

# Market study

# YEMEN

# 2010



World Food Programme

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## Executive Summary

Yemen is a net-food-importing country with an import dependency for 90% of its overall domestic wheat and 100% of its rice requirements, the country's two main staples. As such, Yemen's population suffered considerably during the 2007-2008 food price crisis. Although prices have decreased since the peak, they remain well above pre-crisis levels, continuing to erode the purchasing power of already poor households. The functioning of markets and the behaviour of traders play a pivotal role in ensuring household food security.

Imports constitute the most important source of availability of wheat and rice at the national level. The trends in imports related to demand and also in relation to the production of other important cereals such as maize and sorghum seem highly reactive and reflect that importers are reactive to the demand situation in-country. While production of sorghum and maize is very important in the rural areas to consumption, markets remain the most prevalent forum when looking at issues related to food access and food availability. Home consumption of own-produced crops is most prevalent in Dhamar, with a mere 13.2 percent of crops consumed on-farm, followed by Rayma (12.6 percent), Amran (9.9 percent) and Sana'a (9.2 percent).

While the evolution and level of imports up to and including 2009 indicate good market functioning at the national level, high inflation rates and a depreciating currency are likely to have an adverse impact on the evolution of prices within Yemen – this is evidenced by the fact that although international prices decreased significantly in 2009, domestic prices in Yemen have remained at high levels, though lower than their peak in 2009. In fact, the pass-through of international prices to the domestic markets is not particularly high, thus indicating that the domestic market structure is more important than international market dynamics in determining staple prices in Yemen.

Markets in Yemen are characterized mainly by non-competitive behaviour, with a few large importing companies responsible not only for importing the majority of wheat and rice which is present on the markets in Yemen, but also for milling the wheat into flour and ensuring its distribution across a network of agents and sub-agents present in every governorate of Yemen. In fact, most traders source the commodities which they sell on the market within the governorate in which they operate. If not, the main source markets are Aden, Hodeida (where the ports are located) and Sana'a, the capital city. The largest importer-cum-miller in the country holds 56 percent market share. The importers also hold much of the margin along the wheat chain, along with retailers. In fact, over 60 percent of traders believe that prices will continue to increase, and that the main reasons for this are due to the monopolistic behaviour of larger traders, and also due to availability problems in highlighted in Hajja, Amran and Hodeida.

The source of these changes on the market seem to be a combination of the high food prices that continue to impact Yemen – for a variety of reasons, including a poor macro-economic situation as well as a likely non-competitive domestic market which puts added pressure on the prices of key staple foods – and social instability. These changes are unlikely to have a temporary impact, but are likely to be persistent issues on the market. Thus, any programme decisions made should actively take into consideration the most salient points that have been identified across the board:

- Decrease in credit extension to consumers
- Decrease in the scale of business conducted by traders, thus likely impacting availability and quality of food on the markets
- Increased transports costs
- Increased prices on the markets

While availability of food at the national level across the commodities under study seems to be at normal levels, there is an identified availability problem in certain governorates as a result of the continued impact of high food prices and social conflict. The governorates whose majority of markets, according to key informants, are suffering from diminished availability are Hajja, Ad Daleh, Taiz, Al Hodeida, Lahj, Al Mahweet, and Al Baidha. In addition to this, traders in Rayma and Abyan also indicate that there is diminished local availability of food on the markets. Thus market functioning in these governorates seems to be compromised, and continued food assistance is likely a more appropriate response to avoid negative impacts on the markets and on the beneficiaries.

Traders and key informants on the markets identify a clear lack of purchasing power on the markets, indicating that households have decreased the number of visits to the market, that they buy in fewer quantities and request greater extension of credit. In fact, there has been a noted decline in daily sales volumes of traders mainly as a result of a lack of effective demand on the market. While a quick analysis of terms of trade for the poorest livelihoods, with the exception of wage labourers, indicates a fairly positive trend in purchasing power compared to last year, there is insufficient information to confirm whether this result is reliable or not.

Traders in most markets across Yemen indicate their ability to provide supplies sufficient for an increased demand on the market. However, there are important constraints which traders face including the lack of access to credit and the lack of own capital, which might prove a bit of a constraint to the increase in availability on the market. However, lack of demand is also one of the more important factors that seem to define the availability problems on the markets.

There are important exceptions. Traders in Hajja, Hodeida and Amran indicate the least potential responsiveness to an increase in demand, and also prove to have a higher incidence of traders who believe that increased demand would have an inflationary impact on the markets due to a lack of availability.

The market conditions in Yemen present a confluence of various factors, which have to be carefully considered when taking programming decisions. The fact that the macro-economy has been defined by high inflation rates, price volatility and continued high price levels indicates the need to strengthen market monitoring systems.

Furthermore, it has been identified that the livelihoods group with the greatest prevalence of food insecurity as measured by the food consumption score are those households who are dependent on wage labour. There is currently no system monitoring unskilled wage labour on the markets, and this should be undertaken as part of any coherent food security monitoring system that is being considered in-country.

Although terms of trade seemed to have ameliorated compared to the same time in 2009, it will be important to monitor the situation if prices of the main consumed products continues to increase in the coming months, as expected by traders. Thus, it would be important to consider monitoring the

trends in terms of trade as part of the market monitoring system, including the terms of trade of between livestock, wage labour, agricultural crops and wheat/wheat flour or bread.

The integration of markets through this vertical system of agents has specific implications for any market monitoring systems towards food security purposes. The most important markets identified through this analysis means that the markets of Aden, Hodeida and Sana'a should continue to be actively monitored. However, in addition to monitoring prices of basic commodities, it will also be important to monitor the relevant transportation costs between these markets and markets which highly depend on these markets for their supply – Rayma, Amran, Abyan, Lahj and Shabwa. In addition to these, it is important to monitor the markets in Taiz, Hajja and Hadramout as they seem to be fairly independent catchment areas in terms of supply.

In addition, there is a strong indication that in many governorates the greatest problems impacting markets relate to household purchasing power, or food access, with concomitant decrease in credit availability and increased requests for credit extension along the supply chain. This indicates the high potential for WFP to pursue cash or voucher interventions. However, there are particular risks that need to be carefully monitored, and there are certain governorates in which it is not advisable to pursue cash or voucher interventions.

In terms of the identified risks, there is a clear indication that the presence of monopolistic behaviour on the markets across the country will increase the probability of an inflationary impact on the markets where a cash or voucher system is implemented. However, given that there is high vertical integration along the supply chain, it is possible to mitigate this impact using the large importers as an entry point for negotiation along the chain. Given, however, that retailers also seem to enjoy high margins on the markets, a price increase of a certain degree is to be expected. This should be carefully monitored as part of the monitoring and evaluation system of the project.

In addition, there is the risk of continued volatility and instability of prices on the markets. The presence of volatility on the markets has been identified, though it seems to be diminishing into 2010. This should be carefully monitored, as it will impact whether or not cash or quantity-based vouchers might be most appropriate in governorates where there is no identified availability problem. If volatility continues its declining trend, then cash transfers or value-based vouchers can be considered. However, if volatility continues to increase on the market, quantity-based vouchers are deemed more appropriate to ensure that the value and the benefit to the beneficiaries remain constant through the implementation of the project.

However, there are certain governorates in which the implementation of cash or vouchers are not recommended. Hajja, Amran and the districts in Hodeida bordering the former two governorates display availability and market functioning problems which indicate that continued food assistance is more appropriate. Also, insecurity and related availability problems in Lahj, Abyan and Shabwa increase the risks associated with implementing a cash/voucher intervention. With particularly high instability that has a negative impact on market functioning, thus jeopardising the continuous availability of food could mean that food assistance is more appropriate. Finally, should communities in Rayma and Abyan be targeted for a cash/voucher, there should be a quick micro-study on availability on these markets conducted due to the contradictory indications from key informants and traders on the food availability situation.

## Background and Objectives

A nationwide comprehensive food security survey (CFSS) was carried out which involved the collection of primary data on food security at household and community level in October/November 2009. In addition to this, there has been recent work in partnership amongst the Government of Yemen, the World Bank and the International Food Policy Research Institute (IFPRI) to develop a national food security strategy. This strategy will provide a framework within which food security policies can be prioritized and rationalized in Yemen.

In fact, this market study is considered the second, complementary phase of the CFSS, analysing the relationship between markets, people's livelihoods and food insecurity. This market related addendum to the CFSS will ensure a comprehensive information base that WFP's Country Office in Yemen can confidently refer to in its endeavour to design its programme strategy for 2010/11 and beyond.

Yemen is characterized by high food insecurity and malnutrition with rates of child malnutrition and maternal mortality being amongst the highest in the world. The country faces multi-dimensional challenges: High population growth (>3%) associated with gender inequalities; high prevalence of poverty (35%) with a large rural/urban divide; poor access to social infrastructure; conflicts in several parts of the country (Sa'adah in the north, Abyan and Lahij in the south); increased influx of refugees; recurrent droughts and floods, in addition to increasing aridity due to climate change, as well as increasing agricultural and urban water needs. Furthermore, substantial food price rises over the past two years have led to an augmented number of Yemenis affected by food insecurity and poverty, given that 96% of the population are net-buyers, making them particularly vulnerable to food price fluctuations (IFPRI 2010).

Yemen is a net-food-importing country with an import dependency for 90% of its overall domestic wheat and 100% of its rice requirements, the country's two main staples. As such, Yemen's population suffered considerably during the 2007-2008 food price crisis that has seen wheat retail prices increase by 88% from US\$330/mt to US\$630/mt<sup>1</sup>. Although prices have decreased since the peak, they remain well above pre-crisis levels, continuing to erode the purchasing power of already poor households. Together, the food and fuel price crisis and the more recent global financial crisis have resulted in an estimated 44% increase in national poverty<sup>2</sup>.

The functioning of markets and the behaviour of traders play a pivotal role in ensuring household food security. The 2006-08 worldwide food price hike and its disastrous consequences for household food security is a vivid reminder of the dependence of households on markets. The functioning of markets is particularly critical for the food security and livelihoods in Yemen as very few households are food-self sufficient, most of them relying on markets as their main source of food. Markets also play an important role in implementing external responses to food insecurity. As WFP is shifting from being a food aid organization to becoming a food assistance organization, it is actively using

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<sup>1</sup> WFP, Impact of rising food prices on household food security in Yemen, August 2008

<sup>2</sup> IFPRI, Impacts of the triple global crisis on development in Yemen; presentation at Climate Change workshop in Sana'a, November 2009

markets through the distribution of cash or vouchers, in addition to the traditional provision of food in-kind, to reduce food insecurity.

**The market study in Yemen aims to:**

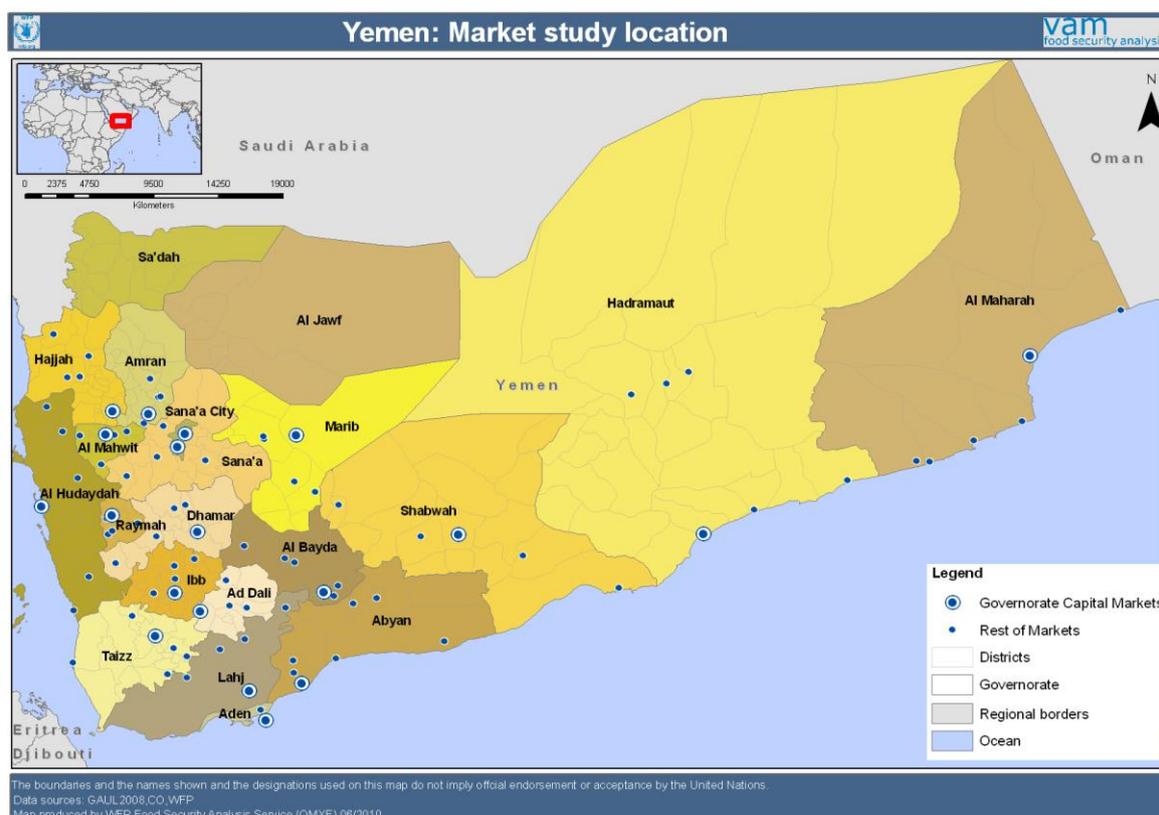
- (1) Improving the understanding of the linkages between markets, food security and peoples' livelihoods in the context of Yemen, building on the findings of CFSS household and community survey;
- (2) Assessing whether there is sufficient availability of food on the markets to support the increased demand that is typically created by a cash/voucher programme and on that basis judge whether a cash/voucher intervention is likely to create inflationary effects, and
- (3) Identifying other risks and potentially negative impacts of response options on beneficiaries due to a misunderstanding of market forces;
- (4) Fine-tuning geographic targeting criteria identified during the household survey and providing recommendations for the implementation process taking risks factors into account.

## **Methodology and Sampling Framework**

The sampling of the markets was based on a variety of purposive criteria including selection of those markets that were nominated by more than 2 communities in the CFSS, those markets identified as key by previous work done by FEWS NET, and ensuring an adequate geographic coverage and representing the population dispersion within the country.

There were several problems reported by enumerator teams in reaching markets in certain areas due to insecurity including Addaleh (main city) and Tor El Baha.

Figure 1



A total of 95 markets were sampled for the study (see Annex for a full list of markets sampled) with 474 traders interviewed in total. The traders interviewed included a sample of retailers and wholesalers dealing in the basic commodities of greatest importance to household food consumption habits; mainly, rice, wheat/wheat flour and beans. There was also information collected on a range of other goods including cooking oil, sugar, livestock and qat from key informants at the market-level from each market through a market questionnaire.

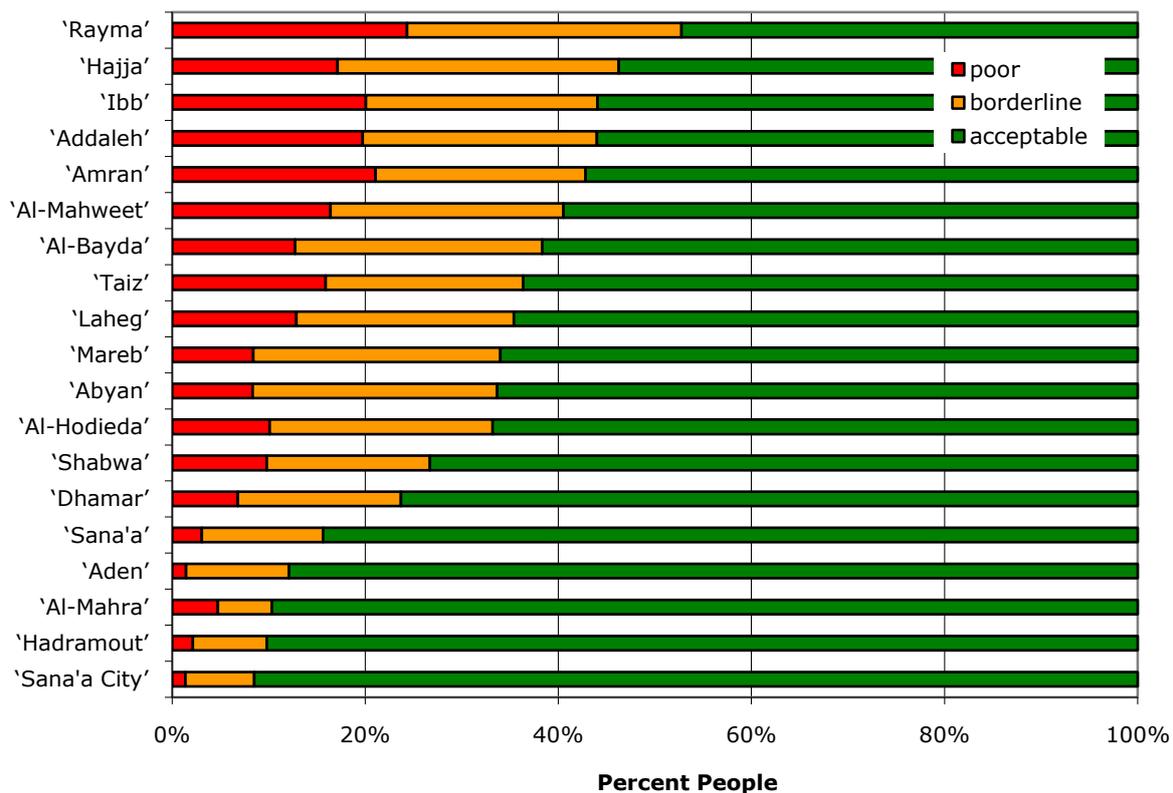
There is a complete list of markets sampled provided in Annex I of the report, as well as the Trader and Market questionnaires used to collect the information used in this report.

## Household Food Security and Markets in Yemen

The Comprehensive Food Security Survey 2010 in Yemen found that households in Yemen are particularly dependent on markets; however, a marked difference in behaviour of households in relation to markets has been identified by the CFSS depending on their food security status.

Food-insecure households comprise 31.5 percent of the population, or 6.8 million people at the time of the CFSS. These households are predominantly found in rural areas; the share of food-insecure people in the countryside is twice the share found in urban areas. However, there is also an important geographic spread of food insecurity by governorate as show in the figure below.

Figure 2 – Percent of food-insecure people\* in 19 governorates



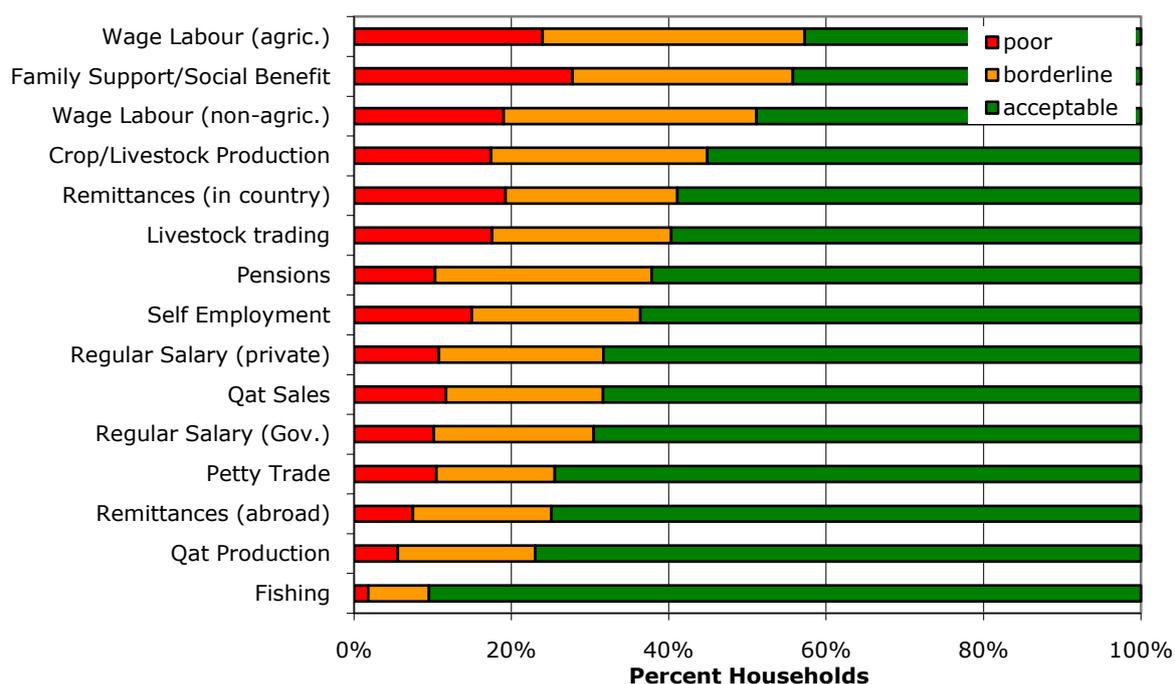
Source: CFSS 2010

\*Food insecurity equivalent to poor or borderline food consumption

The worst affected governorate with more than half of its population food-insecure is Rayma (52.8 percent) followed by Hajja, Ibb, Ad Daleh, Amran and Al-Mahweet, each with more than 40 percent of their population food-insecure. There are also important parts of the population who are food-insecure in Al-Bayda, Taiz, Lahj, Mareb, Abyan and Al-Hodeida with over 30 percent food insecurity.

Across livelihoods, those households who are more likely to be inflicted by food insecurity are those who draw their income predominantly from wage labour, crop and livestock production, livestock trading and external support such as in-country remittances and support from friends/family and social benefits.

Figure 3 – Fifteen main livelihood groups in rural areas by percent of food-insecure households\*



Source: CFSS 2010

\*Food insecurity equivalent to poor or borderline food consumption

The identification of the livelihood profiles who demonstrate the greatest prevalence of food insecurity are those whose relationships with markets, especially in relation to purchasing power and terms of trade, should be carefully monitored. Those who are dependent on wage labour (both agricultural and non-agricultural labour) are particularly vulnerable as their livelihoods are predominantly based upon the sale of their labour on the market – often times the type of work that is undertaken is unskilled, and temporary in nature. The governorates in which these livelihoods predominate are Rayma (65.0 percent), Al-Mahweet (51.7 percent), Hajja (49.9 percent) and Al-Hodeida (46.2 percent).

Also, agro-pastoralism represents an important livelihood with a high prevalence of food insecurity. While only 2.04 percent of Yemen’s land is suitable for cultivation, over 70 percent of its people live in rural areas (CSO 2007), the majority depending on agricultural activities as their main or secondary livelihood. According to CFSS findings, agropastoral livelihoods provided a main income source for 9 percent of rural households. However, over half of rural households (55.6 percent) have access to agricultural land, and 61.2 percent of these households access this land through private ownership. In other words, while agropastoral activities may not represent the main source of income for most Yemenis, such activities complement the overall income for more than half the population as much of what is produced is not marketed, and even if it is very little of it through the market-mechanism.

**On average, households in Yemen spend 45 percent of their monthly expenditures on food, while the rest is devoted to non-food items. Within household expenditures on food, bread and cereals**

account for the greatest share of expenditures for both food-secure and food-insecure households (see table below).

Table 1 – Share of monthly household expenditures on food and non-food items by food security status

	Overall		Food insecure		Food secure
<b>Share of monthly expenditures on FOOD items</b>					
Bread, cereals	22.7%	Bread, cereals	32.7%	Bread, cereals	17.8%
Vegetables	6.4%	Vegetables	5.9%	Vegetables	6.7%
Diary	4.0%	Diary	3.2%	Diary	4.5%
Poultry	3.9%	Poultry	3.1%	Poultry	4.3%
Fish	2.4%	Drinking water	2.5%	Fish	2.8%
Drinking water	2.3%	Fish	1.4%	Pulses	2.3%
Pulses	1.9%	Pulses	1.0%	Drinking water	2.2%
Meat	1.6%	Fruits	0.8%	Meat	2.1%
Fruits	1.6%	Meat	0.7%	Fruits	2.0%
Meals consumed outside home	0.5%	Meals consumed outside home	0.3%	Meals consumed outside home	0.6%
<b>Average on food</b>	<b>45.0%</b>	<b>Average on food</b>	<b>49.1%</b>	<b>Average on food</b>	<b>42.9%</b>
<b>Share of monthly expenditures on NON-FOOD items</b>					
Qat	9.0%	Health	7.3%	Qat	9.9%
Clothing	6.7%	Qat	7.1%	Utilities	6.6%
Utilities	6.7%	Clothing	6.8%	Clothing	6.6%
Health	6.6%	Utilities	6.8%	Health	6.2%
Debts	3.7%	Soap	3.7%	Debts	4.1%
Transport	3.5%	Fuel for cooking	3.3%	Transport	3.9%
Soap	3.2%	Debts	3.0%	Soap	2.9%
Fuel for cooking	2.7%	Transport	2.6%	Fuel for cooking	2.5%
Communication	2.0%	Education	1.6%	Communication	2.4%
Rent	1.7%	Tobacco	1.2%	Rent	2.0%
Education	1.7%	Rent	1.1%	Education	1.7%
Tobacco	1.3%	Communication	1.1%	Tobacco	1.3%
Celebrations	1.1%	Celebrations	0.8%	Celebrations	1.2%
Remittances	0.9%	Remittances	0.8%	Housing	1.2%
Housing	0.9%	Seeds	0.5%	Remittances	1.0%
Seeds	0.5%	Housing	0.4%	Seeds	0.5%
Business	0.2%	Business	0.1%	Hiring labour	0.3%
Hiring labour	0.2%	Hiring labour	0.1%	Business	0.3%
<b>Average on non-food</b>	<b>55.0%</b>	<b>Average on non-food</b>	<b>50.9%</b>	<b>Average on non-food</b>	<b>57.1%</b>

Source: CFSS 2010

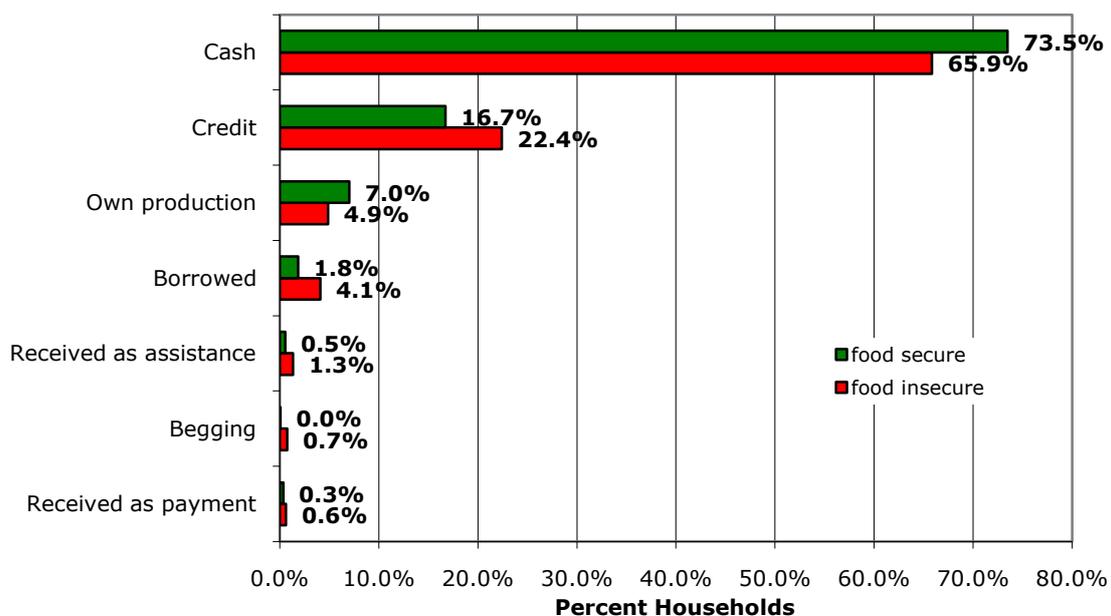
However, while food secure households spend 17.8 percent of their total budget on breads and cereals, food insecure households spend significantly more -- at 32.7 percent of their total budget. The former spend more on vegetables, meat, fruits and dairy products, a reflection of their diversified diet, which determines their food security status and, for example, makes them more resilient to micronutrient deficiencies than food-insecure households.

