-reported market prices and at times has even exceeded the price at which government has conducted official procurements for its national maize reserve. In USD terms, the MFG price regularly exceeds the market price and at times has even exceeded the regional import parity price. In other years, the MFG price has fallen below observed farm gate prices. Often, these distortions and discrepancies between observed prices and the MFG price are due to the static nature of the MFG price. It is announced just once per season and holds for the following 12 months, so cannot be adjusted to reflect short-term domestic or regional market factors. By promoting a MFG price, government appears to be advising farmers to demand an unreasonable price – sometimes far too high, sometimes excessively low – thus reducing its effectiveness as a tool farmers can use to make maize marketing decisions.

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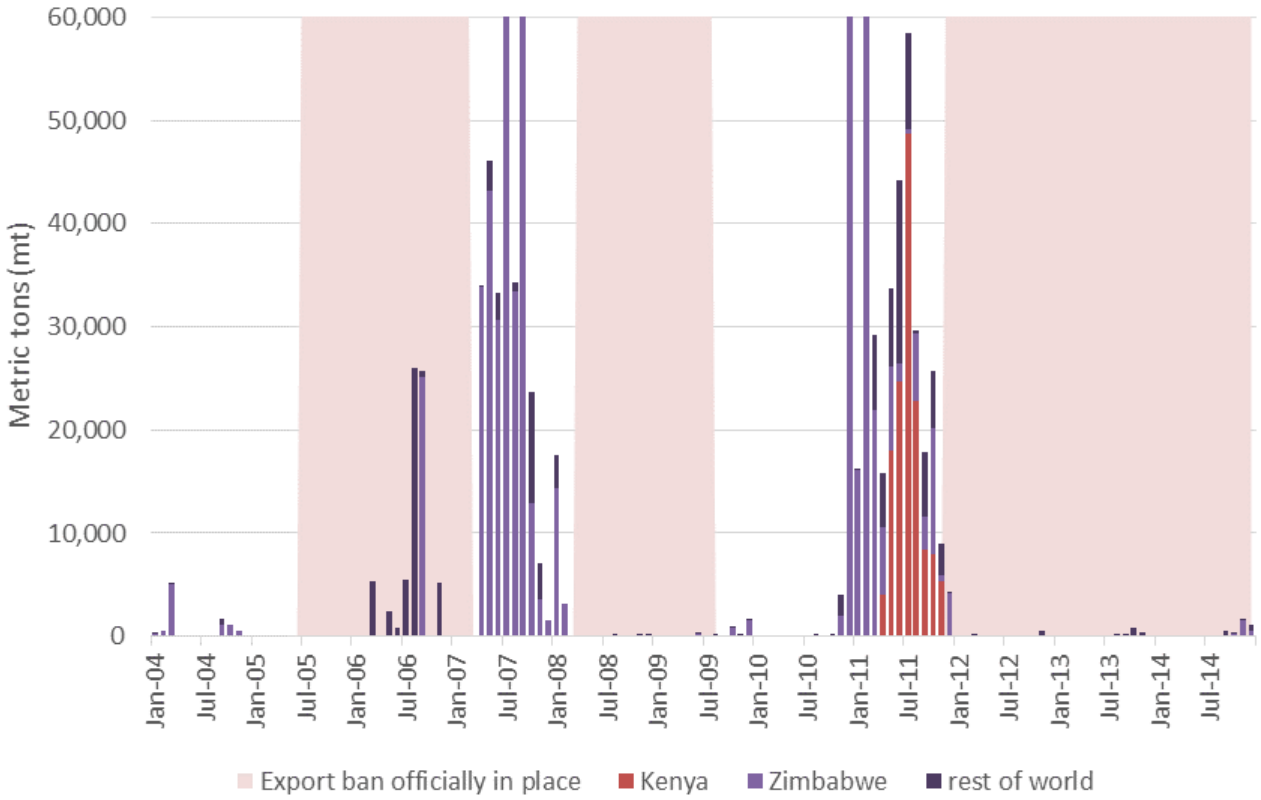
APPENDIX