Another important expenditure for both food secure and food insecure households is on qat. After bread and health, qat is the expenditure item that takes up the largest proportion of the monthly household budget. According to the findings of the CFSS the governorates where households were

found to allocate the largest shares – more than 10 percent of their monthly expenditures – to qat include Amran (13.5 percent), Sana’a (12.6), Ad Daleh and Ibb (11.8), Sana’a City and Mareb (11.7) and Dhamar (10.1). Furthermore, households involved in the production of qat show the greatest expenditure on the cash crop, accounting for up to 22.2 percent of monthly expenditures. However, the poorer livelihoods, such as crop and livestock producers, livestock traders and households relying on support from family and social benefits, spent comparatively low shares on qat – a mere 3-6 percent.

**Nonetheless, the greatest expenditure remains on bread for all households across Yemen.** In fact, IFPRI’s recent analysis shows that 96 percent of households in Yemen are net-buyers of food. However, there is a marked difference in the way in which food secure and food insecure households source their food and the way they interact with markets. Households that are considered food insecure have a greater diversity in the sources they use to obtain their food – ranging from markets purchases through cash and/or credit, gifts, and begging among others as shown in the table below.

Figure 4 – Sources of food over the seven days preceding the survey by food-source and food-insecure households\*



Source: CFSS 2010

\*Food insecurity equivalent to poor or borderline food consumption

Nonetheless, the food markets are largely cash based, even for food-insecure households, with well over half of household foods being bought with cash, and the second-most prominent source of food is purchase through credit on the markets. Cash and credit thus constitute 90.2 percent of the food entitlement for food-secure households, while these constitute 88.3 percent for food-insecure households. This is due to the fact that food-insecure households diversify their food sources, relying more on borrowed food, food received as assistance, and begging.

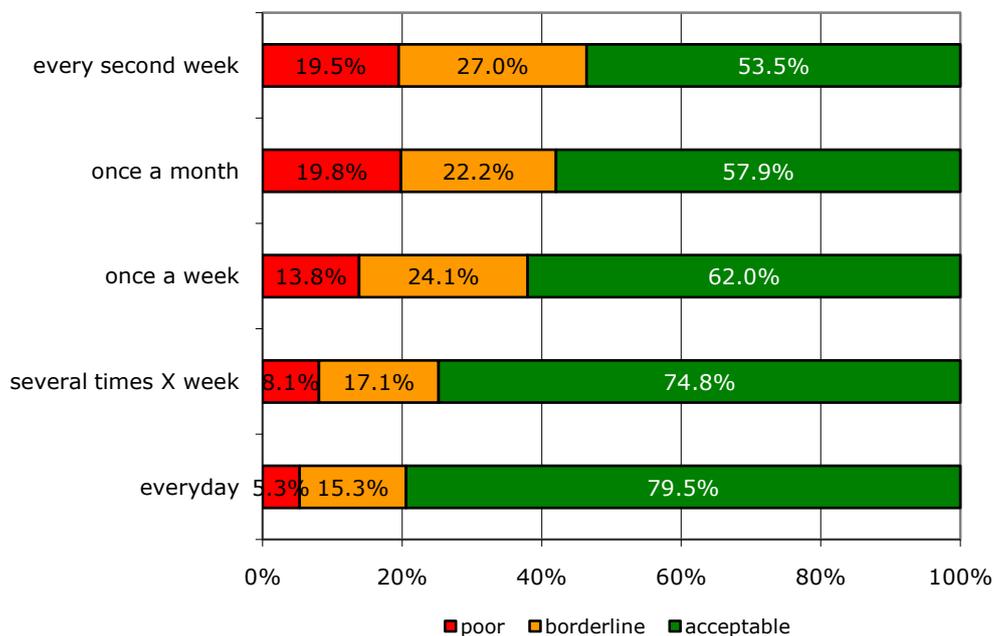
Given that the second-most important source of entitlement to food is through credit, it is important to note that food-insecure households have access to credit (in fact, they rely on it more than food-

secure households) but to a lesser extent than the food-secure. If they do have access their sources are predominantly informal -- 73 percent of households indicated relying predominantly on informal credit systems. The most common credit sources across the board include relatives and friends (64.2 percent), credit from shopkeepers (55.2 percent), followed by banks (3.9 percent) and other formal credit organizations (1.2 percent). An important factor of increased vulnerability status among the food-insecure households compared to food-secure households is their comparatively greater dependence on credit from shopkeepers – 57.3 percent of food-insecure households compared to 54.3 percent of food-secure households. This is considered a source of credit that could easily lead to an accumulation of debts in the long run due to the payment of interest rates set by traders.

**The results of the CFSS also identify that markets are a more important location for purchasing of food and non-food items rather than the selling of food or non-food items.** Although food insecure households are those who are dependent on the sale of food crops, only 3.1 percent of households declared that they used the markets to sell their food crops, and only 5 percent of food-secure households declared to use markets to sell their food crops. This is partially explained by the fact that households may be engaging in the sale of their food crops among individuals in the village, thus in a less formal setting than the market-place.

**Furthermore, food-insecure households purchase food from the market on a less frequent basis than food secure households.**

Figure 5 – How often do food-insecure households\* purchase their food?



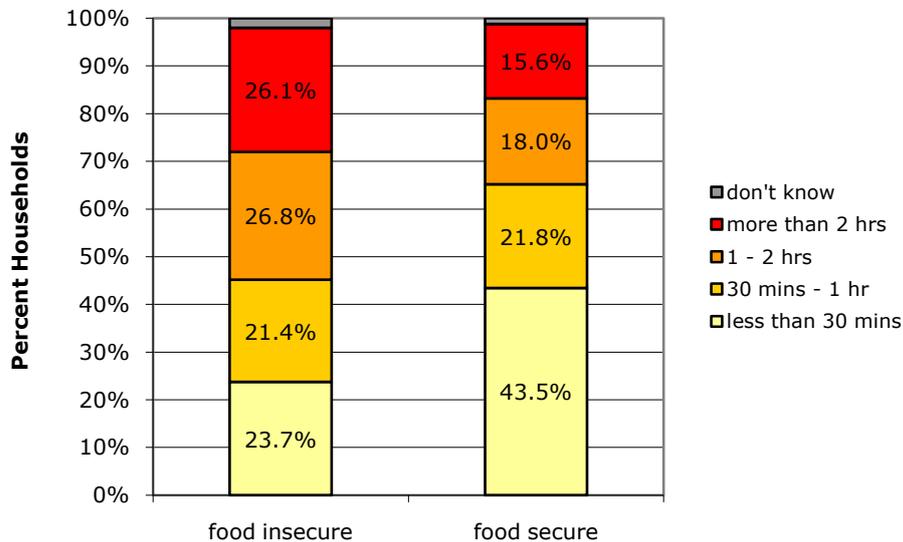
Source: CFSS 2010

\*Food insecurity equivalent to poor or borderline food consumption

This is likely due to the greater physical access issues which food-insecure households face, who are more likely to walk up to two hours to the nearest market or shop to purchase their food than food-

secure households, the majority of which have a market within one hour’s walking distance. More than half of all food-insecure households (52.9) percent walk more than one hour to reach the nearest food market or shop, with 26.1 percent requiring more than two hours, while 65.3 percent of food-secure households need a maximum of one hour and 15.6 percent more than two hours.

Figure 6 – Distance to nearest food market/shop by household food security status\*



Source: CFSS 2010

\*Food insecurity equivalent to poor or borderline food consumption

Thus, physical access to markets is likely to have an impact on the buying behaviours of consumers. With households being further from markets, it is evident that they are likely to go less frequently than if the market were at a closer distance, and buy in greater quantities once they get to the market. The governorates with the largest shares of the population needing more than two hours to purchase their food include Hajja (41.4 percent), Al-Mahweet (37.5 percent) and Rayma (31.0 percent).

**Thus food-insecure households tend to buy a larger share of their food on market relying on cash, credit and borrowing compared to food-secure households. They also tend to visit the market less frequently and tend to live at a farther distance than food-secure households to markets where they are able to source their main foods. The governorates which display the greatest physical access problems are Hajja, Al-Mahweet and Rayma.**

## Market Functioning and Determinants of National-Level Food Availability in Yemen

*The evolution and level of imports up to and including 2009 indicate a responsive and sufficient of basic food staples at the national level. However, high inflation rates and a depreciating currency are likely to have an adverse impact on the evolution of prices within Yemen. While international prices decreased significantly in 2009, domestic prices in Yemen have remained at high levels in*

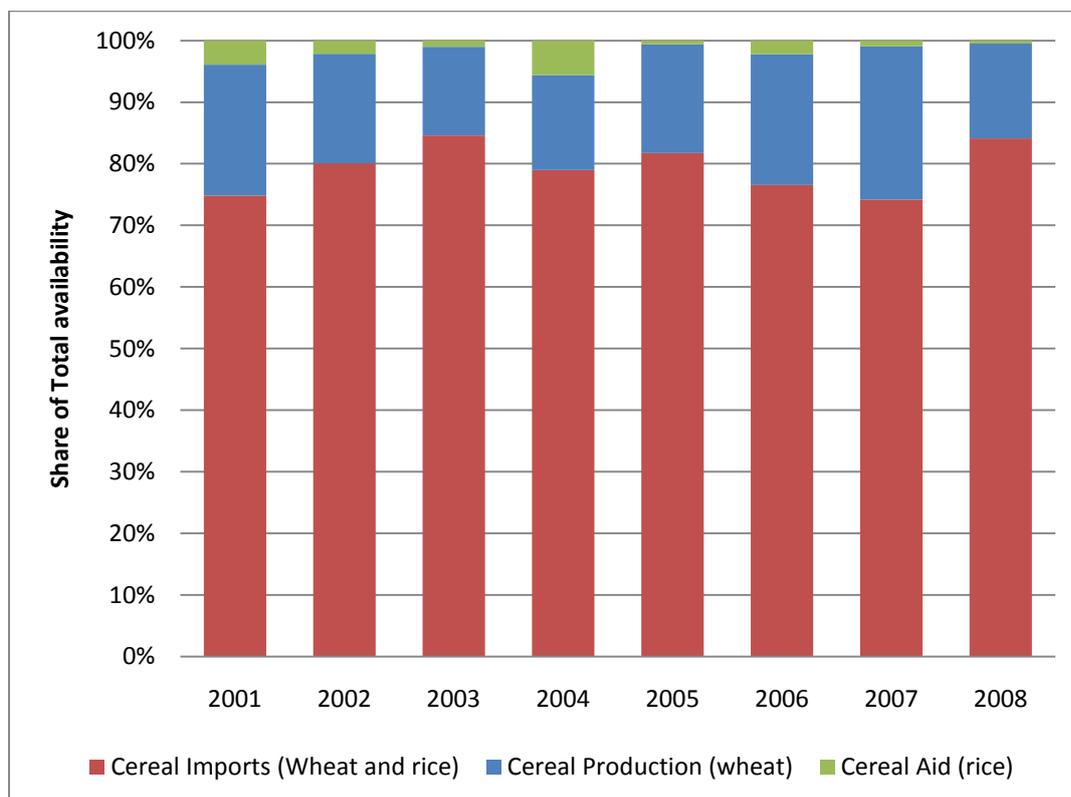
***the first half of 2010, though lower than their peak in 2008. In fact, the pass-through of international prices to the domestic markets is not high at approximately 20 percent, thus indicating that the domestic market structure is more important than international market dynamics in determining staple food prices in Yemen.***

Food availability within a country is typically made up of a variety of factors including domestic production, commercial imports, public imports, food aid and food stocks/reserves. While these various supply sources determine availability at the national level, it may not necessarily reflect what is available at the local level.

Nevertheless, the level of aggregate food availability in Yemen is very much dependent on two factors: a) the ability of the country to import rice and wheat from international markets and b) population growth; population growth is one of the major determining factors of demand in Yemen, and thus dictates the necessary growth in imports year-to-year. Figure 1 below shows us that since at least 2001 cereal availability is consistently dependent on imports, which constitutes 70 percent of the total cereal availability. In fact, Yemen relies on commercial imports for 100 percent of its rice consumption and 90 percent of its wheat consumption. This is of particular importance given that wheat and rice constitute the staple food of most of the population across the country. According to FAO estimates, wheat accounts for 51% of caloric intake of the Yemeni population.

However, from this figure it is also clear that over the years, commercial imports have been quite responsive to the fluctuations in national production. The years in which there was increased domestic production, commercial imports of cereals constituted a lower proportion of total availability, such as in 2001, 2006 and most notably in 2007.

**Figure 7 – Share of Cereal Availability at National Level from Production, Imports and Aid; 2001-2008**



Source: FAOSTAT and INTERFAIS

While wheat and rice are the basic food staples that are heavily dependent on imports, it is also relevant to point out that there is significant domestic production of other cereals; most importantly of sorghum, millet, maize and barley. Nevertheless, these commodities are also imported when production falls short of demand. However, according to the CFSS, much of the sorghum, millet, maize, and barley that are produced is often not marketed, but used for on-farm consumption (CFSS, 2010). Thus it is apparent that while commercial imports constitute the most important supply source for cereal availability at the national level, it is also important to consider production patterns, especially as they relate to staples such as sorghum, maize, millet and barley. The table below shows 2010 estimates for the cereal balance sheet.

**Table 2 - Cereal Balance Sheet Estimates 2010**

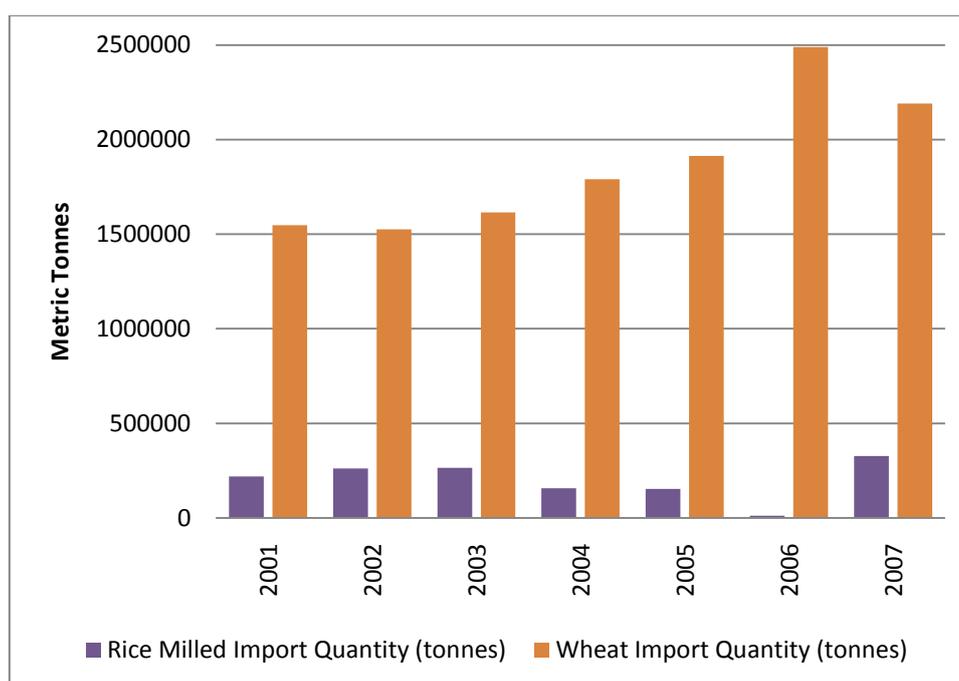
	<b>Wheat</b>	<b>Sorghum</b>	<b>Rice</b>	<b>Maize</b>	<b>Millet</b>	<b>Barley</b>	<b>Total</b>
<b>Domestic Availability</b>	<b>502 471</b>	<b>418 158</b>	<b>35 000</b>	<b>105 246</b>	<b>82 950</b>	<b>31 067</b>	<b>1 174 892</b>
Stock	350 000	30 000	35 000	40 000	10 000	4 000	469 000
Change							
Production	152 471	388 158	0	65 246	72 950	27 067	705 892
<b>Total Utilization</b>	<b>2 986 199</b>	<b>418 158</b>	<b>418 231</b>	<b>434 819</b>	<b>82 950</b>	<b>31 067</b>	<b>4 371 426</b>
Food use	2 601 327	390 327	383 231	162 583	58 065	11 613	3 507 147
Seed use	19 624	11 366	0	3 449	2 240	4 482	41 161
Feed use	0	28 242	0	219 000	7 538	8 266	263 046
Losses	15 247	58 224	0	9 787	5 107	2 707	91 072
Closing Stocks	350 000	30 000	35 000	40 000	10 000	4 000	469 000
<b>Import Requirement</b>	<b>2 483 728</b>	<b>0</b>	<b>383 231</b>	<b>329 573</b>	<b>0</b>	<b>0</b>	<b>3 196 534</b>

Source: CFSAM 2009

Note: Totals computed from unrounded data

Sorghum is the most important cereal in terms of production quantities, followed by wheat, millet, maize and finally barley. The cereal balance sheet estimated in the 2009 CFSAM indicates that 2010 will be a bumper harvest, requiring no imports of sorghum, barley or millet – thus accounting for an estimated decrease in cereal import requirements compared to cereal imports in 2008, which amounted to an estimated 3, 890,000 MT (GIEWS Country Brief, May 2010). However, when looking at wheat and rice, the staples that constitute the most important staple goods, import requirements continue to increase over the years in response to increased demand as well as increased income, most likely due to population growth, and this trend seems likely to continue well into 2010 and beyond. The figure below shows the increasing trend in wheat imports over the years, and this trend has continued past 2007 as well.

Figure 8 – Wheat and Rice Imports in Metric Tonnes; 2001-2007



Source: FAOSTAT

Nonetheless, local production of crops such as sorghum, maize and millet still play an important role for household access for households engaged in agricultural production. In fact, the most frequently cultivated crops in 2009 by households included maize (48 percent of households), and sorghum (29 percent of households)<sup>3</sup>. According to the Household Budget Survey findings, the consumption of home-produced food constitutes a large component of households' total agricultural income. While 96 percent of Yemeni households are net-buyers of food (IFPRI 2010), nearly half of households' agricultural income is reflected as consumption of home products. In other words, cereals, when and where cultivated, are mostly consumed at home rather than commercialized. The CFSS findings show the highest shares of home consumption in Dhamar with 13.2 percent of food consumed from own production, followed by Rayma (12.6 percent), Amran (9.9 percent) and Sana'a (9.2 percent). **Thus, while own-consumption is important to food insecure households, markets remain the most prevalent forum to consider when looking at issues relating to food access, food availability and as a result, food security of the majority of the Yemeni population.**

**Thus the sufficient of availability of basic staples is dependent on markets at two levels:**

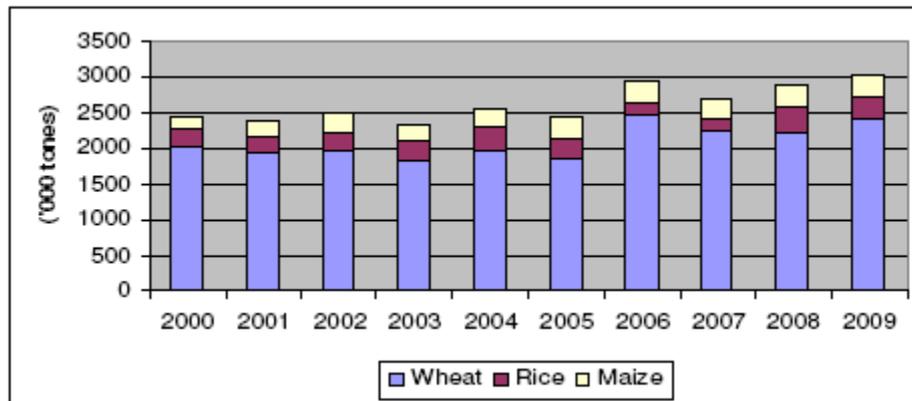
- the international market and the ability of commercial traders to import sufficient quantities of food at the national level; and,
- the functioning of markets across Yemen, operating through traders who are able to ensure a sufficient and stable supply of cereals at the sub-national, governorate level.

## Yemen, International Markets and the Macro-economy

<sup>3</sup> CFSS, 2010 pg. 56

The high dependence of Yemen on commercial imports for wheat and rice entails a careful study of the way commercial imports relate to the international markets, and also to government policies that govern commercial imports of staple foods. However, even through the high food price crisis the country did not face any critical constraints in commercial imports, as shown in the figure below. The level of commercial imports were maintained, and even increased, presumably in response to increased demand driven by a variety of factors including population growth. Thus, importers seem highly reactive and responsive to demand conditions in Yemen.

Figure 9 – Total amount of commercial imports in '000 metric tonnes; 2000 - 2009



Source: CFSAM 2009

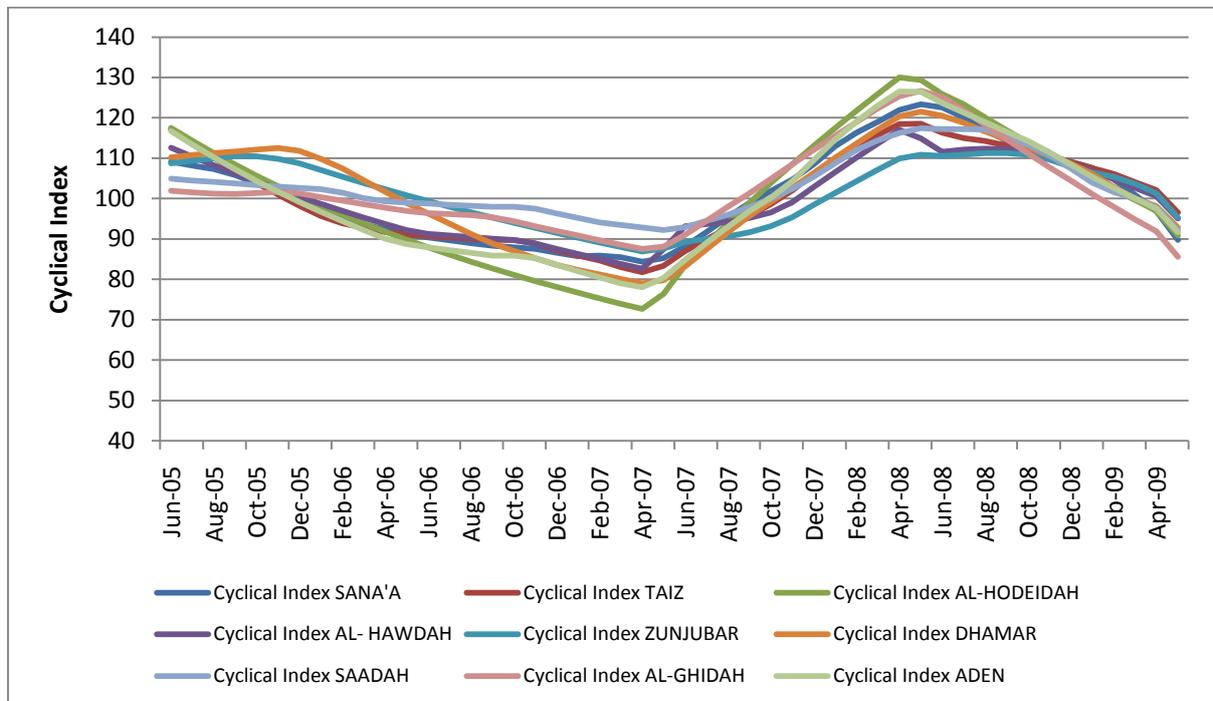
Yemen's high dependence on commercial imports would suggest that food availability and consequently, the evolution of food prices are highly dependent on international markets. Following the unification of North and South Yemen in 1990, the Republic of Yemen undertook a structural reform programme, which included liberalising the foreign exchange and trade regimes. Prior to the uptake of this structural programme, the supply of staple foods was ensured through public imports by the Yemeni Economic Corporation (YECO). YECO still operates in Yemen, although it serves specifically the Armed forces and Security forces through its retail shops.

From a commercial perspective, government policy in relation to the import of staple food items can be considered very favourable to an open market, with favourable customs regulations and no tariff barriers that might impede or constrain imports in any way. According to the Customs Authority of Yemen, staple foods including wheat grain and rice are exempt from any import tariff. This shows a conscious attempt by the Government to ensure that there is a sufficient supply of basic staples to meet the needs of the population. In fact, overall, the World Bank's World Trade Indicators 2009 indicate that Yemen has a more open trade regime than the average Middle East and North African country.

The liberalisation of the trade regime allowed the participation of private companies in the trade of staple foods (World Bank, 2009). Competition was further intensified as the government abandoned restrictions on foreign firms operating within Yemen without a local partner (World Bank, 2009). Thus, the trading policies and the general overview of the Yemeni domestic economy indicate a *laissez-faire* attitude towards trade. However, it is also important to note that the government, in the wake of the high food price crisis, took action in an attempt to counter the negative impact of the dramatic increase in prices experienced in Yemen during 2008.

A study conducted by WFP in 2008 to look at the impact of rising food prices in Yemen found that nominal prices increased considerably over a one year period – with imported wheat grain prices increasing by 56 percent between June 2007 and June 2008 (WFP 2008: 36). Prices across Yemen were dramatically impacted by the high food price crisis. This is particularly evident when looking at the cyclical index of wheat grain prices in the figure below.

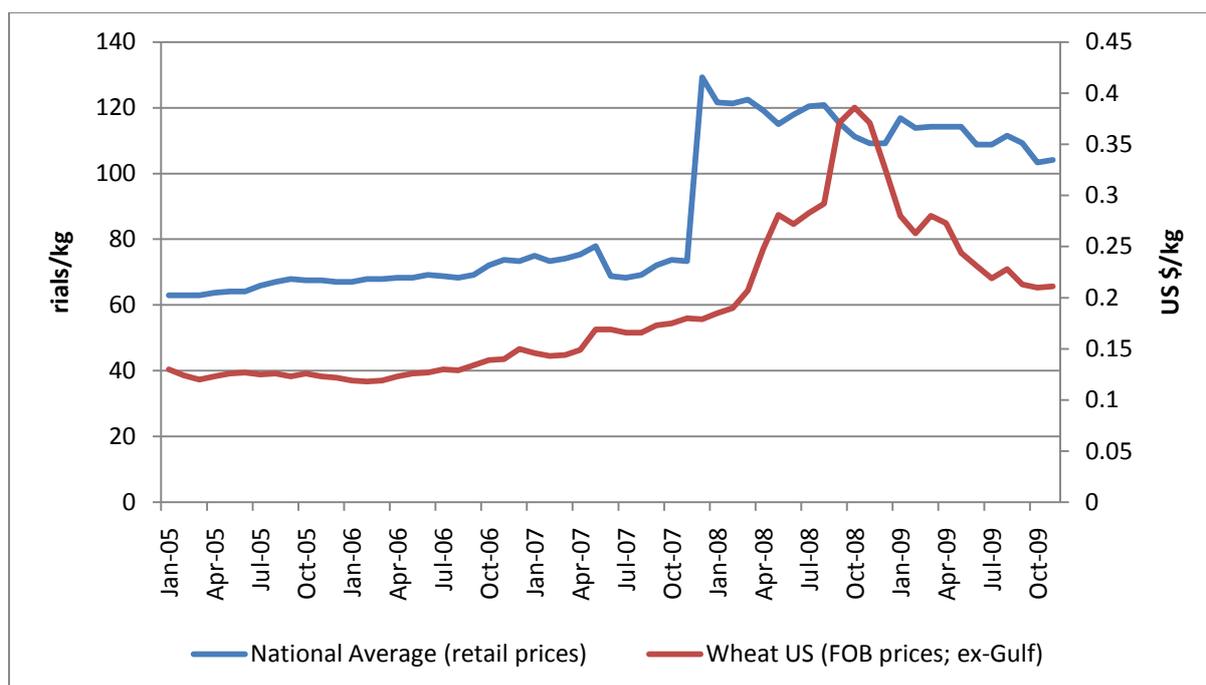
Figure 10 – Evolution of Wheat Grain Cyclical Index; 2005 - 2009



Data Source: Yemen Central Statistical Organization (CSO)

It is clear from this figure that the prices in Yemen reflected a very clear increase as the food price crisis picked up in 2008, reaching its peak in mid-2008. It is also clear that prices starting increasing in mid-2007 in Yemen, well before the alert of the high food price crisis at the global scale. However, it is also clear that prices have started to decline towards their pre-crisis levels in April 2009. Nonetheless, even in April 2009, prices were still above their pre-crisis levels in 2007. As shown in the figure below, it seems that the evolution of prices in Yemen has generally followed the evolution of international prices of wheat until the food price crisis. As prices increased throughout 2008 on the international market, prices also increased fairly concomitantly at the retail level within Yemen. However, it is also apparent that when international prices decreased with the easing of pressure on international markets, the decline in domestic prices did not follow as quickly.

Figure 11 – Evolution of Nominal International and Domestic Yemen Wheat Grain Prices; 2005 - 2009



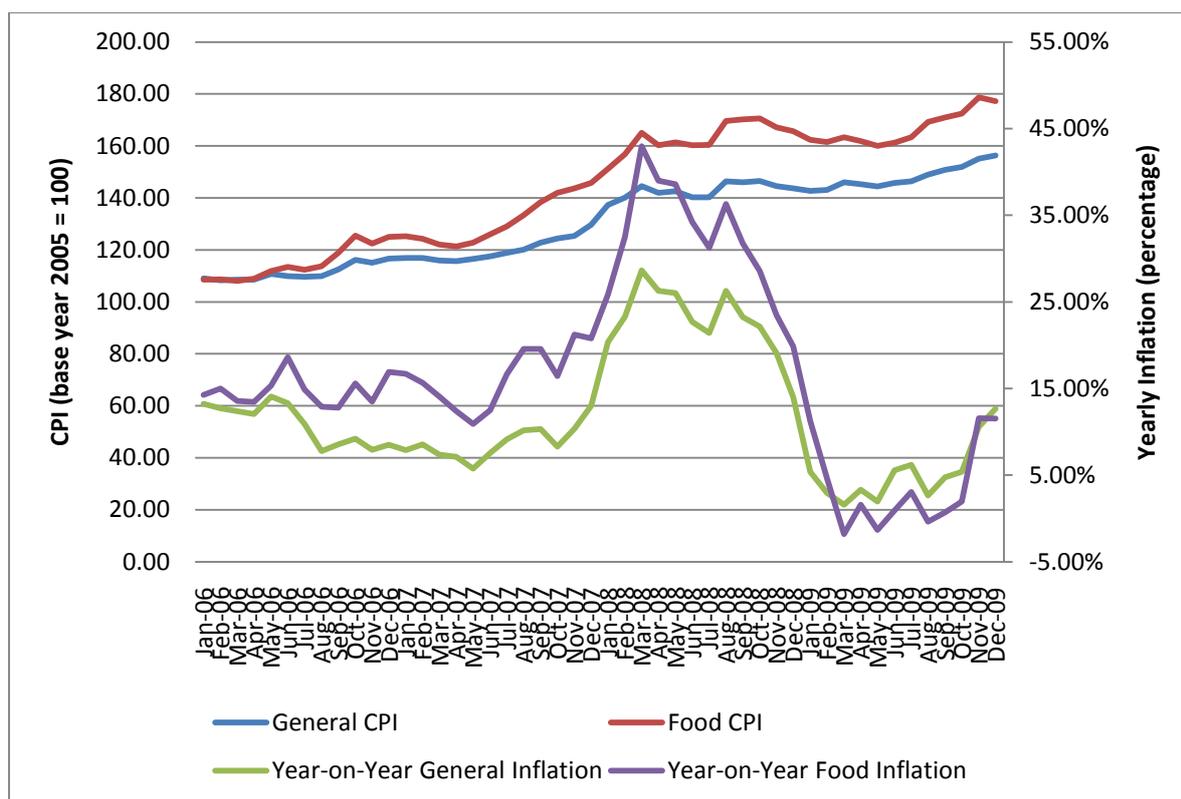
Source: Data for Yemen domestic prices from Central Statistical Organization (CSO); International prices from USDA Wheat Yearbook (2010)

This is a clear indication that while Yemen depends highly on imports for the availability of its staple foods, the prices do not necessarily follow international trends – indicating there is less transmission than might be intimated by being a net food-importing country. In fact, while international prices reached their peak in August 2008, the prices in Yemen were actually decreasing from their peak in January 2008. This indicates that government policies and domestic market structure likely play a key role in determining domestic price formation and levels.

During the course of the high food price crisis, in fact, the government of Yemen put in a purchasing plan to encourage increased domestic wheat production, and the government also imported wheat and distributed it through retail markets (World Bank, 2009) and YECO shops. There was also a sizeable donation in the form of wheat from the United Arab Emirates in 2008 of 500,000 metric tonnes. Thus, Yemen’s price stabilizing policies are likely to be responsible for the stabilization of prices in 2008 seen in the figure above.

This apparently stabilizing impact towards the end of 2009 could very well be mitigated by other factors. There are also other likely forces that explain the evolution in prices at the domestic level including inflation, the foreign exchange rate and foreign currency availability within the country. Though international prices decreased significantly, it seems that prices within Yemen have been slower to react. Thus they have remained at a high level in nominal terms compared to international prices. In fact, both food and general inflation had been on an increasing trend towards the end of 2009, reaching approximately 12 percent in December 2009. These double-digit food inflation rates could mitigate any stabilizing factor in the price levels as indicated by the cyclical index.

Figure 12 – Evolution of Food-Inflation and General-Inflation; 2005-2009

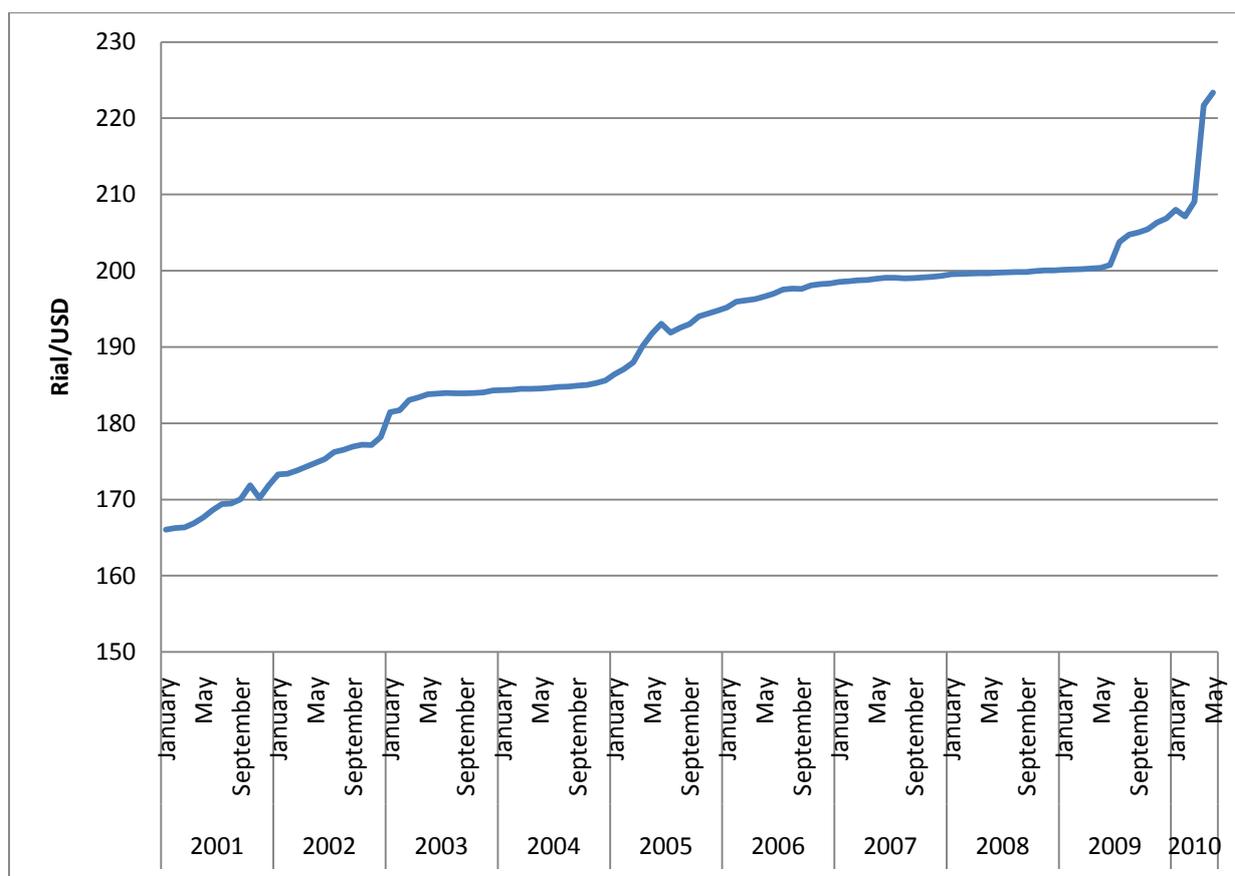


Adapted from CFSAM 2009; Data Source Yemen CSO

Furthermore, the general and food CPI in August 2009 are very similar to those registered one year before, showing that prices stabilised around their highest levels (CFSAM 2009). In fact, it is clear that Yemen is characterized by high and volatile inflation rates. This is particularly worrisome given that food constitutes a major category in the CPI basket with a weight of 43.8 percent. A study conducted by the IMF found that the most important determinants of inflation in the short-term are pass-through of international prices and depreciation in the exchange rate. Interestingly, in the short-run (ie. over a one-year time period), developments in inflation are determined by external factors rather than domestic factors such as demand and monetary policy issues (Almonsour, 2010). Domestic factors have a greater impact on the evolution of mid- and long-term inflation rates.

This means that a portion of Yemen’s inflation is imported – thus any depreciation in the currency is likely to exacerbate inflationary pressures in the short-run. Given this evidence, it is likely that Yemeni inflation will continue to be high and volatile as the Yemeni rial has started a marked depreciation in relation to the US Dollar in 2010 (see figure below), losing 12 percent of its value in the first half of 2010 (Financial Times, May 10 2010).

Figure 13 – Evolution of Yemeni rial – US Dollar Exchange Rate, 2001 - 2010



Data source: Yemeni Central Bank

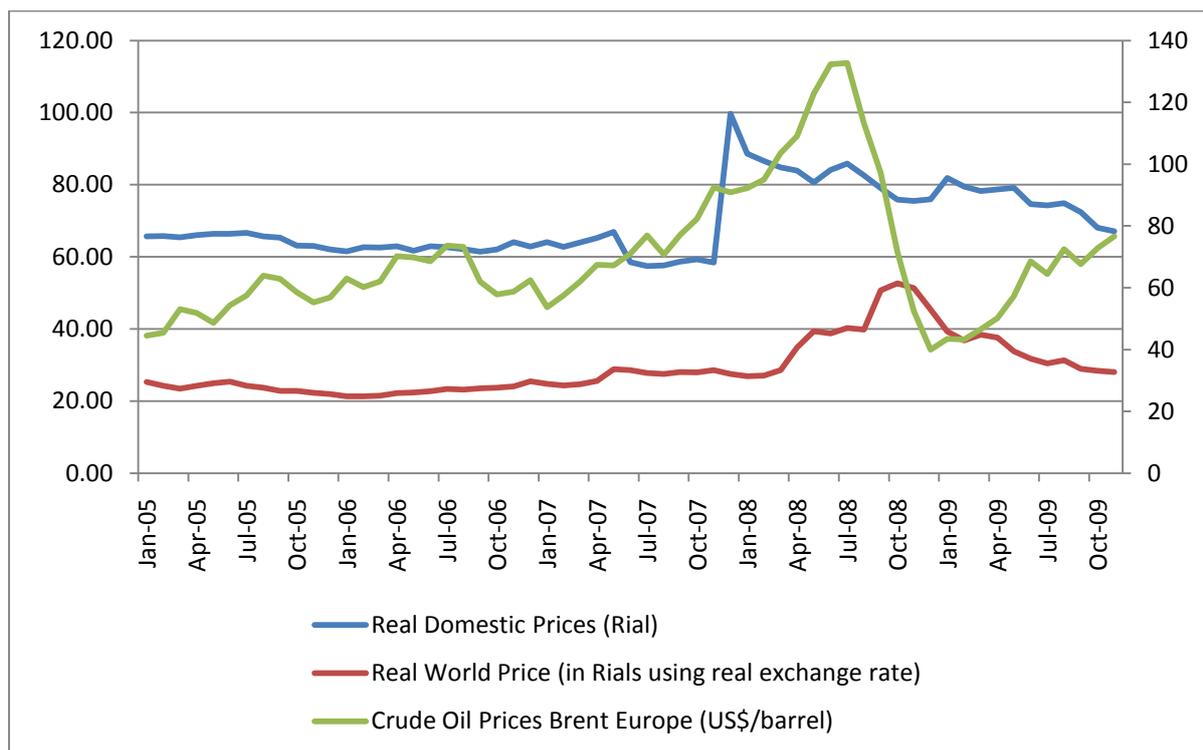
Though the depreciation of the rial had already begun in 2009, the first half of 2010 led to a significant decrease in foreign exchange reserves in light of lower expected oil exports and likely depletion of oil reserves – thus making it difficult to maintain a stable exchange rate (IMF, 2009: Staff Evaluation). The government had already spent USD 800 million by the end of the first half of 2010 in attempt to halt the depreciation of the rial. This has cut into its meagre foreign reserves, which had fallen from USD 8 billion at the beginning of 2009 to around USD 6.5 billion in mid-2010. The IMF has recently approved a USD 368.9 million loan over the next 3 years to restructure its public finances, with a view to decreasing its dependence on the hydrocarbon sector for its export earnings (at 90 percent) and government revenues (at 60 percent), thus providing a chance for Yemen to stabilize its macro-economic conditions.

Key informant interviews, and discussions with traders indicate that these exchange rate fluctuations might have a direct impact on the retail domestic prices of staple goods as the goods are often denominated in US dollars rather than in Yemeni rial among traders. Thus the implication during data collection was that as the USD-rial exchange rate changed, prices on the market in rials would also change accordingly. If this were the case, then the secondary data would show a steep increase in staple food prices starting in 2010, thus roughly following the trend of the foreign exchange rate depreciation. However, this relationship is not apparent in the secondary data available until the end of 2009<sup>4</sup>. There is very little correlation between the change in wheat prices

<sup>4</sup> Statistical tests to look at the relationship between domestic wheat prices and foreign exchange rates did not yield anything statistically significant. Even the correlation among contemporaneous changes in the wheat prices and foreign

and the change in the US Dollar-rial exchange rate: a mere 3 percent correlation<sup>5</sup> in contemporaneous changes in foreign exchange rates and wheat prices. In the figure below, it is apparent that Yemeni prices and international prices followed the same trends up until mid-2007, though the Yemeni domestic prices display greater volatility than international prices. During 2007, however, there seems to be a divergence in the trend between Yemeni and international prices – Yemeni prices starting to increase sharply even before the spike in international wheat prices during the summer of 2008, as shown in the figure below.

**Figure 14 – Evolution of Wheat prices on International markets and in Yemen in real terms, and the evolution of crude oil prices**



Data Sources: US Wheat grain prices (USDA); Brent Crude Oil Prices (IMF); US CPI (US Bureau of Labour Statistics); Yemen CPI (Yemen CSO)

The continued depreciation of the Yemeni Rial has very important implications for smaller trading companies who might be more dependent on the Yemeni Central Bank for their access to foreign currency in order to continue doing business on the international market. Furthermore, the depreciation of the currency simply means that imports become more expensive. Thus there is a possibility that continued depreciation of the currency will eventually have a negative impact on the availability of basic foodstuffs within the country, if traders have no alternative access to foreign currency reserves outside of the Central Bank of Yemen<sup>6</sup>. However, this is unlikely to be the case as

exchange rates (taking first differences to account for unit roots in both time series) yielded a 3% correlation. Thus, while traders discuss the importance of the foreign exchange range, this is not evident in the secondary data.

<sup>5</sup> The correlation between real wheat prices and the foreign exchange rate was run using first differences due to the presence of unit roots in both time series. Any statistical correlation that might have been found between the raw data, in this case, would likely have been spurious.

<sup>6</sup> It was not possible to ascertain through key informant discussions which traders had access to foreign currencies outside of Yemen, however the larger importer-cum-millers have foreign counterparts and foreign investment interests thus they have greater access to foreign currency than provided by the Yemeni Central Bank. In fact, one of the largest

the largest importers have foreign counter-parts and they own assets outside of Yemen, thus allowing them access to foreign reserves independent of the Central Bank of Yemen.

In fact, looking at the degree of transmission between international prices and domestic Yemeni wheat prices, we observe only a slight transmission of approximately 20%. This indicates that there are mitigating factors to the transmission of prices despite the fact that Yemen depends highly on imports for the most consumed goods (see table below). The table looks at the quarterly cumulative price changes in real terms of international and domestic Yemeni wheat prices between the third quarter of 2005 and the third quarter of 2009<sup>7</sup>.

**Table 3 – Transmission mechanism**

(1) World Price (PW)(US\$)	(2) World Price (LC)	(3) Domestic Price(DP) (LC)	(4) Transmission (PD/PW (US\$))	(5) Transmission (PD/PW (DC))
61.04%	28.07%	12.12%	19.86%	43.18%

The difference between columns (1) and (2) shows that the exchange rate appreciation of the US Dollar on the international markets has muted the impact of increased wheat world prices, however prices in Yemen have increased, even in real domestic currency terms as indicated by the cumulative positive change in prices in the period between 2005 and 2009. Column (3) of this table shows the cumulative increases in domestic retail prices from the 3rd quarter of 2005 to the 3rd quarter of 2009 in real domestic currency terms. The cumulative changes in domestic retail prices are approximately 43% of cumulative changes in world prices (see column 5) denominated in real domestic currency terms. This means that while Yemen is considered to be highly dependent on imports, the country is not allowing a large proportion of international price changes to transmit to the domestic economy. This analysis is true after taking exchange rates into account. This is achieved through some government policies, including restrictions on re-exports and through ad-hoc policies, such as that instituted during the high food price crisis in which wheat flour, wheat grain and other basic commodities were sold at favourable prices through YECO and retail shops.

When, on the other hand, international prices fall, the domestic prices do not fall as quickly, because of the nature of the domestic market structure and the domestic purchase and sale conditions. Thus there appears to be an asymmetry not necessarily captured by the analysis applied above. A look at the dynamics of the wheat markets once the grains actually enter the domestic markets may provide some insight.

**Fundamentally, import quantities in spite of increased inflation or devalued currencies have been able to keep up with demand, also during the high food price crisis as shown above. Thus, there is no immediate indication that increased macro-economic instability would lead to a major break in**

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conglomerates and most important importer in Yemen is majority owner of Tadamon International Islamic Bank, the largest private bank in Yemen.

<sup>7</sup> This methodology is based on the work done by David Dawe in looking at the degree of transmission of prices in selected Asian countries as a result of the high food price crisis in 2008. Please refer to Dawe (2008) for more details on the methodology.

the capacity of large importers to continue to respond to demand for basic staple foods. However, this is not to say that smaller traders will not have difficulty dealing with pressures from a highly volatile foreign exchange rate due to the impact on foreign reserve availability in-country. Furthermore, it is clear that the domestic market structure is important to staple food price determination and evolution in-country.

## Domestic Yemeni Markets

*Markets in Yemen are characterized mainly by non-competitive behaviour, with a few large importing companies responsible not only for importing the majority of wheat and rice which is present on the markets in Yemen, but also for milling the wheat into flour and ensuring its distribution across a network of agents and sub-agents present in every governorate of Yemen. In fact, most traders source the commodities which they sell on the market within the governorate in which they operate. If not, the main source markets are Aden, Hodeida (where the ports are located) and Sana'a, the capital city. In Rayma, Amran and Al-Mahweet traders are dependent mainly on suppliers from outside their governorate.*

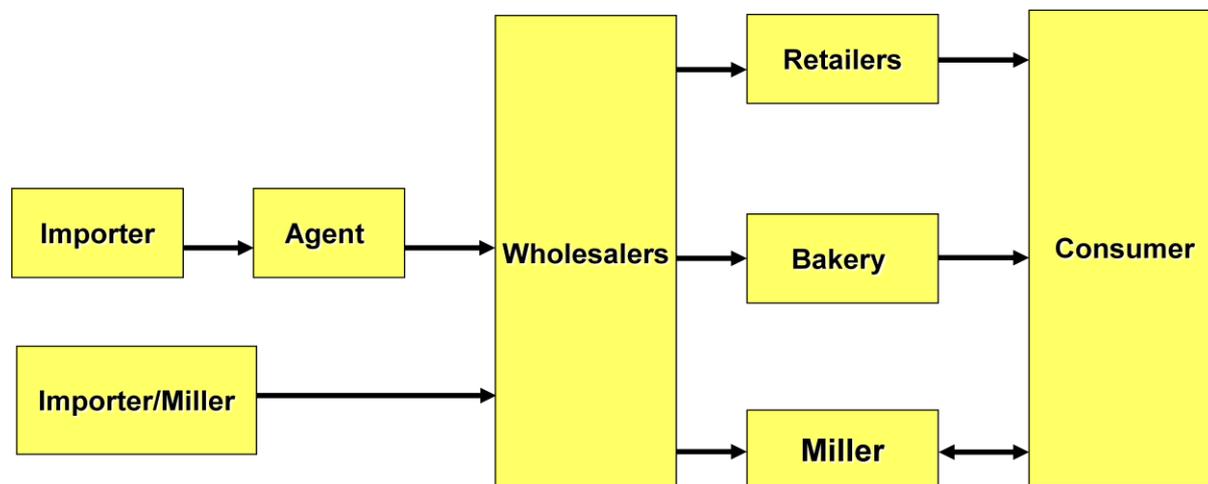
*The largest importer-cum-miller in the country holds 56 percent market share. The importers also hold much of the margin along the wheat chain, along with retailers. Thus, continued high price levels in Yemen are due to a monopolistic market structure. In fact, over 60 percent of traders believe that prices will continue to increase, and that the main reasons for this are due to the monopolistic behaviour of larger traders, and also due to availability problems in highlighted in Hajja, Amran and Hodeida.*

### Structure and Conduct

The imported wheat and rice chain relies upon an extensive network of wholesalers that purchase from a handful of key agents who represent private importers. About 80 percent of the cereal consumed in the country is imported. There are six big importers in Yemen and four of them own silos and port facilities and provide industrial milling and packaging services. These importers are amongst Yemen's largest industrial groups, with financial interests in many sectors. Larger traders import wheat mainly from Australia, USA, Ukraine, France and Syrian Arab Republic, while smaller traders tend to import from India and China. Between 90 and 95 percent of imported wheat is immediately processed into flour at the sea port in Aden and Al Hodeida, usually by the same trade company (CFSAM 2009).