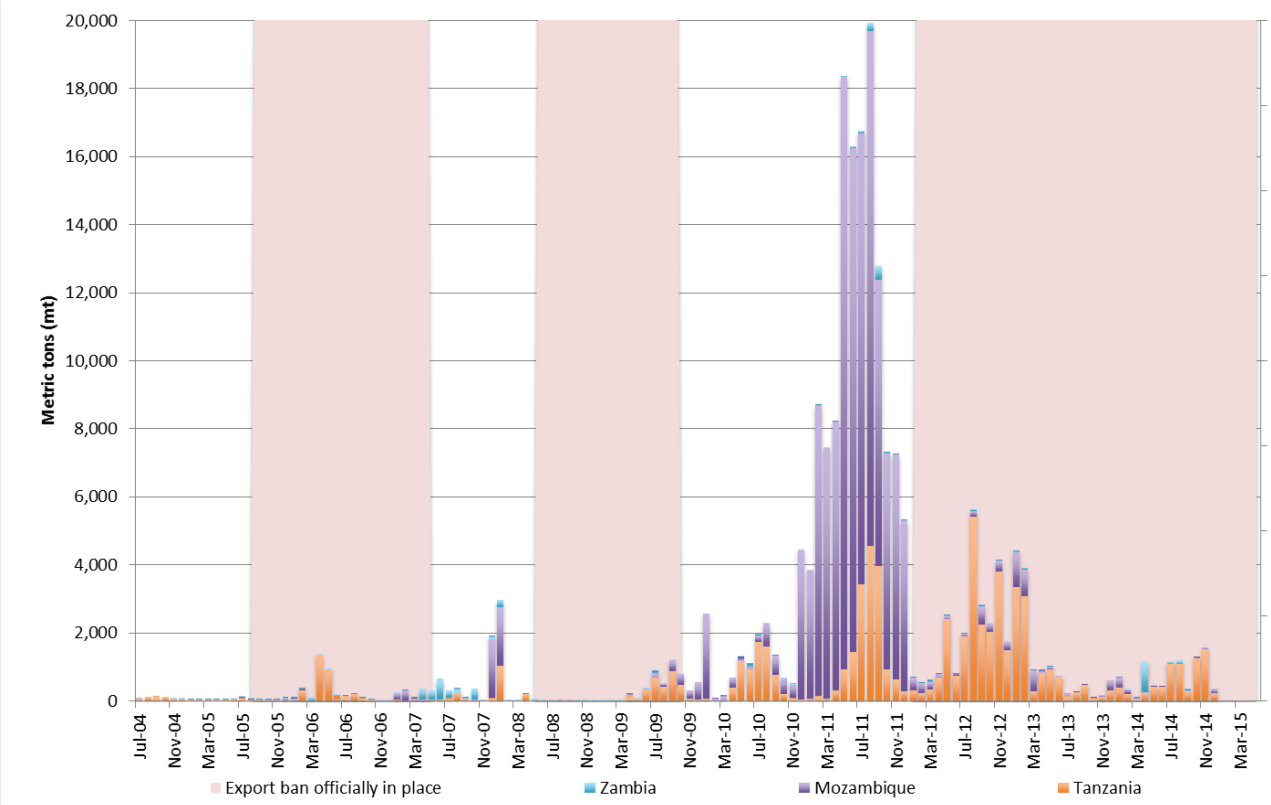
Appendix Figure A.1—Formal exports of maize from Malawi by destination, 2004 to 2014



Source: Author's calculations based on ITC (2015).