Figure 15

## Wheat and wheat flour imported chain map



Adapted from: Royal Tropical Institute and Sneps (2009)

Key informant interviews suggest that there are a variety of import companies who are active in the market; in fact, the Chamber of Commerce's business directory<sup>8</sup> lists 46 companies that are involved in trading foodstuffs, with additional companies listed in the trading of general services, which also include foodstuffs. This would indicate a fairly competitive import market in Yemen.

These companies run their business on a fully automated basis; have their own discharge equipment; and transport their grain through belt conveyors into silos. In fact, the wheat and rice sector is very advanced and seems to have sufficient capacity to maintain staple food availability for the country as a whole. These companies have their own private jetties with ships carrying wheat grain, oil, sugar and rice arriving into their ports approximately every 2-3 weeks.

The largest importers-cum-millers have a very high capacity for storing and processing wheat grain and wheat flour. The daily milling capacity of wheat importer-cum-millers and smaller companies involved in the wheat trade within Yemen stands at approximately 7,350 tonnes per day. Furthermore, the two of the largest importer-cum-millers have a combined storage capacity of roughly 250,000 tonnes located largely in Aden, but also with some storage presence in Al-Hodeida. These traders typically keep a buffer stock of 3 months worth of wheat grain and/or flour.

The largest importer-cum-millers have a presence all across Yemen, with agents and sub-agents representing them in every governorate in Yemen. Thus, these importer-cum-millers and their agents are able to sufficiently supply even the far-off reaches of the country such as Hadramout and Al-Mahara. Data from the Customs Authority suggests that of the 2, 377, 504 metric tonnes of wheat grain imported in 2009, 56 percent of it is imported by one single company. The table below

<sup>8</sup> <http://www.yemenembassy.org/economic/YemenBusinessDirectory.pdf>

shows the one-firm, two-firm, three-firm and four-firm concentration ratios<sup>9</sup>. This indicates that there is a very important market share, more than 50 percent market share which is enjoyed by one single importer in the country.

**Table 4 – Concentration Ratios of the largest 4 wheat importing companies in Yemen, 2009**

<b>Concentration Ratio</b>	<b>Percentage Market Share</b>
CR-1	54
CR-2	71
CR-3	82
CR-4	90

Data Source: Customs Authority of Yemen

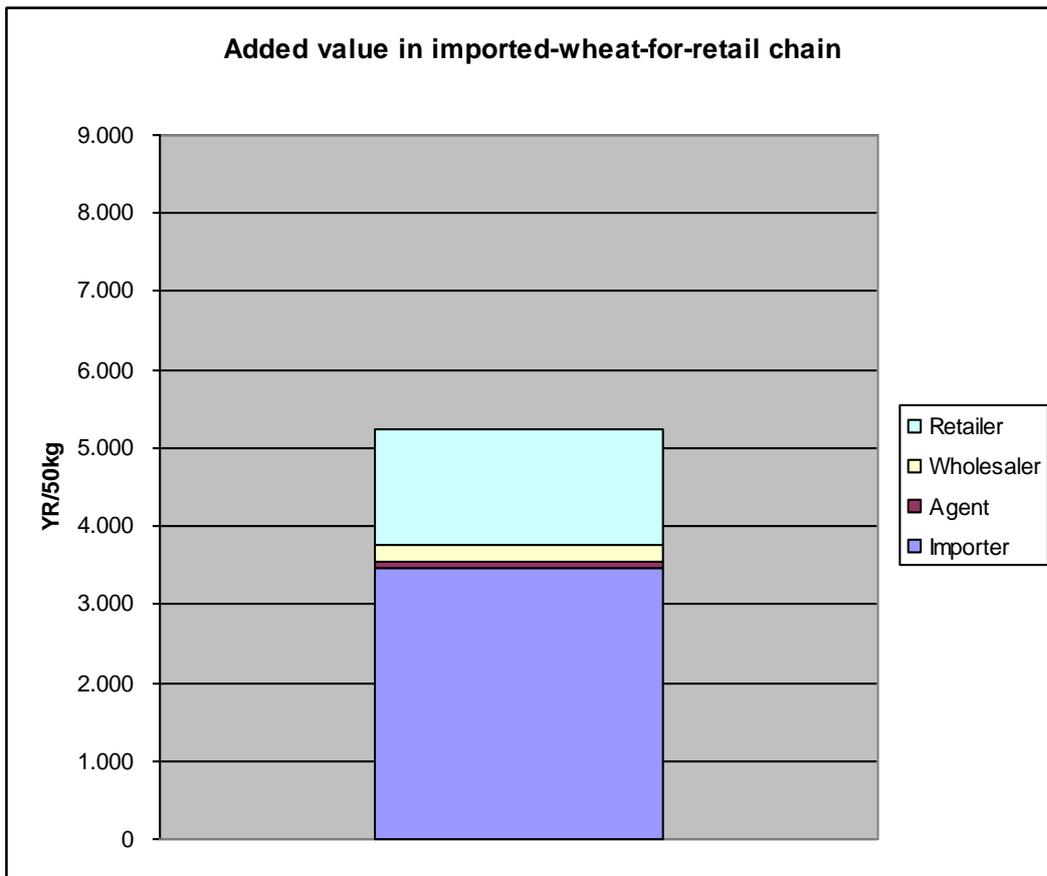
Typically, a market that is characterized by a four-firm concentration ratio that is over 60 percent is considered oligopolistic. In the case of Yemen, the one-firm concentration ratio is over 50 percent – indicating that more than half of the supply of wheat in Yemen is controlled by the importing activities of a single company, thus indicating a strong leaning towards monopolistic behaviour on the market. The two-firm ratio, which stands at 71 percent, means that even the second largest importing firm represents less than 20 percent of the imported wheat on the market.

In fact, the presence of these importer-cum-millers across the country at each governorate through agents and sub-agents means that there is an important degree of vertical integration on the markets, likely including wholesalers as well. Thus, the market displays non-competitive behaviour at the importing end. However, research conducted by the Royal Tropical Institute and Sneps (2009) suggests also that the margins taken on by the retailers is greater than that taken on by wholesalers and agents alike, as shown in the figure below.

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<sup>9</sup> The concentration ratios are used to show the extent of market control of the largest firms in the industry and to illustrate the degree to which an industry is oligopolistic. The various concentration ratios measure the total market share of the 4,3,2, 1 largest firms in an industry.

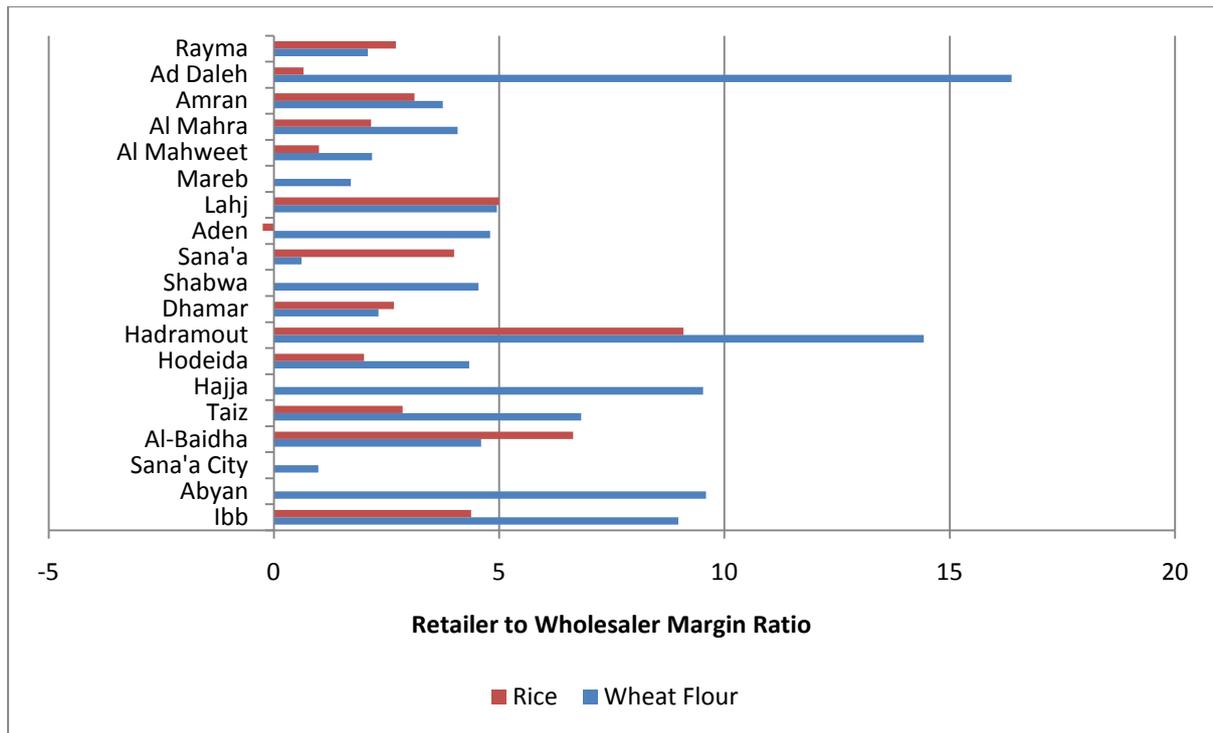
Figure 16 – Margins along imported wheat chain



Source: Royal Tropical Institute and Sneps (2009)

In fact, the data gathered from the market study indicate a very similar pattern, with retailers' margins typically surpassing those of wholesalers for wheat as well as rice, as shown in the retailer to wholesaler margin ratio in the figure below.

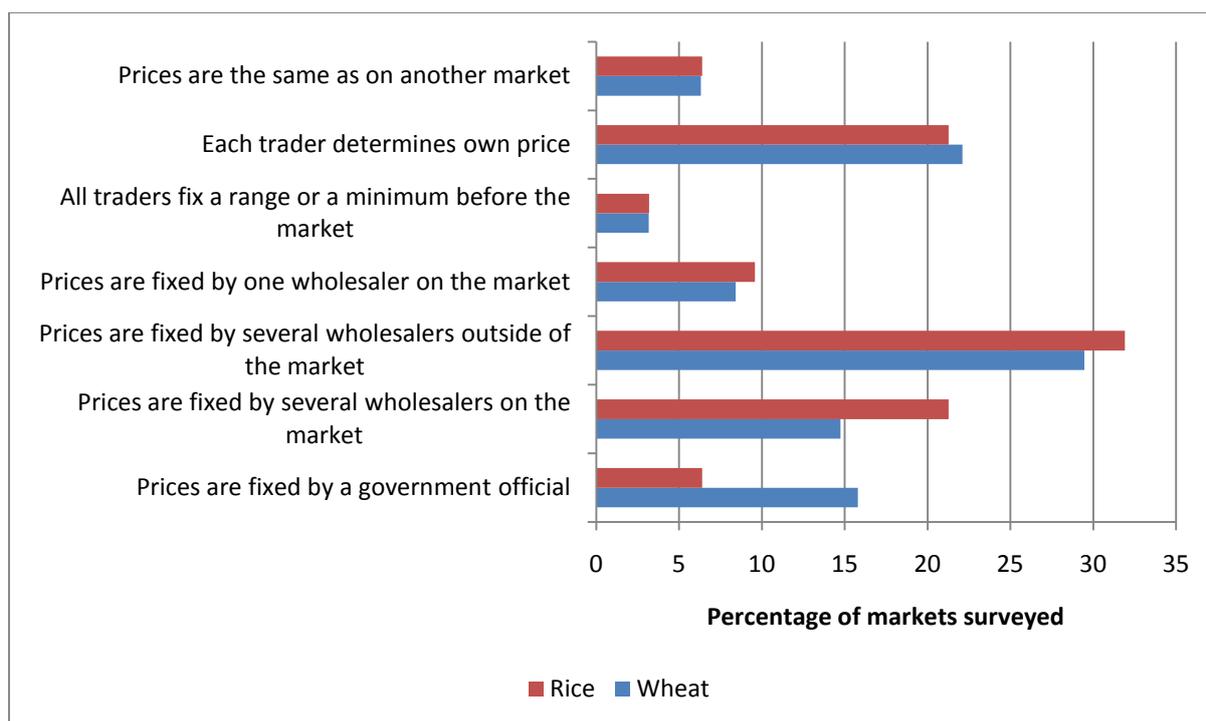
Figure 17 -- Ratio of Margins between Retailers and Wholesalers for Wheat and Rice



It is apparent that retailers often have a margin which is twice that of wholesalers according to the results of the market survey. Thus, it would indicate that market power is shared amongst retailers and the importers. However, it is also important to recognize that the relationship between importers, their agents and wholesalers on the market needs to be explored. In many cases when discussing with traders, it became apparent that the agent or sub-agent for a particular importer acted as the wholesaler on the market.

In fact, for wheat it is indicated by key informants that in 29.5 percent of the markets surveyed, the price is fixed by several wholesalers outside of the market, and in 22.1 percent of the markets each trader determines his own price. There are also similar results for the rice markets (see figure below).

Figure 18 – Price determination in markets surveyed



It is also important to note that there are also 8.4 percent of markets for wheat, and 9.6 percent of markets for rice in which one wholesaler explicitly sets the prices. Furthermore, there are a significant number of markets in which key informants declare that a government official fixes the price<sup>10</sup>. Thus, the proportion of markets in which non-competitive price determination takes place is 68.4 percent for wheat, and 69.1 percent<sup>11</sup> for rice.

**This is of particular importance in terms of implementation strategy to avoid inflationary risks and risks of corruption in the market with any eventual implementation of a cash/voucher pilot. It seems that the price is effectively controlled at the level of the importer-cum-millers and also at the retail level. However, in terms of WFP’s possibility of hedging any risk of monopolistic increases of prices due to the implementation of a large-scale cash/voucher pilot, it is recommended that the importers and their agents are aware of the intervention. As there seems to be a high level of vertical integration on the markets due to the role and presence of the agents and sub-agents in each governorate, and due to the fact that there is one particular importer who has significant market share, it is likely that prices along the chain are dictated by decisions made at the importer-cum-miller level. An unnecessary increase in prices at the retail level will be harder to control, while direct discussions at the importer level are more feasible for a programme intervention.**

<sup>10</sup> This is of interest as it would seem that officially the government does not interfere with retail pricing on the market. However, in some discussions it became clear that in places market power is exercised by the local community leader, though unclear whether they are always a government official.

<sup>11</sup> These percentages are taken by aggregating the prevalence of the following categories, considered non-competitive: if fixed by a government official, fixed by several wholesalers on the market, fixed by several wholesalers outside the market, and fixed by one wholesaler on the market.

## Market Integration and Food Flows

The relationship between markets, as indicated by the correlation coefficients<sup>12</sup> between prices on the major markets monitored by the Central Statistical Organization (CSO) in the table below, show that there is a relatively high degree of integration between markets overall. The greatest level of integration is between Aden and most other governorates, with correlation coefficients over 60 percent, with the exception of Saadah<sup>13</sup> and Sana'a.

Table 5 – Correlation Coefficients of major markets across Yemen

	ADEN	AL GHIDAH	AL HAWDAH	AL HODEIDAH	DHAMAR	SAADAH	SANA'A	TAIZ	ZUNJUBAR
ADEN	1.00	0.64	0.78	0.86	0.67	0.22	0.46	0.85	0.72
AL GHIDAH		1.00	0.33	0.59	0.70	0.17	0.52	0.52	0.45
AL HAWDAH			1.00	0.91	0.37	-0.05	0.25	0.74	0.82
AL HODEIDAH				1.00	0.60	-0.04	0.41	0.73	0.75
DHAMAR					1.00	0.13	0.39	0.47	0.26
SAADAH						1.00	-0.27	0.38	0.13
SANA'A							1.00	0.31	0.28
TAIZ								1.00	0.72
ZUNJUBAR									1.00

Source: Central Statistical Organization (CSO)

This is relevant due to the fact that Aden is the main port of entry for most of the imported products in Yemen. The other major ports are Al Hodeida and Al Mukalla. Nonetheless, Aden is the major port of entry, and thus the correlation of prices with Aden would indicate that this is the most important market to monitor to understand the potential trends and impacts on the rest of the country.

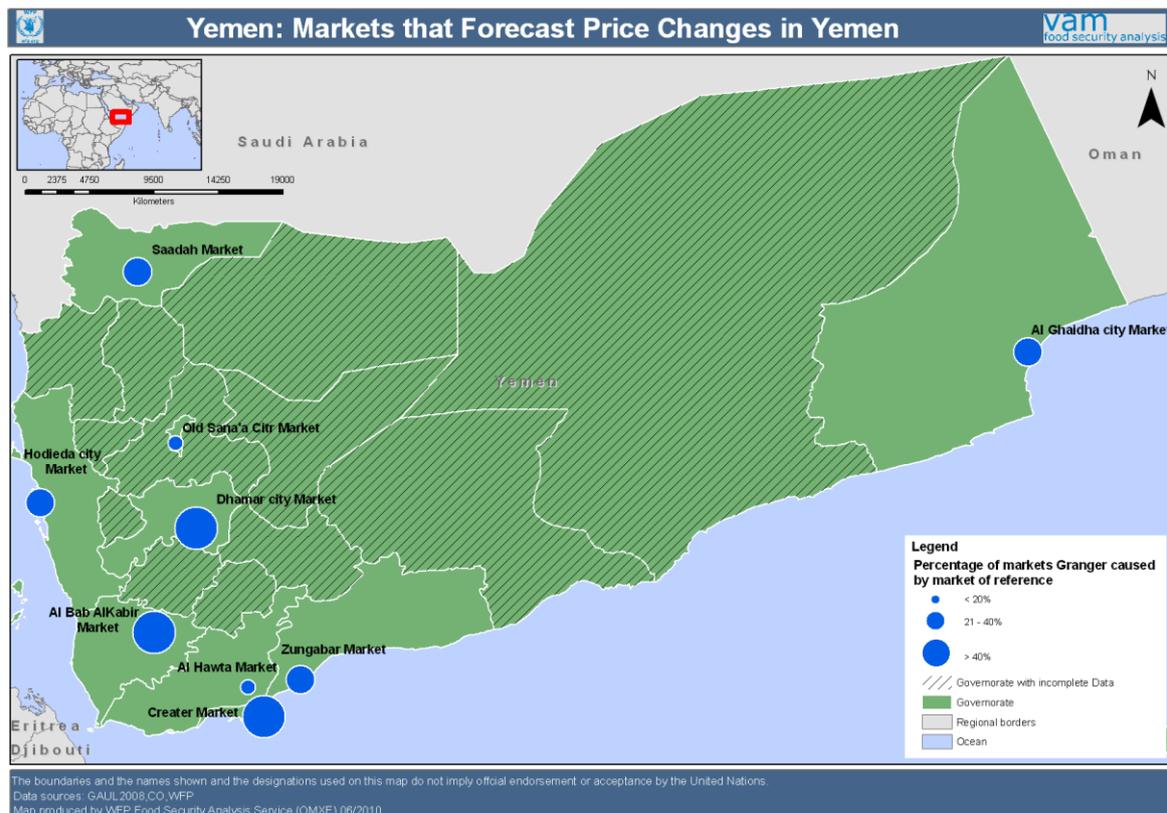
In fact, further investigation into the relationship between markets across space using Granger causality<sup>14</sup> analysis, gives an idea of those markets which are responsible for the formation of prices in other correlated markets, and also an understanding of those markets which are predominantly price-takers. The figure below indicates that Aden granger causes more than 40 percent of markets under study. Other important markets are also indicated as Al Hodeida, Taiz and Dhamar, granger causing between 20 and 40 percent of markets under study. Al Hodeida and Taiz represent important locations in terms of the wheat market due to an important presence of the commercial importers in these cities. There is a fairly large importing and milling capacity present in Hodeida, and Taiz is the headquarters for the largest importing company in Yemen.

<sup>12</sup> The correlation coefficients presented were calculated on the first differences of the price series due to the presence of unit roots in the price series.

<sup>13</sup> It is important to note that Saadah has little relationship with any other market under study. This indicates that the conflict has effectively isolated the markets in Saadah from the rest of the country.

<sup>14</sup> Only the relationships identified as significant at the 1 percent and 5 percent levels are indicated in the analysis. The Granger causality analysis was run with the first differences of the price series due to the presence of unit roots.

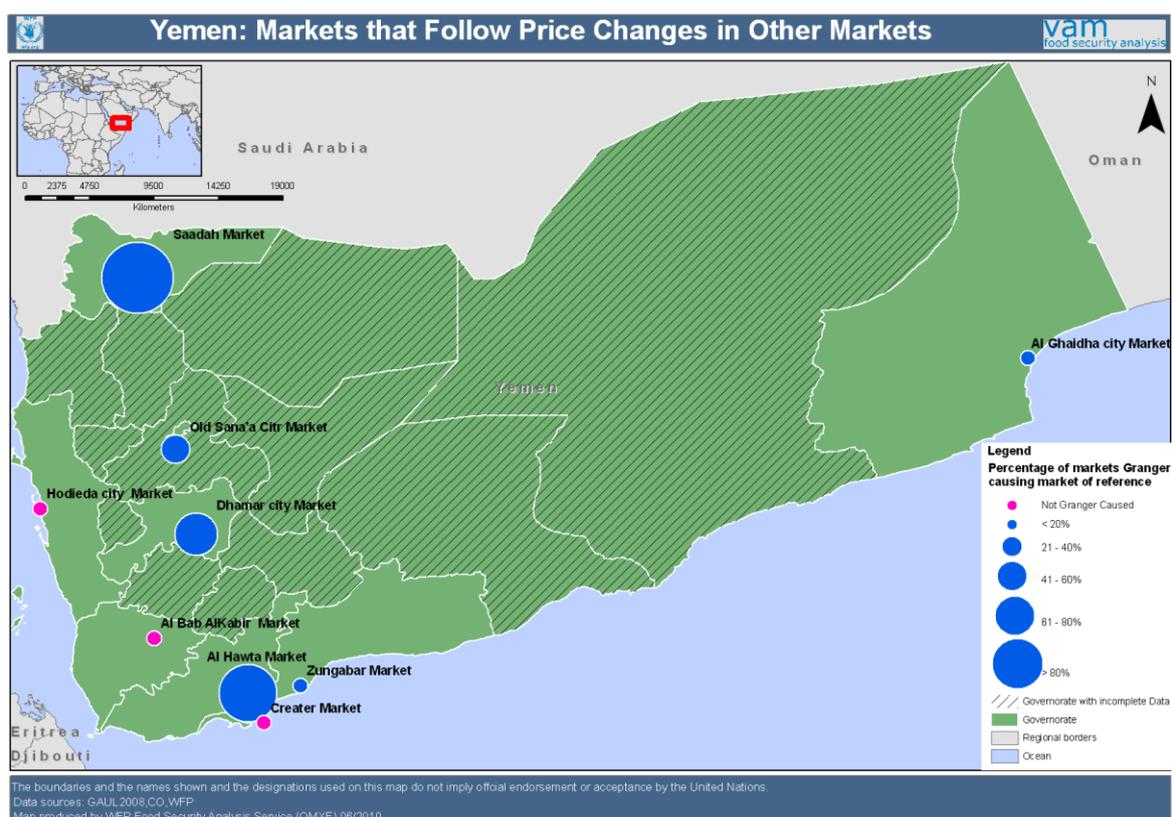
Figure 19 – Percentage of markets that Granger cause prices on other markets



Dhamar also seems significant to price formation within the country, likely due to the road and infrastructure links that it provides between important markets such as Taiz and Sana'a.

The markets which are most likely to be destination, or price-taking markets, are indicated in the map below. In fact, those markets identified as source markets, or price determining markets have very low incidences of being granger caused by another market. On the other hand, Sadaah and Al Hawta in Lahj prove to be important destination markets – with 66 percent of markets granger causing prices in these two locations. While correlation coefficients show that there is little correlation between Sadaah and other markets in Yemen, the little relationship that does exist is significant – thus showing that Sadaah does have links with the rest of Yemen. However, it is very likely that much of the commodities flowing into Sadaah are from Saudi Arabia.

Figure 20 – Percentage of markets that are Granger caused by other markets



Dhamar, again likely due to its location at a cross-road between important consumer markets, is also significantly granger caused by 44 percent of markets. In fact, this is reflected in the food flows that have been identified through the market study – where approximately 60 percent of traders in Dhamar purchase their stocks locally, but the other 40 percent procure their goods from Aden and Hodeida. It also serves as important source market for traders in neighbouring Ad Daleh, as indicated in the table below.

Table 6 – Food Flows by Governorate; identification of purchase locations of traders by governorate

Governorate	Within Governorate	Other
Ibb	50.0%	Aden, Sana'a
Abyan	16.1%	Aden
Al-Baidha	54.2%	Aden, Abyan
Taiz	84.0%	Aden
Hajja	100.0%	
Hodeida	100.0%	
Hadramout	100.0%	
Dhamar	60.0%	Aden, Hodeida
Shabwa	45.5%	Aden
Sana'a	100.0%	
Aden	100.0%	
Lahj	36.4%	Aden
Mareb	41.7%	Sana'a

Al Mahweet	0.0%	Hodeida, Sana'a
Al Mahra	58.3%	Hadramout
Amran	0.0%	Sana'a
Ad Daleh	50.0%	Aden, Dhamar
Rayma	0.0%	Hodeida

The table also indicates that for 11 of the 19 governorates under study, over half of the traders source their goods from within the governorate. This supports the presence of vertically integrated agents and sub-agents in the governorate capitals. In these 11 governorates, district level markets indicated the governorate capitals as their source markets. In those instances where traders purchase their commodities outside of the governorate in question, the main source markets identified include Aden, Sana'a and Hodeida.

Thus, while Aden and Hodeida represent very important markets as they represent the main port of entry for the imported staple goods, they are also important direct source markets for neighbouring governorates in addition to the procurement of staples from sub-agents based within the governorate capitals. Market integration and food flows analysis suggest that markets across Yemen are fairly integrated through two channels: the first through the agents and sub-agents of the major importers, and the second through food flows bought in the governorates essentially neighbouring Aden, Hodeida and Sana'a.

There are also certain governorates in which traders are highly dependent on agents and suppliers outside of their own governorate including Rayma, Amran, and Al-Mahweet where all traders indicate an external supplier –from Al Hodeida or Sana'a. This is significant as Rayma represents the governorate in which the highest prevalence of food insecurity has been identified. Also, Amran and Al-Mahweet are governorates with high food insecurity and also bordering Saadah and thus likely to be impacted as a result. This lack of suppliers within the governorates is likely to have implications on the response capacity of traders, and it will also have important implications in terms of transactions costs for the traders as well as lead time, which will in turn have an important impact on price formation in these governorates. As the physical accessibility of roads and the associated transport costs might be high due to the proximity of the conflict in the north, there could be availability problems, and higher prices in relation to neighbouring governorates.

## Household Food Access: Purchase conditions for households

### Evolution and Behaviour of Prices

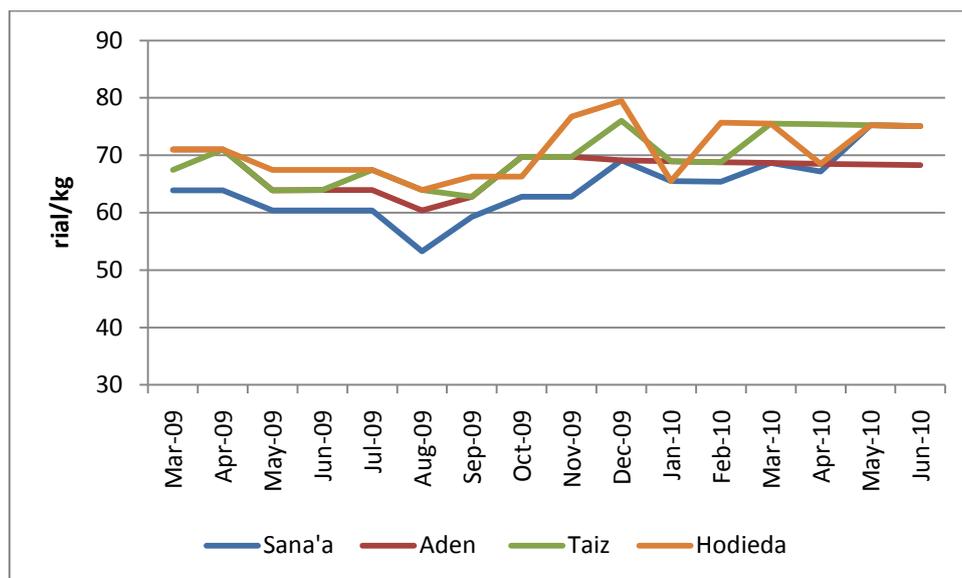
***The prices are likely to continue increasing through the second half of the year in Yemen. This is mainly due to domestic market dynamics. Discussions with traders suggest that this is likely to be due to a variety of factors including continued high food inflation, perceived decrease in food flows by traders and due to the monopolistic behaviour of agents on the markets.***

The fact that most households are dependent on purchases of the most basic food items to ensure adequate food security entails a close look at the evolution and behaviour of retail prices in Yemen, and whether they are likely to be increasing or decreasing in the foreseeable future. The evolution of retail prices has an important impact on the purchasing power of households, and, given stability in

household incomes, any increase in retail prices may mean that households will have to spend even greater shares of their resources on food over non-food items; otherwise they might start engaging in destructive coping strategies.

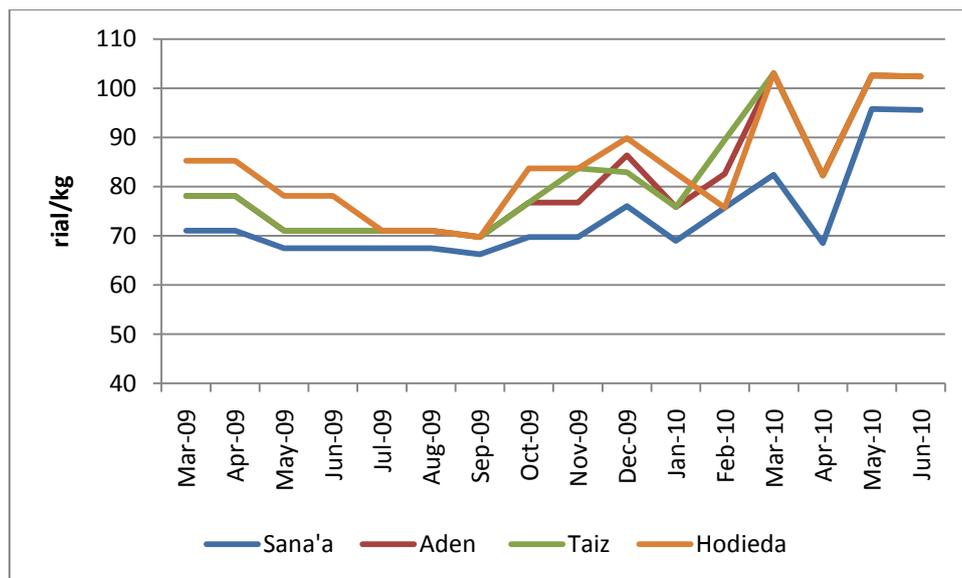
Indeed, while international prices showed a decreasing trend in 2009, the most recent evolution of retail prices in real terms<sup>15</sup> of the basic staples including wheat grain, wheat-flour and rice, show an increasing or relatively high trend in 2010 compared to 2009.

Figure 21 – Real Wheat Grain Prices, 2009 - 2010



Data source: WFP Yemen Market Monitoring System

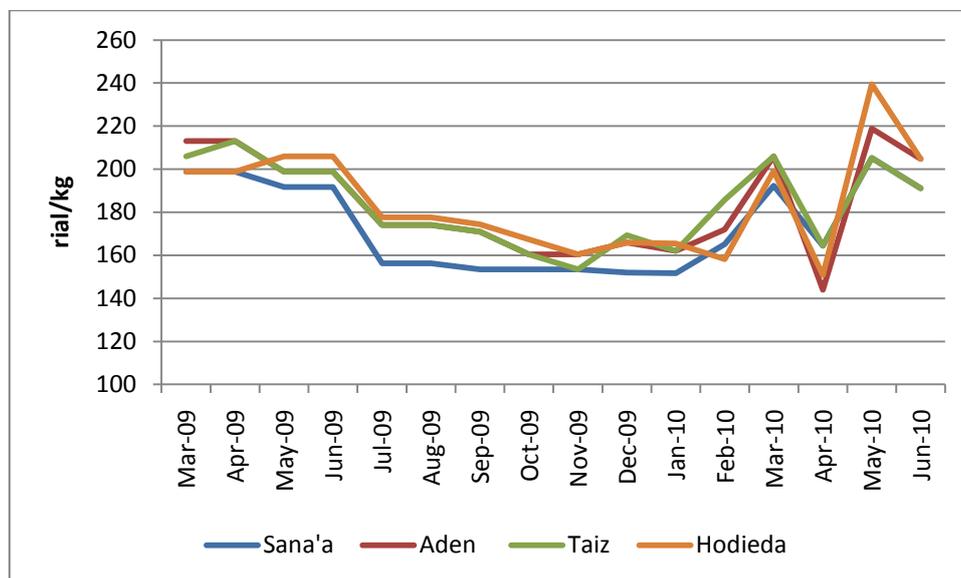
Figure 22 – Real Wheat Flour Prices, 2009-2010



<sup>15</sup> As CPI data for 2010 were not available to calculate real prices, the monthly CPI for 2010 was estimated using a forecasting methodology from the previous CPI data available until December 2009.

Data source: WFP Yemen Market Monitoring System

Figure 23 – Real Rice Prices, 2009 - 2010

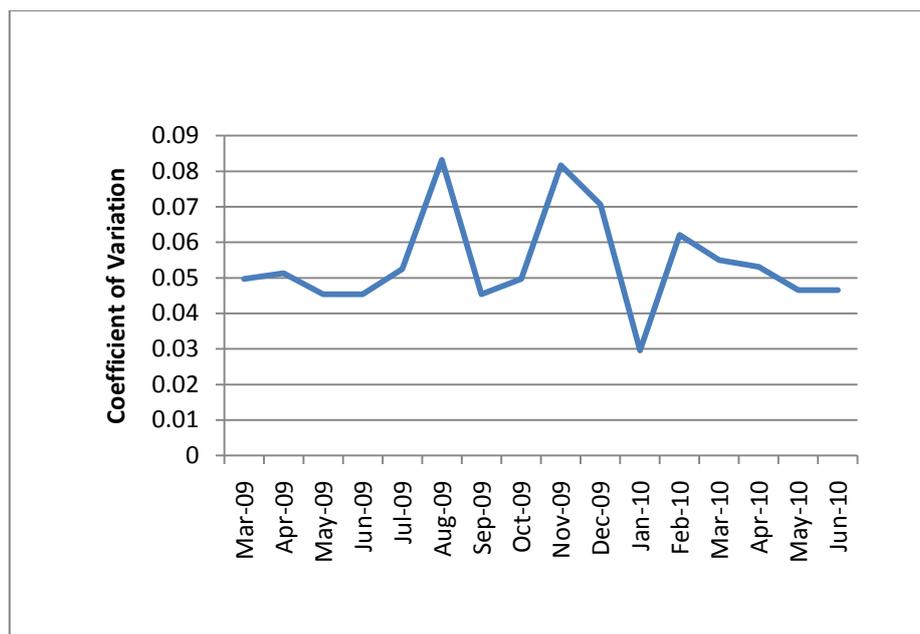


Data source: WFP Yemen Market Monitoring System

This increased level of prices is likely to continue providing problems related to household access, and is likely to continue as a result of increased international wheat prices due to the recently developing drought in Russia, and subsequent export ban, as well as Ramadan, which typically generates increased demand on the markets, thus pushing prices up beyond their typical seasonal levels.

While prices remain high, there is increased stability in prices in recent months, as shown in the figures below. The coefficient of variation calculates the degree of variance of prices across different markets in Yemen contemporaneously. Prices in 2010 for wheat grain show less volatility across Yemen, with a declining trend. This is a positive sign, showing that price differences across different markets in Yemen are diminishing, thus providing some indication of greater market efficiencies, with possible decreases in transaction costs.

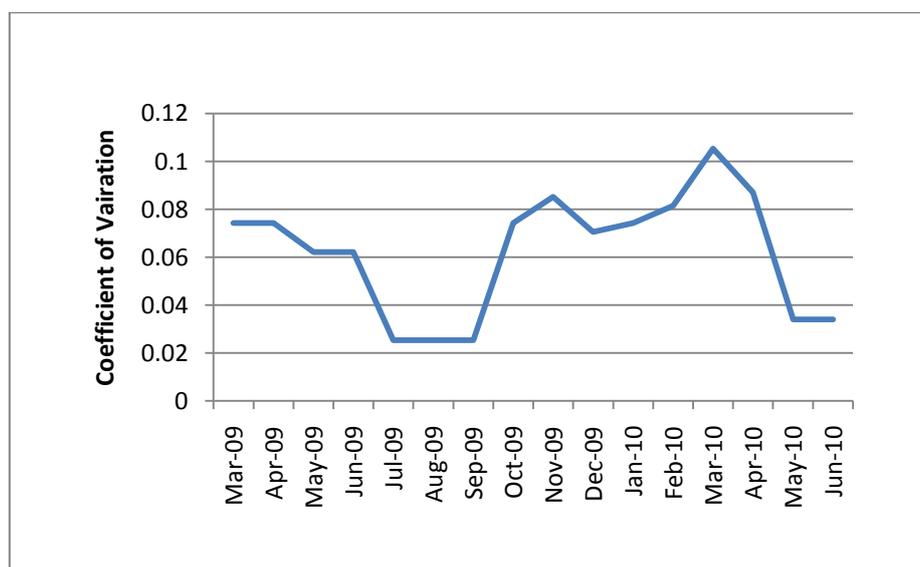
Figure 24 – Volatility of Wheat prices across Yemen, 2009 - 2010



Data Source: WFP Market Monitoring System

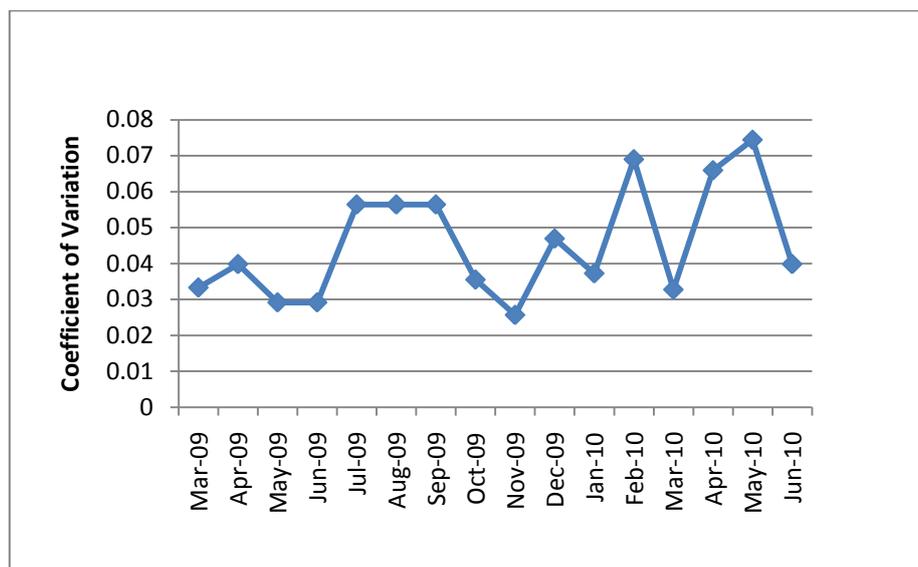
However, knowing that most of the wheat grain that is imported to Yemen is directly processed into wheat flour it is important to note the volatility that seems to be developing in those prices as well as in rice prices in 2010. This is particularly relevant as the evolution of prices of those grains which are domestically processed, that is, rice and wheat flour, are those which are determined by greater volatility and higher prices – again pointing to the domestic structure of markets as the most important factor in these prices (see figures below). The figures below show that the volatility, as measured by the coefficient of variation across major markets in Yemen of wheat flour prices have a fairly high percentage compared to wheat grain, with wheat flour volatility peaking over 10 percent in mid-2010, while volatility of wheat grain prices were decreasing at the same time to less than 5 percent .

Figure 25 – Volatility of Wheat flour prices across Yemen, 2009 - 2010



Data source: WFP Yemen Market Monitoring System

Figure 26 – Volatility of Rice across Yemen, 2009 - 2010



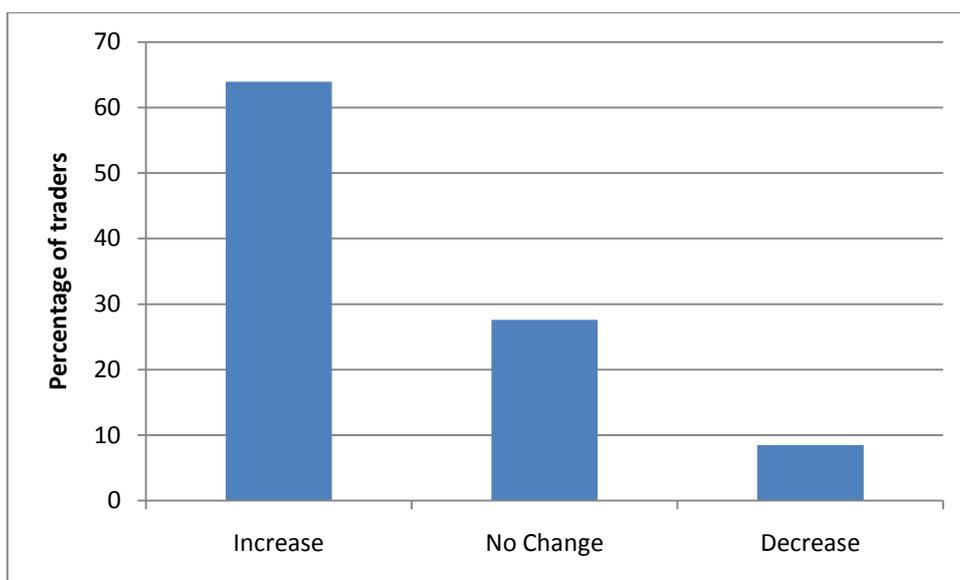
Data source: WFP Yemen Market Monitoring System

Continued volatility has an important impact on the access of households to important staple foods. Continued volatility is likely to sustain uncertainty in the markets, as was noted during the time of data collection with many retail traders bemoaning the price hikes they are facing from the wholesalers due to monopolistic behaviour, as well as increased transport costs as a result of a steady decrease in fuel subsidies<sup>16</sup>.

In fact, most traders on the market had the impression that prices in the coming 6 months are likely to reflect an increasing trend. Over 60 percent of traders believe that prices will reflect an increasing trend, and less than 10 percent of traders identified a perception that prices would decrease in the 6-months after the study was implemented.

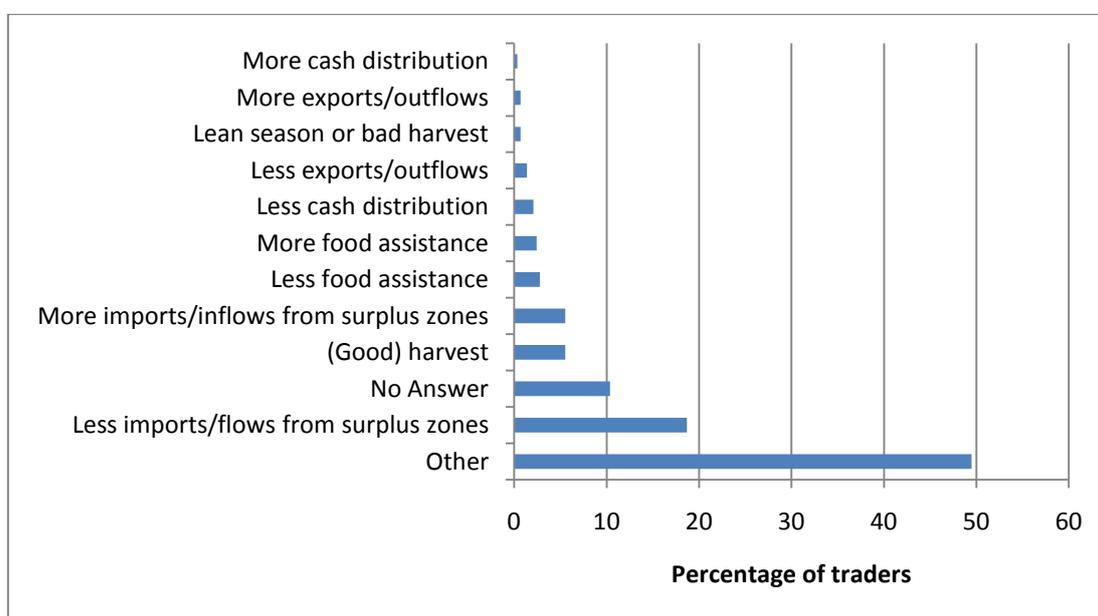
<sup>16</sup> "Three dead in south Yemen clashes, fuel prices raised", Reuters Alertnet accessed at: <http://www.alertnet.org/thenews/newsdesk/LDE6421P7.htm>

Figure 27 – Perception of the evolution of prices in 6 months



The different factors that were identified by traders as important, as shown in the figure below, mainly reflect a problem related to lower availability due to decreased imports and ‘other’ reasons (39 percent). Those traders who gave other reasons for the perceived increase in prices cited the monopolistic and price fixing behaviour of the wholesaler agents on the market (44 percent), while other major reasons included the generally poor state of the economy in Yemen, and the continued depreciation of the rial.

Figure 28 – Reasons for expected price increases

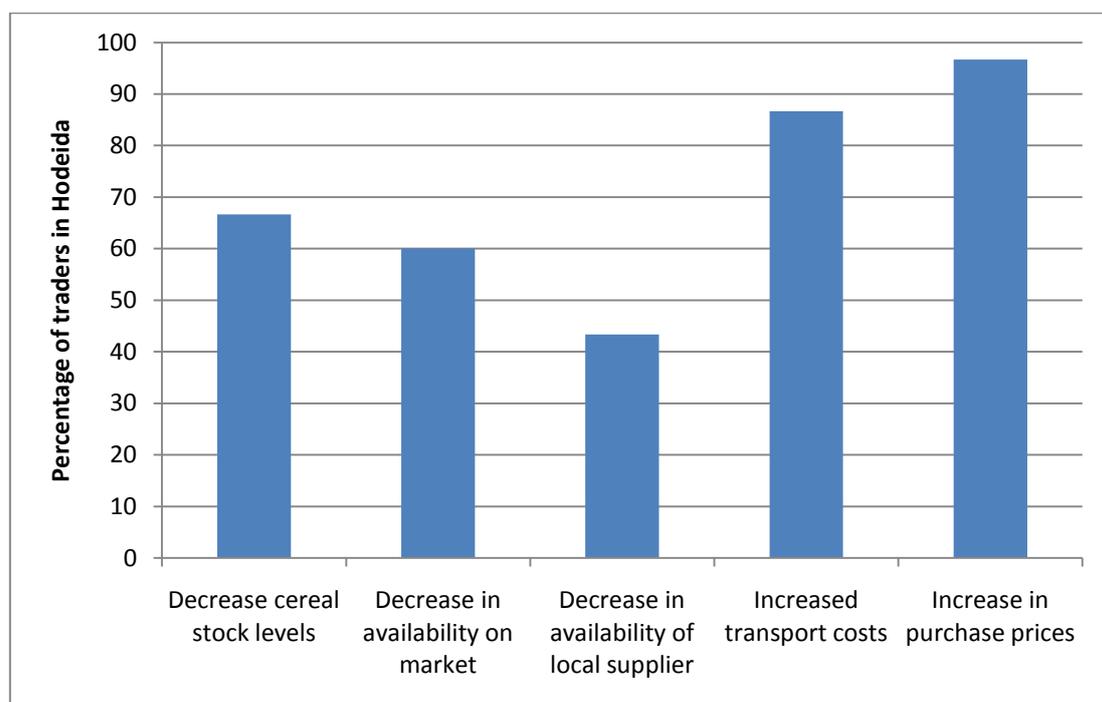


It is also important to understand the significance of the perceived decrease in imports and flows of food. Taking a closer look, the traders that reported this as the main reason for an expected increase in prices were from Hajja (38.9 percent), Hodeida (22.2 percent) and Amran (13 percent). Hajja, in fact has been negatively impacted by a recently built security fence that has blocked trading activity with Saudi Arabia. While information gleaned from the traders indicate that many retailers purchase their food from within Hajja governorate itself, reports from data collection indicate that the

originating source of many of the food is from Saudi Arabia. Thus, the Sada’ah conflict seems to have had a direct impact on the availability of food within the governorate. This is also the case with Amran, which is directly impacted by security issues and roadblocks as a direct result of any unrest in Sada’ah, thus impacting traders’ abilities to move food effectively into the governorate. Many of the traders in Amran source the food they sell from Sana’a, thus they are vulnerable to any road closures that result from unrest in Sada’ah.

The results from Hodeida governorate may seem a bit more surprising due to the fact that Hodeida represents one of the main ports of entry for wheat, rice and other imported commodities into the country. However, the traders who cited the lack of availability of flows hail from the districts of Az Zuhrah, Bajil and Al-Qanawis, which are the districts bordering Hajja and Amran. The traders source their foods directly from Hodeida or from within their own district (which is the case mainly for Al-Qanawis district). The likely answer to why there is a decrease in availability has to do with the way that traders have responded to shocks to the market over the past year. Traders in Hodeida have expressed that the high food price crisis has had an important on the markets in the past year (see figure below).

Figure 29 – Perception of traders of impact of high food prices in Hodeida



The most striking perception from traders is that 96 percent cite an increase in their own purchase prices for their commodities on the market as a result of the high food prices, thus impacting the flows of wheat and rice into the districts under question.

**This is likely to have an adverse impact on the access of food for households – with the spectre of increased prices; the purchasing power of vulnerable households is likely to decrease as well. This means, that even if there are no problems related to food availability, households will likely face greater stress in purchasing the same amount of food. In such cases, the introduction of cash or voucher programming to support household access would be appropriate.**

Thus, with continued monitoring of the volatility situation, as the latter part of 2010 seems to show greater stability in price evolution, this will help to determine whether it might be more appropriate to implement quantity-based vouchers to beneficiaries in order to hedge the risk of price volatility.