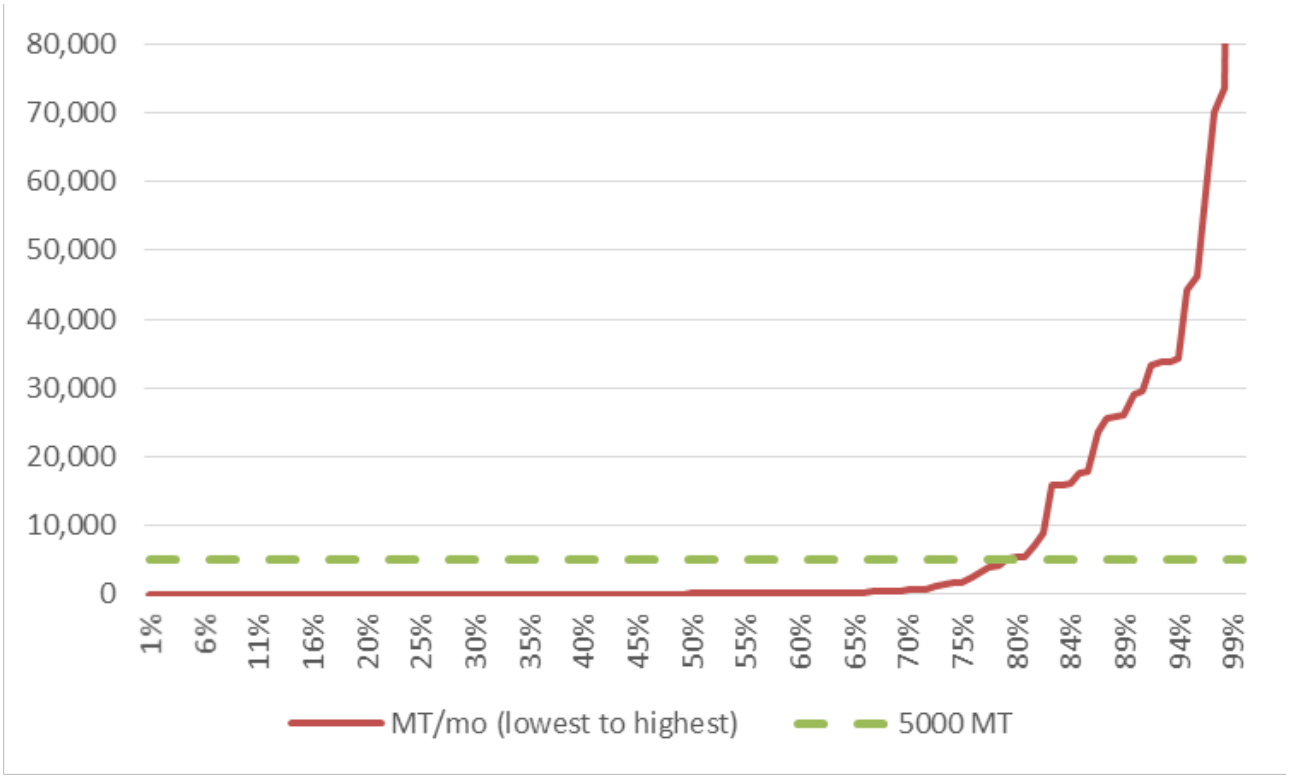
Note: Some values truncated for display purposes.

Appendix Figure A.2—Informal exports of maize from Malawi by destination, 2004 to 2014



Source: Author's calculations based on FEWSNET (2014).

Appendix Figure A.3—Quantities (mt) of monthly maize exports from Malawi, 2004 to 2014, by percentile



Source: Author's calculations based on ITC (2015).

Note: 97th to 99th percentile values truncated for display purposes.

About the Author

Brent Edelman is a research collaborator of the International Food Policy Research Institute's (IFPRI) Malawi Strategy Support Program (MaSSP).

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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

2033 K Street, NW | Washington, DC 20006-1002 USA | T+1.202.862.5600 | F+1.202.457.4439 | Skype: ifprihomeoffice | ifpri@cgiar.org

IFPRI-LILONGWE

P.O. Box 31666 | Lilongwe 3, Malawi | T +265-1-771780 | ifpri-lilongwe@cgiar.org

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