### Presence of shocks and their impact

*The source of these changes on the market seem to be a combination of the high food prices that continue to impact Yemen – for a variety of reasons, including a poor macro-economic situation as well as a likely non-competitive domestic market which puts added pressure on the prices of key staple foods – and social instability. These changes are unlikely to have a temporary impact, but are likely to be persistent issues on the market. Thus, any programme decisions made should actively take into consideration the most salient points:*

- *Decrease in credit extension to consumers*
- *Decrease in the scale of business conducted by traders, thus likely impacting availability and quality of food on the markets*
- *Increased transports costs*
- *Increased prices on the markets*

The most prominent shock remains the high food price crisis, with many key informants and traders also lamenting the impact that the global financial crisis recently has had on the local markets. There is also, however, the impact of social conflict that is prominent in a few governorates, which will have an important impact on response options.

Figure 30

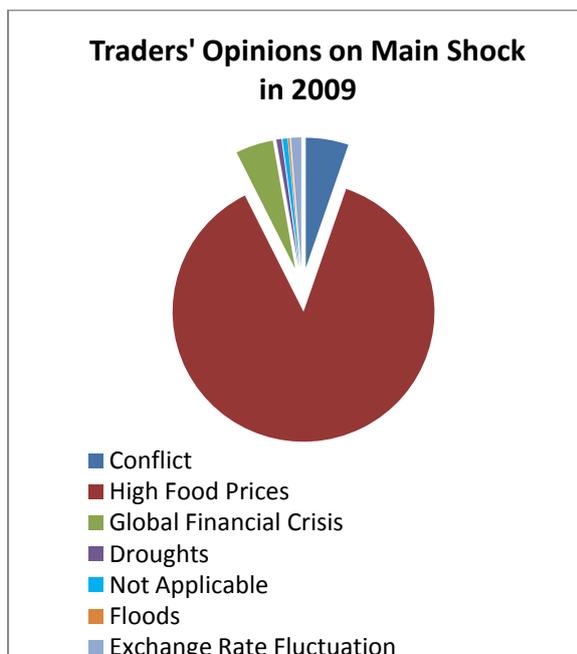
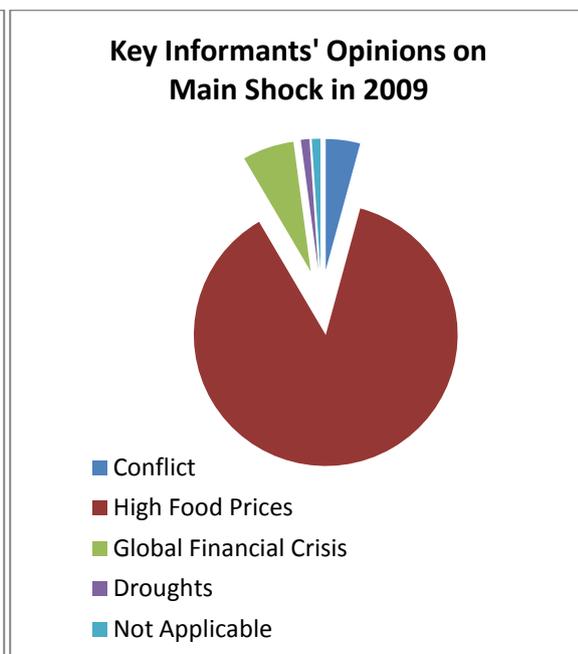


Figure 31



According to traders there has been an important impact of social conflict across a variety of governorates, though the impact of the high food prices does dominate the preoccupation of traders and key informants alike across the board. Nonetheless, it is important to consider the possible impact of social conflict on the markets – and in Lahj and Abyan, over 20 percent of traders mentioned that conflict is a greater worry than the recent high food price crisis. Other governorates where social conflict seems to play an important role are Shabwa, Ad Daleh, and Hadramout<sup>17</sup>.

Lahj and Hadramout are governorates that have been particularly prone to the flaring of tensions between the security forces and the liberation movement. This creates an environment that is prone to spontaneous protests. This is also the case for those traders who point out that closure of their stores, as part of protests lead to a disruption in trading activities. This is of particular importance, especially in the case of Hadramout governorate as it is the governorate capital city market Al Mukalla, and supplies many of the other markets in the vicinity in the governorate. At the time of data collection, there was an ongoing protest in Ad Daleh which actually prevented the team from entering the governorate capital – thus the impact of social unrest was being actively felt by the traders. This governorate is also one which depends highly on the trading activities in the governorate capital as a source of supplies, with 50 percent of traders depending on suppliers within Ad Daleh city.

The source of the social conflicts in Shabwa, on the other hand, is mainly tribal conflicts. Traders report that when a conflict flares up, access to roads are often blocked, impacting trading activities as much of the district markets in Shabwa depend on flows from Ataq city market. The roads leading out of the district capital are often the ones that are blocked.

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<sup>17</sup> In fact, there were 4 markets in which conflict was mentioned as the main shock impacting trader and general market activity by key informants. The 4 markets in particular were: Al-Mukalla Central City Market in Hadramout; Mushaimeer market in Al Qabbaytah in Lahj; and Nisba and Ataq market in Shabwa.

Figure 32 – Main Shock on market across governorates according to Key Informants

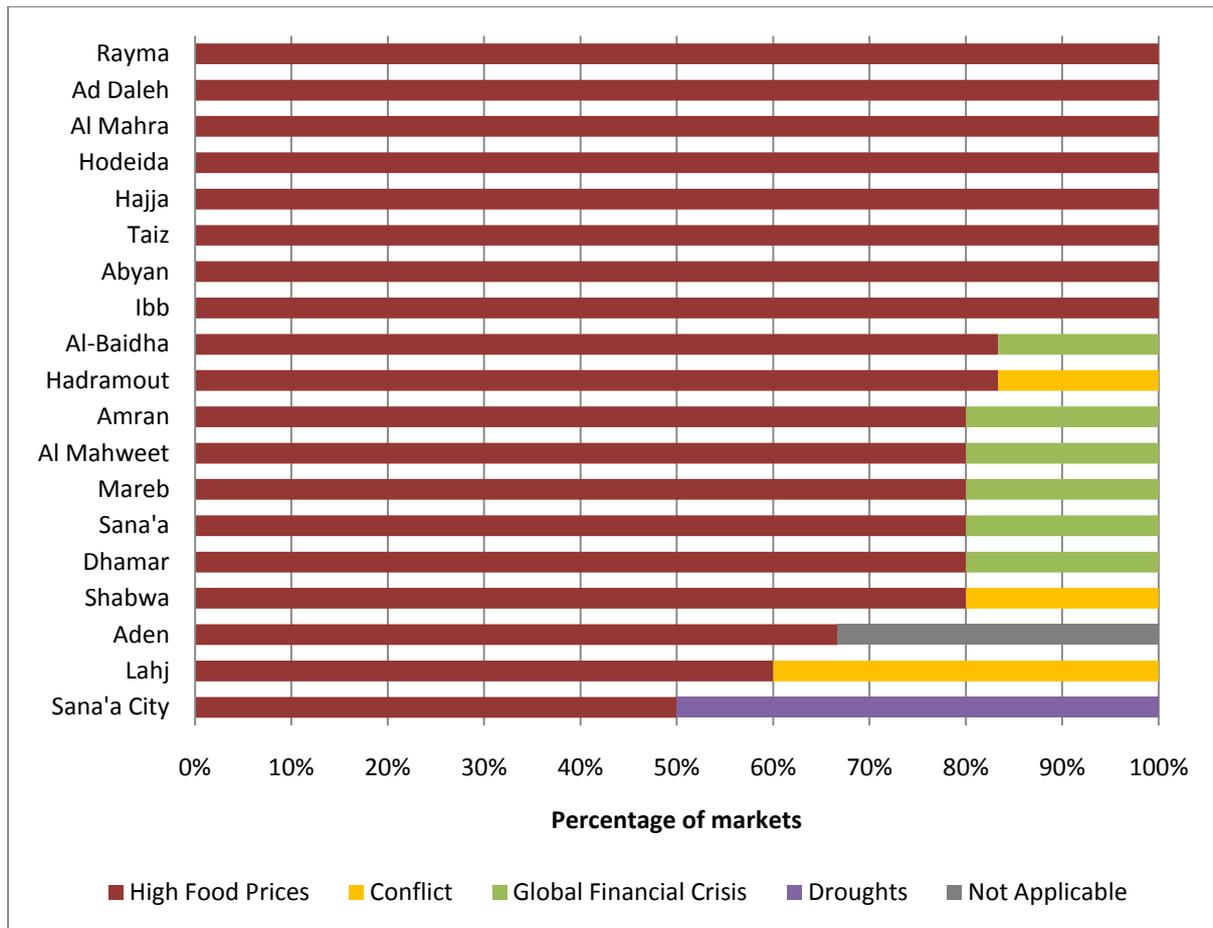
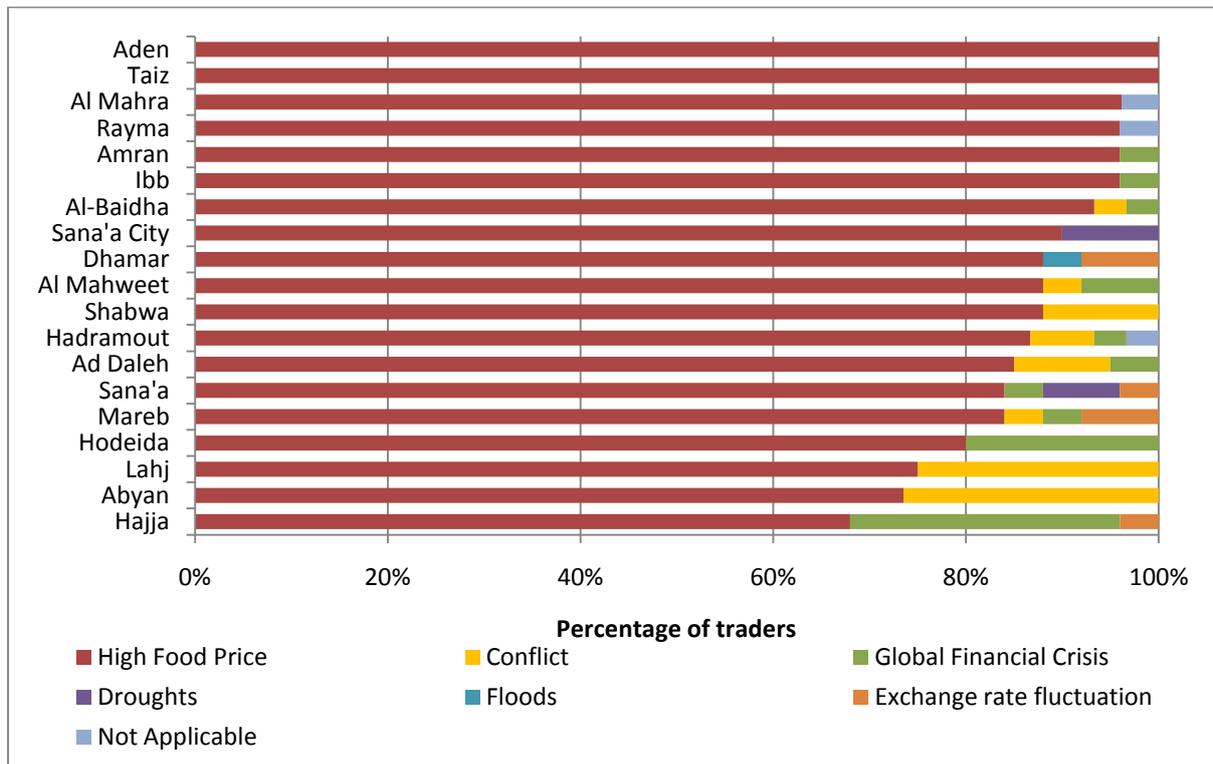


Figure 33 – Main shock on markets according to traders



Where conflicts were highlighted as major issues on the markets, it may be interesting to find out if there is any correlated damage to or physical impact on the markets, as noted from key informant interviews on the market. The table below shows the impression of key informants of the direct impact that the identified social conflicts have had in Hadramout, Shabwa and Lahj – the three governorates in which both traders and key informants identified conflict as one of the major shocks in the past year on the markets.

**Table 7 – Magnitude of Destruction at Market Level according Key Informants**

Governorate	Magnitude of shop destruction		Magnitude of Storage destruction	Magnitude of trader vehicle destruction	Magnitude of destruction of roads, bridges		Magnitude of communications destruction
	Very high (50-100%)	High (30-49%)	High (30-49%)	High (30-49%)	Very High (50-100%)	High (30-49%)	Very High (50-100%)
Hadramout	0	100	0	0	0	0	0
Shabwa	0	0	0	0	100	0	0
Lahj	50	50	100	100	0	100	100

In the markets where destruction was identified, direct damage to shops was reported in Hadramout and Lahj. In Shabwa, on the other hand, the main physical impact has been related to the infrastructure in the area. In fact, discussions with traders relate that most tribal conflicts in the area mean that roads are often blocked, with danger to trucks and the movement of goods into Ataq city market. It is also noted that due to the conflict and the practice of blocking the roads, the sales’ representatives of the major wholesalers lack access to the market. This is particularly relevant as 20 percent of the traders interviewed in Shabwa identified Ataq market as their main purchase source of wheat flour. Thus, if Ataq market is cut off, this has a potential impact on those district markets that depend on Ataq for their availability, and also the prices at which commodities are available.

In Hadramout, the main physical impact seems to have been directly on the stores of the traders. Discussions with the traders indicate that this is not in the form of direct destruction of the stores, but rather in terms of the closures that are imposed on the markets as protests take place quite often due to the secessionist movement in the governorate. In fact, less than 10 percent of the traders interviewed identified the conflict as the major shock on the markets in this governorate.

In Lahj, on the other hand, there seems to be a significant pre-occupation across key informants and individual traders alike regarding social conflict in that particular governorate. Lahj is a governorate that has been highly impacted by anti-government protests and related instability<sup>18</sup>, and this impact has been registered in market activity as demonstrated by both trader and key informant preoccupation. More than 20 percent of traders in the governorate identified social conflict as being

<sup>18</sup> <http://www.criticalthreats.org/yemen/tracker-unrest-southern-yemen>

a greater shock on the market than persistent high food prices. The impact of this shock seems to have had an impact on storage, conditions of shops, communication and general infrastructure.

These markets display variable seasonal access, which was exacerbated across the board by social conflict during 2009. Specifically, the markets of Al Mukalla City, Nisab and Al Qabbaytah have seasonal access issues as identified by key informants on these particular markets. Al Qabbaytah market is blocked seasonally from October to March; Al Mukalla City's access becomes more difficult in May, while Nisab market has accessibility issues all year round due to the insecurity. This, however, is unpredictable and dependent mainly on tribal clashes. Furthermore, key informants have identified physical damage to markets across the board (as indicated in the table above).

The implications of this can be of particular importance, especially in the case of Hadramout. Not only are those markets within districts of Hadramout governorate that are close to Al Mukalla dependent on that market as their source of food availability, but there are also approximately 40 percent of markets in Al Mahara governorate where food is sourced from Al Mukalla city. Thus any disruptions in Al Mukalla not only impact those districts surrounding it in Hadramout, but also in neighbouring Al Mahara governorate.

There is also a sense that insecurity has had an important impact on over 20 percent of traders in Abyan as well. This perception does not come from the key informant interviews, however. Continued tension between liberation forces and security forces in the region has led to many armed incidents in various districts. As insecurity prevails in the region, traders close their shops to avoid coming to any harm. Furthermore, those traders who discussed the issue of insecurity on the market complained mostly of robbing and looting activities, which have forced them to scale down their operations.

**The implications are particularly important in terms of cash and voucher implementation in those governorates where there seems to be a high impact of social conflict – mainly Hadramout, Lahj, Abyan and Shabwa. The primary risk of implementing a cash/voucher programme in an environment defined by spontaneous market closures and especially in those contexts of violence directly on the market, as reported through discussions with traders on the markets in Abyan and Lahj, is that of putting the beneficiaries at direct risk in terms of their personal security. In addition to this, there is the likelihood that there is an unstable supply of sufficient food that is of quality for the beneficiaries to benefit from the programme. In this sense, there should be a careful cost-benefit analysis of continuing with food distribution in these areas versus the implementation of a cash/voucher programme which might both put the beneficiaries at risk, and also spur inflation on the market as a result of a lack of availability.**

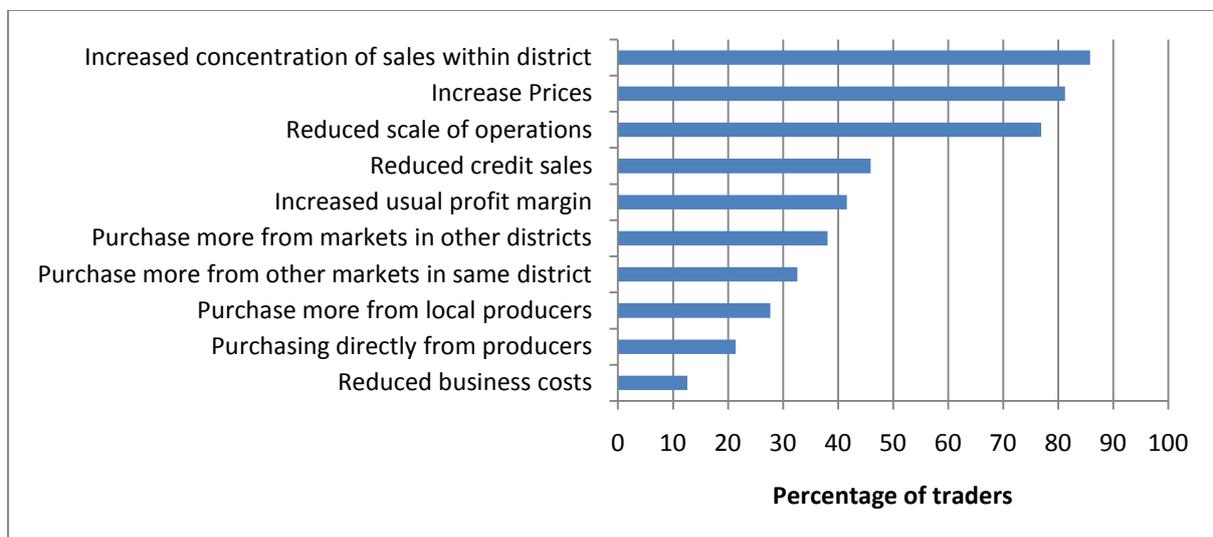
Notwithstanding the instability that is present across Yemen, the greatest single shock that has had the greatest impact continues to be the high food prices. In fact, while the high food price crisis reached its peak in 2008, there has been continued upward pressure on prices in the markets, due to a variety of factors, including inflation and due to the nature of price formation as dictated by the domestic market structure. Furthermore, though Yemen is a country which is dealing with a complex array of issues ranging from economic to civil and social; the problems that are mainly discussed on the markets by traders are less about the weekly protests in the south, tribal conflicts in the north and more to do with the economy – with the latest issue regarding the devaluation of the currency coming up across the board in discussions with traders. Thus, social unrest plagues a large part of

the country; it seems to have been internalized, in some way, by most traders, as evidenced by the lack of concern in areas directly impacted by the Saadah conflict such as Hajja and Amran.

The impact of the high food price crisis, continued pressure on prices and the global financial crisis seem to have had an important impact on trader behaviour within markets across Yemen, with a direct impact on food availability on local markets and on prices, which are a very important part of determining household access to food.

At the aggregate level over 80 percent of traders mentioned shifting their sales more to within their own district of operation and of increasing prices at which they sell. Furthermore, over 70 percent of traders have reduced their scale of operations, which is likely to have a spill-over impact on levels of availability at the local market level (see figure below).

Figure 34 – Traders’ reactions to identified shock



The way in which traders have dealt with the various shocks between 2009 and 2010 have important implications on the food security of the households in the regions, as well as certain important implications on the appropriateness of implementing a cash/voucher programme. In this instance, let us take a look at the most important ‘coping strategies’: the increased concentration of sales within the district, increasing prices, reducing scale of operations and credit sales, and increasing usual profit margin.

The reaction of traders means that their actions directly impede household access –increasing of usual profit margins and prices indicates a general lack of competition on the market. If markets were sufficiently competitive, then traders would likely be forced to decrease their profit margins in times of crisis. However, the fact that they are able to increase their profits indicates a certain amount of market power, as already identified by looking at the margins along the wheat supply chain. This presents clear risks of inflation and price-fixing in the context of a cash/voucher pilot programme. Furthermore, these strategies have been noted in well over 50 percent of respondents, which is not insignificant.

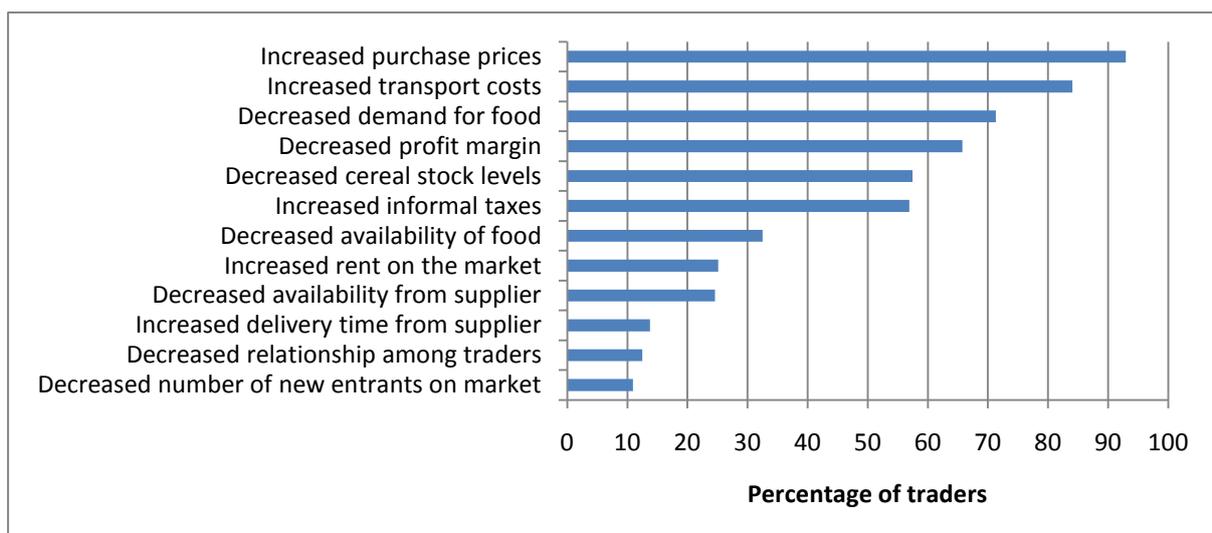
In addition to the decreased access to food items by households due to apparent non-competitive behaviour of traders on the markets, there is also the impact of reduced credit sales that should be taken into consideration. As previously highlighted, food insecure households depend, on average,

on 22 percent of their food being sourced through credit sales. With over 40 percent of traders reducing credit, this is likely to have an important impact on household access to food as well<sup>19</sup>.

There is also an important implication on the availability of food on the markets due to trader behaviour over the past year – mainly the reduced scale of operations and also increased concentration of sales within district. The reduction in the scale of operations of traders means that there is a direct decrease in the turnover of traders – thus decrease in the supply of food available on the market. The increased concentration of sales within the districts can have an impact on neighbouring districts that are highly dependent on those traders for their supply and thus availability of food and other supplies on the markets. This means markets in governorates such as Rayma, Amran and Al Mahweet may suffer considerably, and also be adversely impacted by a decreased flow of food.

These changes in trader behaviour can be traced through the importance of the specific impacts that the high food price crisis and global financial crisis have had on trader businesses. In fact, the most important impacts cited are increased purchase prices, increased transport costs and decreased demand for food.

Figure 35 – Impact of identified shock on traders



The implication of these is that as the prices at which traders purchase their stock and transport costs increase, the margins along which traders operate decrease (this was indicated as being the case for 67 percent of traders sampled). In fact, it is likely that as transport costs have increased, this would be the reason why traders who might have been trading across a variety of districts are now concentrating their trading activities within their own district. As traders try to cover increased costs of running their business, it is then expected that retail prices would increase to reflect this. It is also

<sup>19</sup> In fact, during key informant discussions and trader, comments often focused on the tightening of credit lines along the market chain. There has recently been a shortening of the extension of credit starting from the large importers and wholesalers to retailers. As the duration in which debts must be repaid has decreased, supposedly mainly due to the depreciation of the Yemeni rial, the amount of trader credit available to households has also decreased.

true that if retailers are facing increased transport costs, and increased purchase prices with a decreased effective demand on the market for food that they would be facing decreasing profit margins. This, however, needs to be reconciled with the finding that approximately 40 percent of traders have reported actually *increasing* their profit margins<sup>20</sup>. In fact, while retailers on the market enjoy a considerably higher margin than wholesalers on the market, it is plausible that their margins would decrease due to the pressure on both the supply-side with higher transactions costs, and at the same time decreased demand due to lack of purchasing power from the consumers.

The patterns of the impact on traders' behaviour show similarities across governorates, as shown in the figure below. More than 50 percent of traders in every governorate have increased prices as a result of the identified shock (mainly due to continued high food prices), and in most governorates there has also been a decrease in credit extended to customers on the market, with a notable exception in Abyan.

Figure 36 – Trader behaviour impacting household food access



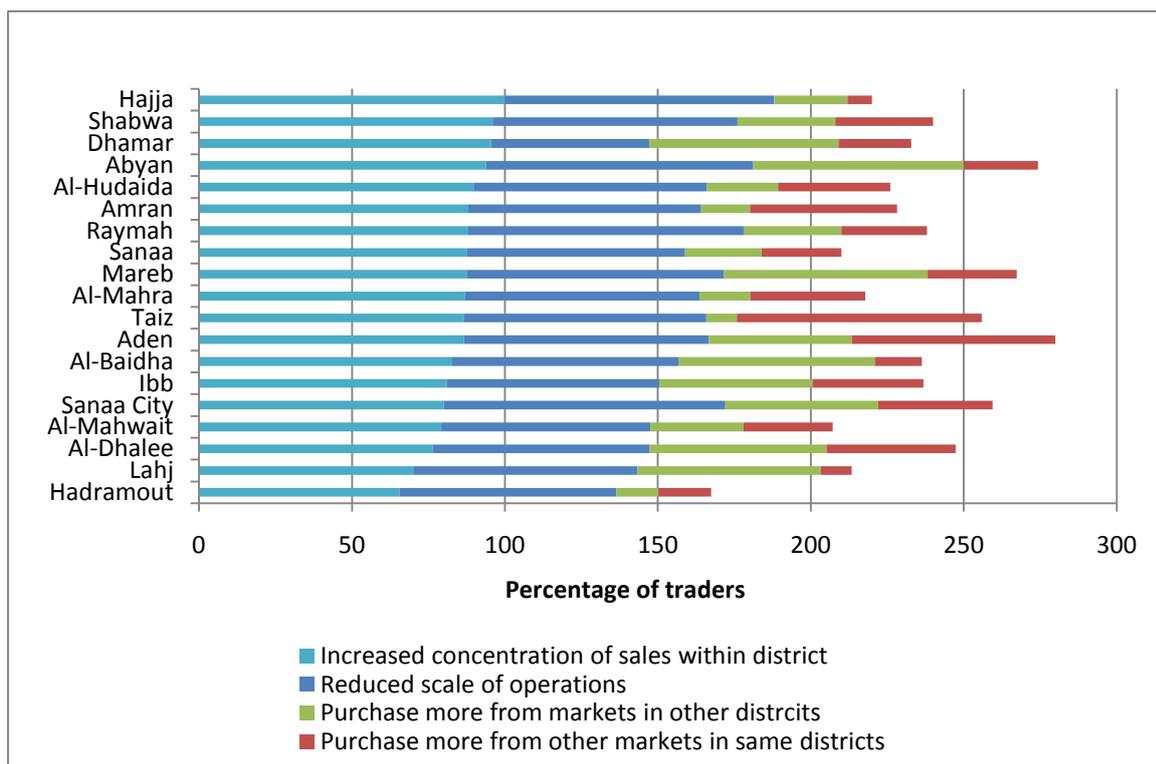
Also, in Al Mahweet, Aden, Lahj and Taiz less than 40 percent of traders noted that they reduced their credit sales. Thus, a majority of traders in those governorates are still extending credit to their customers. However, there is a great difference across governorates when it comes to looking at the profit margins of traders. The governorates in which the highest percentages of traders have increased their profit margins are those in Hajja and Amran – the governorates closest and with the greatest impact from the Sada’ah conflict. This is significant and also points to the fact that competition in these governorates is likely more restrictive than in other places in the country. There

<sup>20</sup> In fact, looking at the breakdown of those traders who noted that they increased their profit margins 60.8 percent were retailers and the rest wholesalers – and 42 percent of retailers noted that they increased their profit in relation to 40.9 percent of wholesalers. However, it is important to note that this particular issue has a bias in terms of data collection and also in terms of interpretation of the question. As such, the weight and importance of the other indicators should be more carefully examined than this particular one.

is also a high portion of traders engaged in increasing their profits in Taiz, Hadramout, and Sana'a City – also pointing to issues relating to competition in these areas.

In terms of impact on availability, there also seem to be some significant findings. In all governorates over half of traders have reduced their scale of operations, which is likely to manifest itself in decreased availability of key food items on the markets. Furthermore, depending on the food flows previous to the identified shocks, certain destination markets (that is, deficit markets that depend on traders from other markets to replenish their stocks and supplies) are then likely to suffer from significant availability issues.

Figure 37 – Trader behaviour impacting food availability



In order to determine the real possibility of implementing cash/voucher in a context where there is an across the board tightening of the belts in terms of supplies on the markets due to reduced scales of operations, there needs to be a further investigation of the impact on actual availability of food on the market and the volumes on the markets.

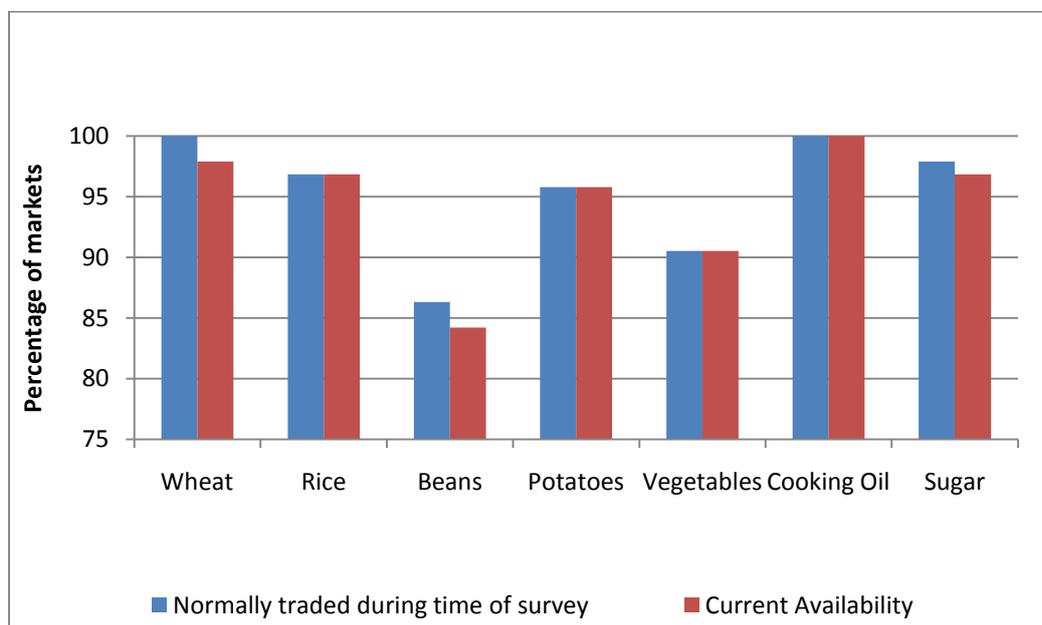
### Impact on Local Availability

***While availability of food at the national level across the commodities under study seem to be at normal levels, there is an identified availability problem in certain governorates as a result of the continued impact of high food prices and social conflict, where appropriate. The governorates whose majority of markets, according to key informants, are suffering from diminished availability are Hajja, Ad Daleh, Taiz, Al Hodeida, Lahj, Al Mahweet, and Al Baidha. In addition to this, traders in Rayma and Abyan also indicate that there is diminished local availability of food on the markets. Thus market functioning in these governorates seems to be compromised, and continued***

**food assistance is likely a more appropriate response to avoid negative impacts on the markets and on the beneficiaries.**

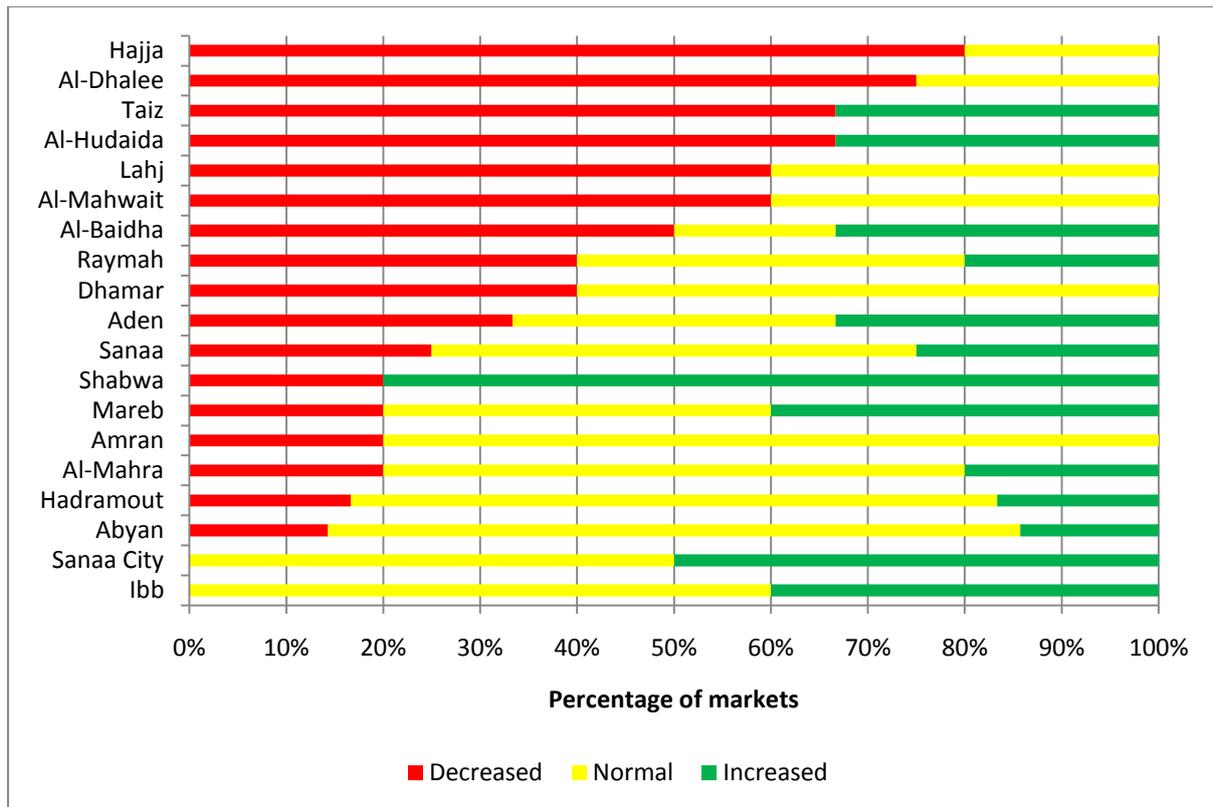
In fact, the availability of the basic items across the board at the national level during the time in which the data collection was undertaken at the beginning of May, 2010 seemed to be in line with typical availability levels. In nearly all markets surveyed there was an indication of normal availability levels of wheat, rice, beans, vegetables, potatoes, sugar and cooking oil (see figure below). In looking at the national figures, however, there is some indication that for wheat, beans and sugar there might be availability problems in certain markets – with a small percentage of markets reporting lower availability at the time of data collection in relation to the same time in 2009. These items constitute an important part of the Yemeni diet and it is important to identify the affected markets.

**Figure 38 – Current availability of main commodities consumed in relation to typical availability**



Looking at the availability at the governorate level for the most important foods (wheat, rice and beans), there is a clear indication of variable availability at the local level. The governorates that stand out in terms of poor availability in comparison to pre-2009 are Taiz, Lahj, Hajja, Al Mahweet, Al Hodeida, Al Dhalee and Al Baidha, where there is a decrease in supply in more than 50 percent of the markets sampled in each of these governorates.

Figure 39 – Wheat availability after identified shock



The picture, according to key informants on the market, is rather similar for rice and beans, though less disconcerting than the situation for wheat availability (which represents the most important staple food within Yemen). In Hajja, Al- Mahweet and Al-Dhalee more than 50 percent of markets displayed a decrease in availability in rice supplies, while for beans, the figure below shows that more than half of the markets in Hajja and Al Hodeida have seen a decrease in availability.

Figure 40 – Rice availability after identified shock

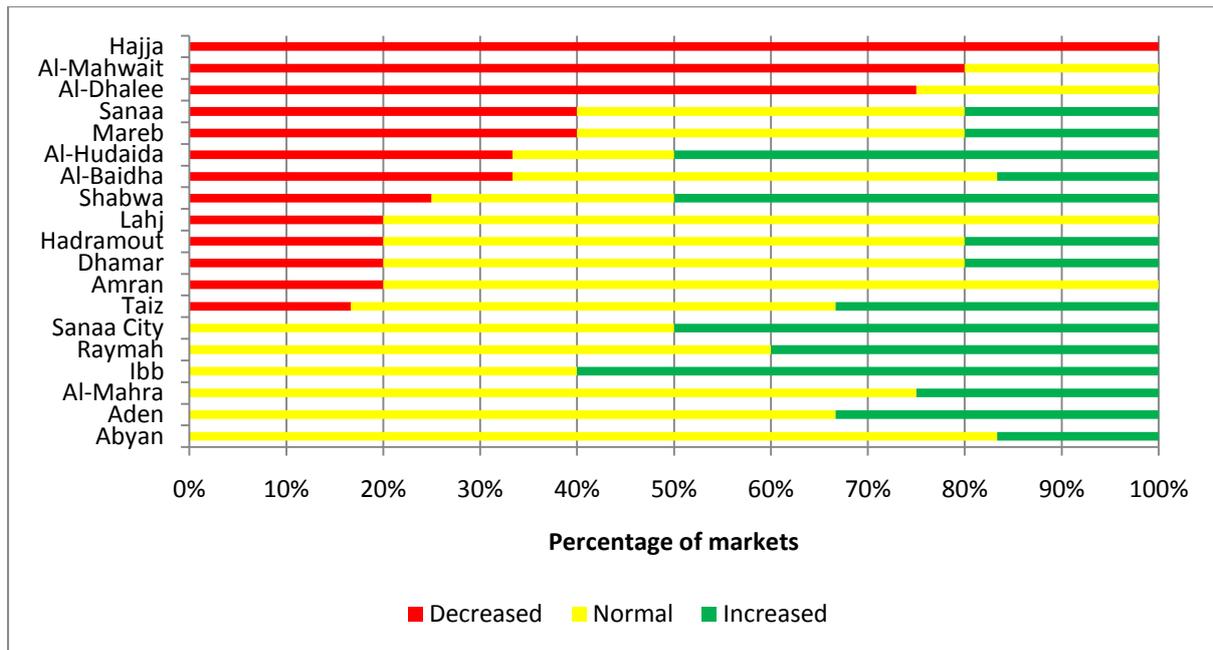
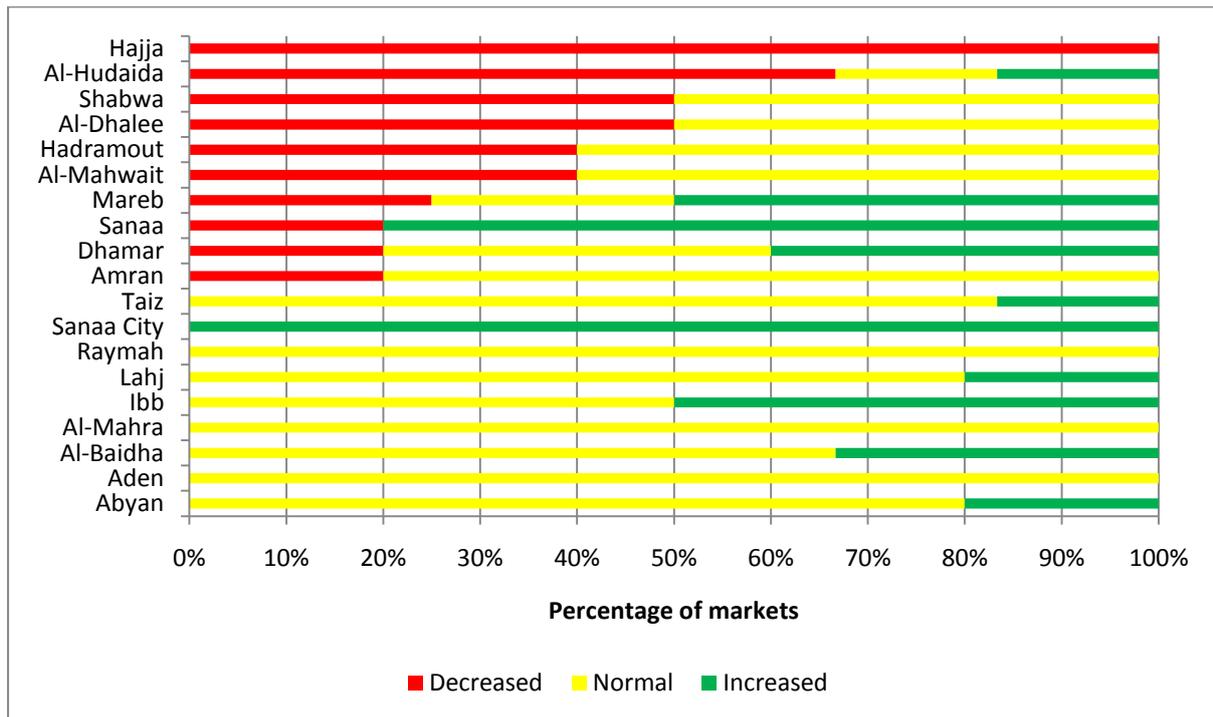


Figure 41 – Beans availability after identified shock



The common feature regarding decreased availability for wheat, rice and beans is for Lahj, Hajja, and Al Dhalee. The only exceptions are those markets in which a base period availability of such products is not identified, mainly of wheat in Al-Sahn market in Utmah district in Dhamar; and the lack of typical availability of beans in Azzan (Mayfa district), Medghal and Al Sawadiyah Markets in Shabwa, Mareb and Al-Baidha governorates, respectively. Thus while there isn't an overarching availability problem across Yemen, it seems that there might be certain hotspots, certain markets

that do not seem to be functioning properly; mainly markets in Lahj, Hajja, Ad Dhalee, Al Mahweet and Al Hodeida.

The key informant information is also reflected by the trader impressions on levels of availability of food in general at the local level, as well as the perception of decreased availability at the direct suppliers (see the two figures below). This also indicates that there are possible availability problems in Rayma, which does not appear as problematic when looking at specific commodities such as wheat, rice and beans.

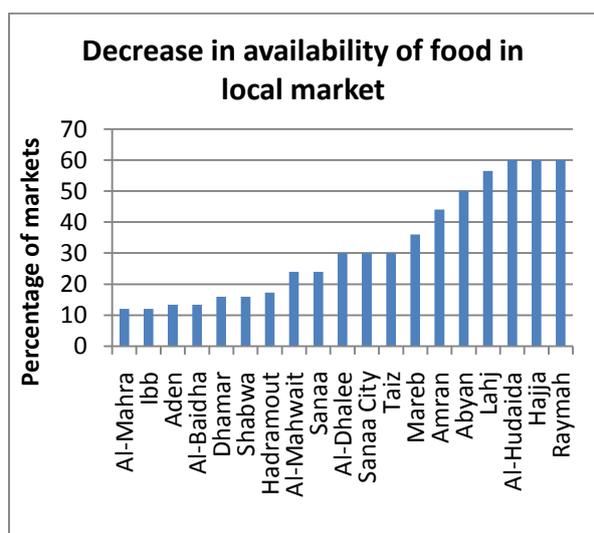


Figure 42

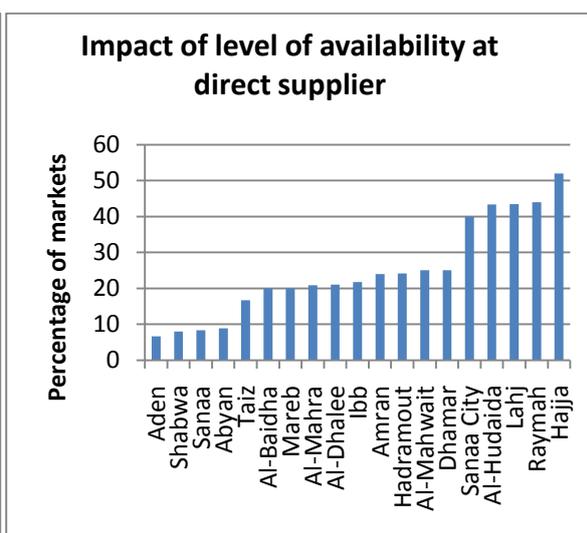


Figure 43

The combination of access and availability problems within the most problematic of governorates indicates that while in a majority of them there is likely to be the potential for a cash/voucher interventions without the prospect of a negative impact on the markets and on the beneficiaries, the governorates of Hajja, Amran, Shabwa and Lahj present a confluence of factors that would warrant careful consideration of a cash/voucher intervention. This, however, may be mitigated to a certain extent, by the capacity of traders to respond to increased demand. There are also other markets that appear to be border line cases, such as Al-Hodeida (due to the apparent availability issues in the districts neighboring Hajja and Amran).

### Purchasing Power and Terms of Trade

*Traders and key informants on the markets identify a clear lack of purchasing power on the markets, indicating that households have decreased the number of visits to the market, that they buy in fewer quantities and request greater extension of credit. In fact, there has been a noted decline in daily sales volumes of traders mainly as a result of a lack of effective demand on the market. While a quick analysis of terms of trade for the poorest livelihoods, with the exception of wage labourers, indicates a fairly positive trend in purchasing power compared to last year, there is insufficient information to confirm whether this result is reliable or not.*

Households that are particularly vulnerable to food insecurity have been identified as those who rely on salaried work, livestock owners and food crop producers (CFSS 2010). While there is no

systematic monitoring of labour wages on the market, the trader survey did collect limited information on livestock and producer prices for food crops such as sorghum, barley and millet.

The terms of trade, according to data collected from the market survey, indicate that there has been an overall increase in purchasing power of households who rely on the sale of crops such as sorghum, millet, barley and livestock compared to last year in relation to wheat. While there has been a slight increase in prices of wheat, there also seems to have been an increase in the prices of commodities sold – thus explaining the increased terms of trade (see table below).

Table 8

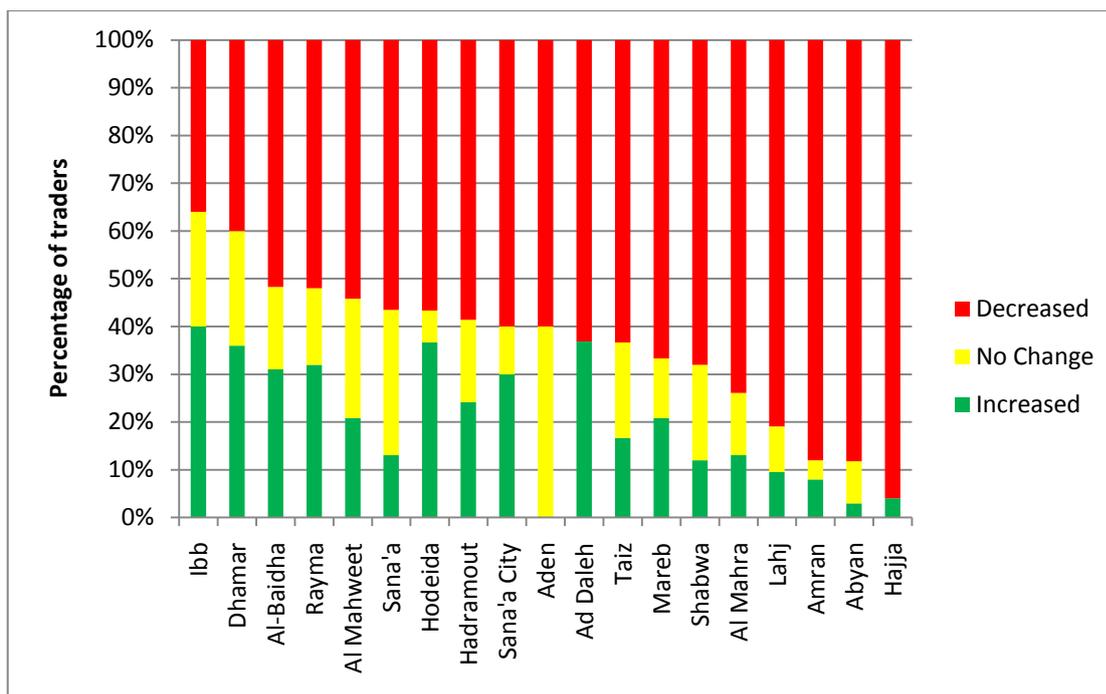
Percentage Change in Terms of Trade with Wheat for Selected Commodities Across Governorates

Governorate	Barley	Sorghum	Millet	Sheep	Goat
Abyan			-23.97		
Aden					
Al-Baidha	58.90	21.25	-72.18	20.06	3.31
Al-Dhalee	14.40	5.60	12.59		
Al-Hudaida	12.93	-3.91	17.35	23.95	21.38
Al-Mahra	23.90	93.60	-3.31		
Al-Mahwait	0.67	25.91	11.93	17.06	21.00
Amran	26.58	15.53	23.26	22.96	16.73
Dhamar	-24.71	-19.33	-4.36	109.73	109.73
Hadramout	16.79	60.22	11.93		
Hajja	36.78	31.85	24.24	28.57	27.56
Ibb	-19.64			8.90	8.90
Mareb	6.48	-12.88	13.91	1.81	3.63
Raymah	16.16	16.16	19.15	16.96	7.55
Sanaa	10.95	-11.15	-8.87	-3.03	-4.60
Sanaa City	23.69	45.20	18.83	-3.20	-3.20
Shabwa	32.36	17.54	25.56		
Taiz	10.88	-0.35	16.16	59.29	29.80

It is also important to note from this table, however, that sorghum and millet producers seem to be having a loss in purchasing power across some governorates – most importantly Dhamar, Sana’a governorate, Al-Baidha and Abyan. However, this decrease in purchasing power is also mitigated by the fact that some of the sorghum, millet and barley that are produced is not marketed but used for own-consumption.

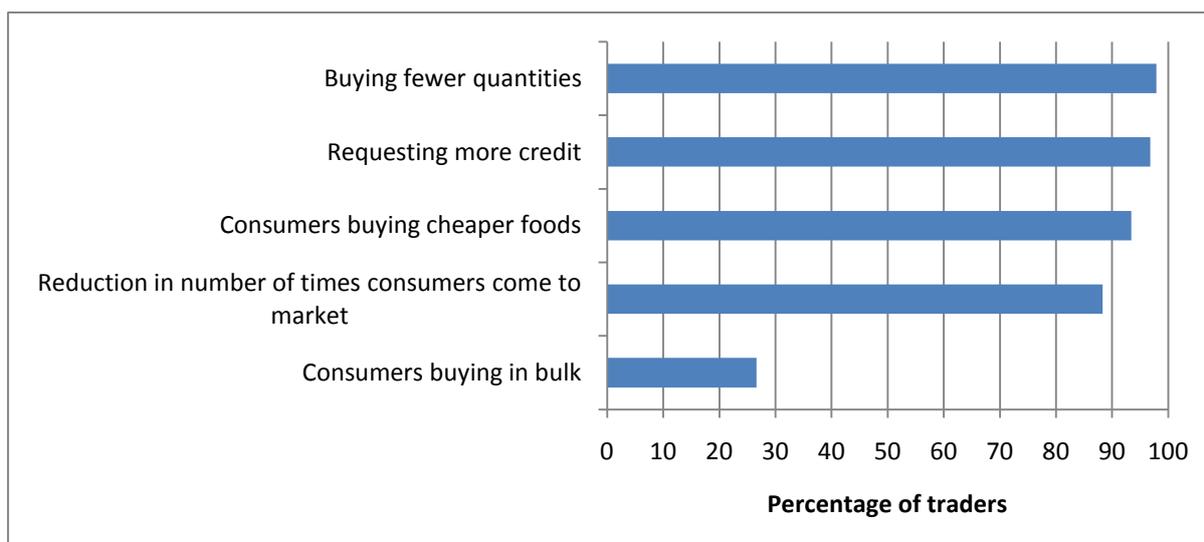
While the terms of trade may indicate increased purchasing power, traders indicate that purchasing power remains problematic due to decreased volumes in sales as a result of the high food price crisis. According to traders, the impact of this shock continues. **The governorates in which there was the greatest perception of a decrease in daily sales are Hajja, Abyan, Amran and Lahj. This perception, by more than 50 percent of the traders, in fact persists for all other all governorates with the exception of Ibb and Dhamar.**

Figure 44 – Change in daily sales’ volumes compared to before identified shock



In each case, the traders discussed the general state of the Yemeni economy that is driving the lack of purchasing power and demand that is present on the market. The figure below shows that 97.8 percent of traders reported that consumers are consequently buying fewer quantities when they do come to the market and that they are requesting greater extension of credit (according to 96.8 percent of traders). Also, 93.4 percent of traders indicate that consumers are buying cheaper foods.

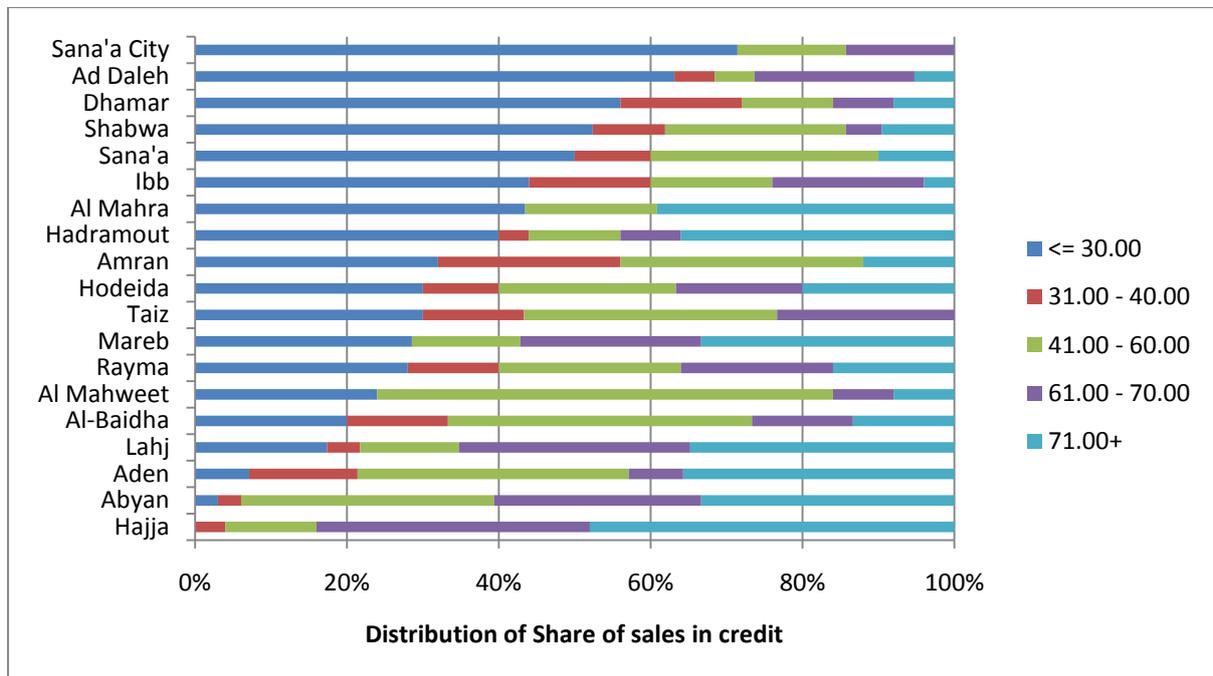
Figure 45 – Impact of Shock on Consumer Behaviour



Nonetheless, the amount of sales that are given through credit arrangements remain fairly high, especially in Hajja with over 80 percent of traders selling over 60 percent of their goods in credit.

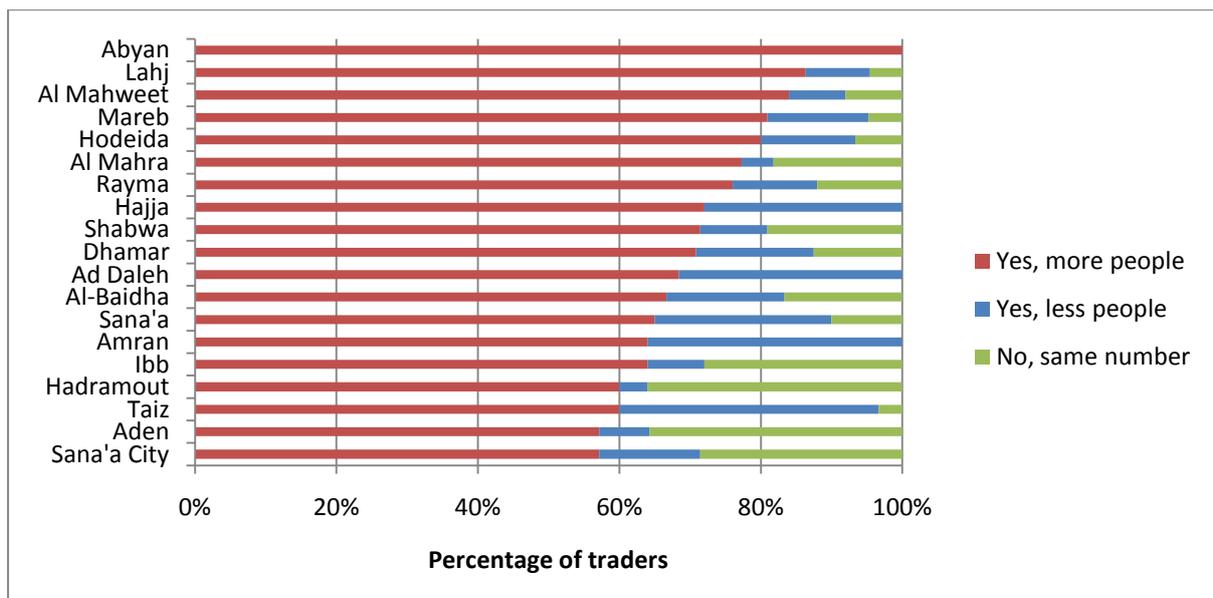
Abyan, Lahj and Aden are also governorates where exchange seems to depend heavily on the provision of credit between consumers and traders.

Figure 46 – Distribution of Share of sales in credit by governorate



This indicates that credit along the market chain is particularly important, not only for households, but also for traders in terms of their ability to effectively conduct their business. In fact, over half of traders across the board indicate that there is an increase in the amount of credit that clients request as they come to the market, as indicated in the figure below.

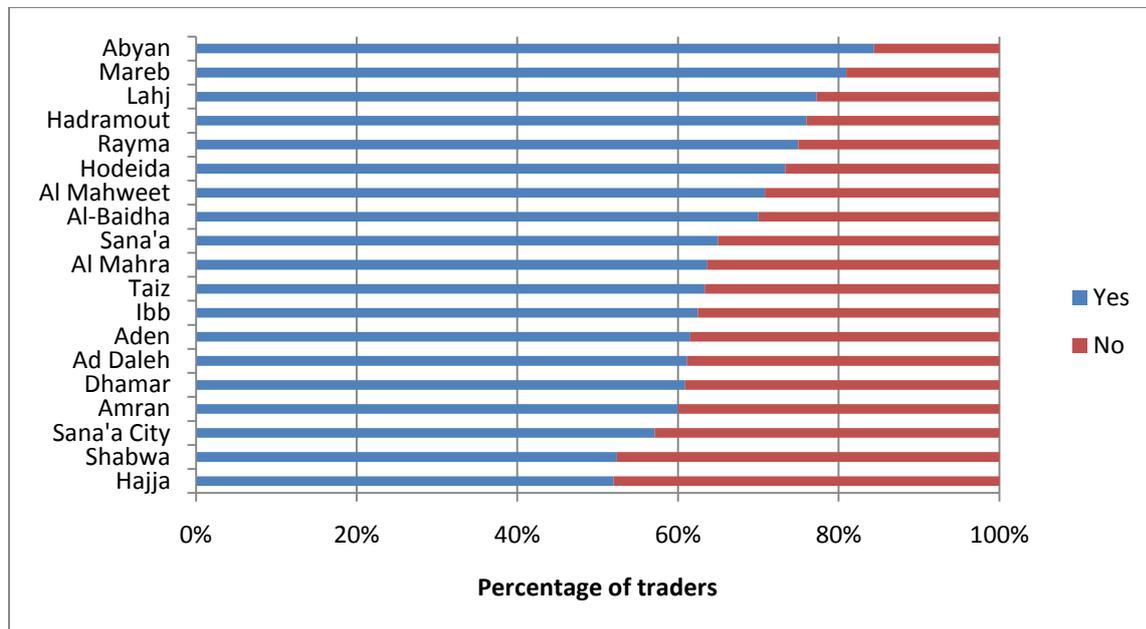
Figure 47 – Change in requests for credit by consumers



Even though discussions with key informants indicated that the extension of credit along the supply chain was diminishing due to the depreciation of the rial, it seems that a majority of traders attempt

to provide clients with the extra credit that they are requesting in order to make purchases for basic staple food items, as shown in the figure below.

Figure 48 – Provision of greater credit to clients



However, there is also an important portion of traders who indicate they are unable to provide credit to households in key governorates such as Hajja, Amran and Shabwa, which already have suffered from availability constraints due to factors mainly compounded by social conflict and unrest.

Thus, there is a marked decrease of effective demand on the market that is having an important impact on the turnover of traders and also an important impact on the burden of debt and credit.

**Nonetheless, it is apparent that the impacts on household access and purchasing power continue to dominate the food security problematic within Yemen over many of the governorates under study. This is due to a combination of the continued high prices, and the apparent decrease in purchasing power that has resulted. Also, looking at the trend and evolution of prices, it is likely that there will be continued upward pressure on prices throughout the year. As such, food access problems are very likely to continue as they did with the high food price crisis.**

### Market Recovery and Response Capacity

*Traders in most markets across Yemen indicate their ability to provide supplies sufficient for an increased demand on the market. However, there are important constraints which traders face including the lack of access to credit and the lack of own capital, which might prove a bit of a constraint to the increase in availability on the market. However, lack of demand is also one of the more important factors that seems to define the availability problems on the markets.*

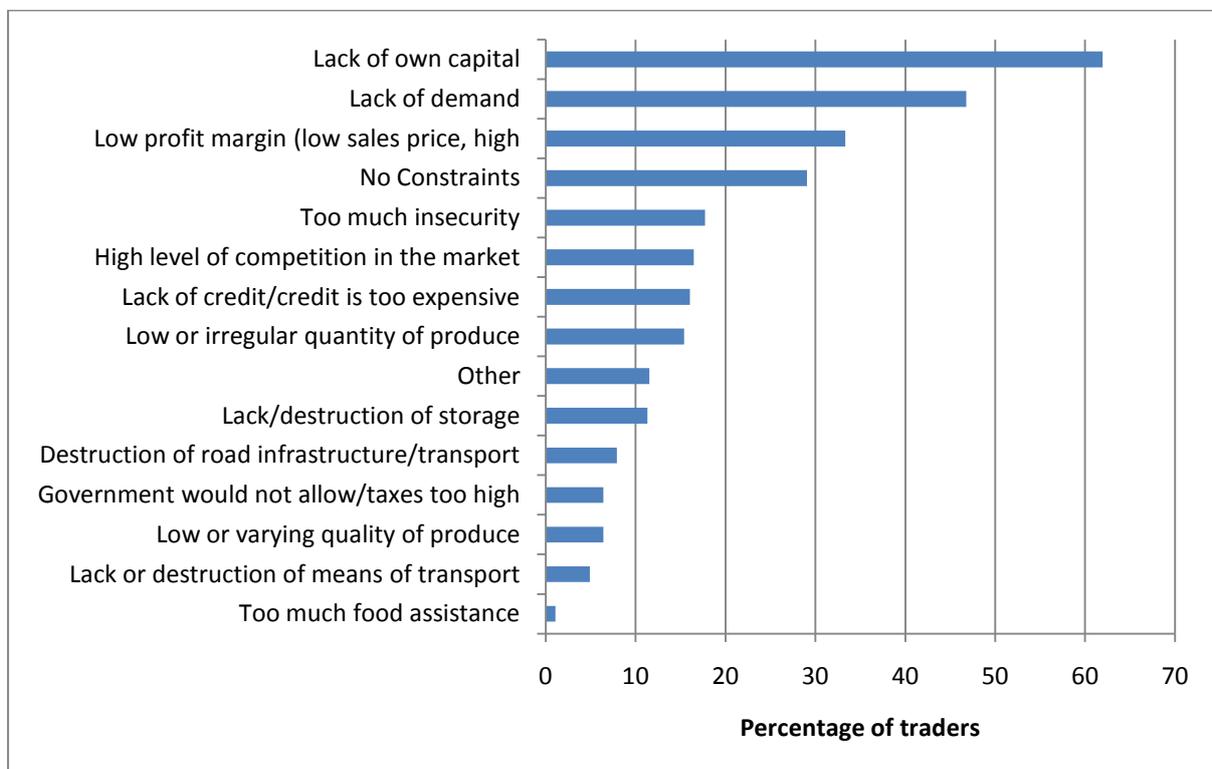
*There are important exceptions. Traders in Hajja, Hodeida and Amran indicate the least potential responsiveness to an increase in demand, and also prove to have a higher incidence of traders who*

**believe that increased demand would have an inflationary impact on the markets due to a lack of availability.**

The market conditions in Yemen, and especially within specific governorates such as Hajja, Amran, Hodeida, Shabwa and Lahj, seem to be particularly tight. There are availability problems identified by the traders in these governorates. In such a case, it is important to consider that the injection of increased effective demand in a market where traders lack the capacity to provide the added supply will have an inflationary impact on those markets – thus not only jeopardising the beneficiaries of the programme, but the community as a whole.

Problems relating with availability, as well as a decrease in sales volumes have been identified in certain governorates. Part of the reason is that there is a continued lack of consumer purchasing power on the market, as 46.8 percent of traders mentioned that one of their main constraints to expanding their sales is lack of demand.

**Figure 49 – Main constraints to traders to double their turn-over**



Although retailers seem to enjoy a fairly significant margin along the supply chain, a lot of traders also identify very low margins as impeding an increase in sales volumes, as reported by 33.3 percent of traders. This is likely deemed a constraint if the margins are characterized by high transport costs, as it was indicated that increasing transport costs are likely to continue being a problem as Yemen continues to phase out its fuel subsidies, and also as roads are variably blocked due to social unrest – which increases transport costs due to detours that need to be taken in order to reach certain locations.

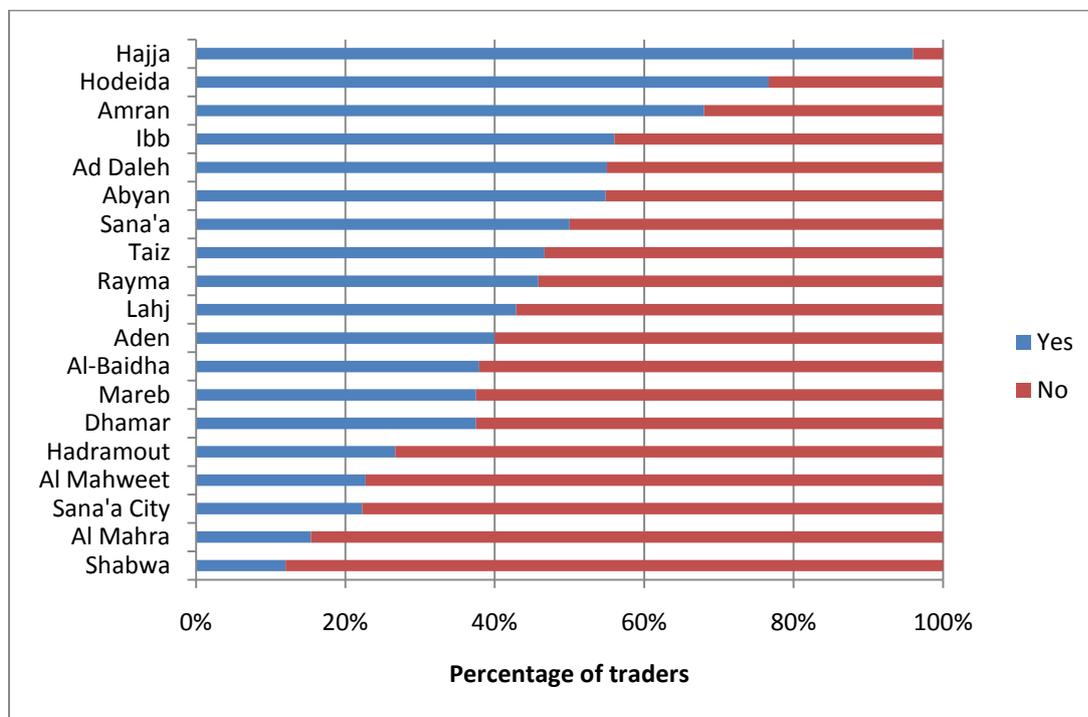
However, there are also 29 percent of traders who identify no constraints, thus indicating trader capacity to increasing turn-over and sales if demand were to increase on the market. The governorates in which the greatest prevalence of traders identify no constraints to doubling their

turn-over are Hadramout (45.0 percent); Ibb (33.8 percent); Sana'a city (23.3 percent); and Al-Baidha (18.3 percent).

The most concerning factor however, is that a large prevalence of traders identifies a lack of capital. However, it is noteworthy that lack of own capital of traders represents 62.0 percent of the constraints to sales activities. The governorates in which lack of own capital is most prevalent includes Amran (33.8 percent); Shabwa and Hajja (32 percent); Taiz (30.5 percent); Hodeida (29.5 percent); and Dhamar (27.0 percent).

In fact, a large majority of traders across all governorates identify a lack of access to credit to run their businesses, thus they are highly dependent on the flow of cash in order to ensure that they can supply the markets in which they operate. This would be a very important factor, also in identifying why traders lack their own capital. This is true for most governorates, with the exception of traders in Hajja, Hodeida and Amran who seem to have good access to credit, should they require it.

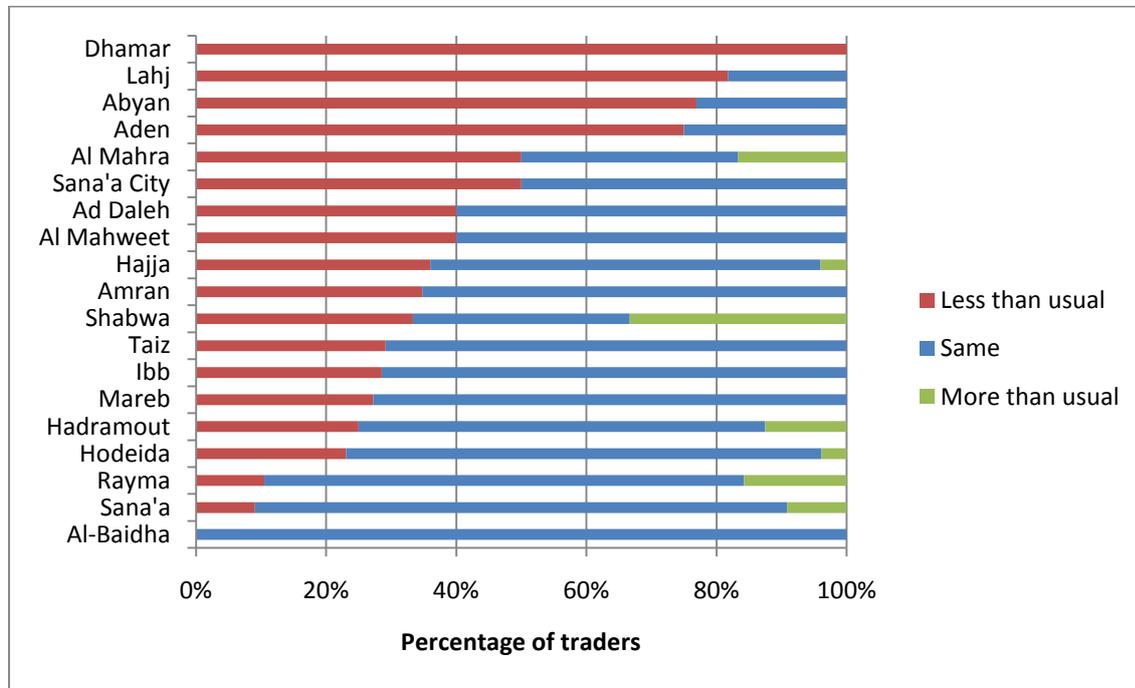
Figure 50 – Traders' access to credit by governorate



Those governorates in which there seems to be a high lack of access to credit includes many markets in which households are highly dependent on access to credit through their traders. In addition, these same traders who provide sales on credit to their clients seem to have their own problems accessing credit. Of those traders who declare lacking access to credit, 91.2 percent provide credit to their clients; and 75.6 percent of traders who have access to credit also use this credit to purchase the commodities which they in turn sell on the market. This can mean that there is also a chain of indebtedness, and in fact discussions with traders indicate that client defaults cause many problems to their businesses. Traders more often than not receive this credit from other traders; thus 82.3 percent of traders who have access to credit receive it from other traders. In fact, credit is often extended through the agents and sub-agents of the large importer-cum-miller companies.

Furthermore, discussions with key informants and the market study indicate that there is a shortening of credit along the chain. Traders with whom discussions were held identified that wholesalers and agents who typically extend credit had been recently diminishing the credit extended, and also shortening the time period stipulated for repaying the loan.

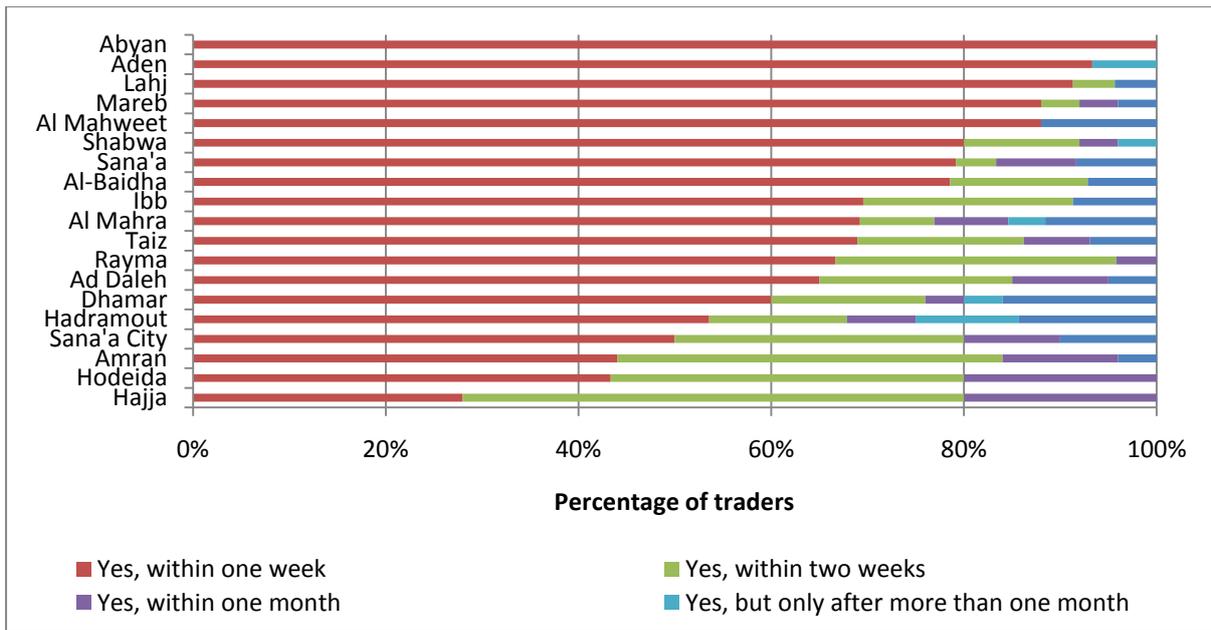
Figure 51 – Change in trader access to credit by governorate



This seems to be of particular concern in Dhamar, Lahj, Abyan and Aden where more than 50 percent of traders report a decrease in the amount of credit being extended by agents, sub-agents and wholesalers on the market. This means that the extension of credits to clients will also be impacted, with less credit being available to households. This lack of credit also undermines the markets' capacity to respond to any eventual shock or crisis on the markets. They would not have access to sufficient liquidity to increase their supplies or move their businesses of required by insecurity, in places such as Lahj and Shabwa.

Traders were asked whether there would likely be an impact on the market if there was a 25 percent increase in demand on the market, and whether they would have the capacity to respond with the necessary supplies. Traders are very confident that they would be able to supply the market in reaction to increased demand. In fact, many of the problems identified on the market, and particularly in relation to the problematic of diminished sales volumes on the market are linked to the lack of consumer purchasing power by the traders. Over 50 percent of traders in all governorates with the exception of Hajja, Hodeida, and Amran maintain that they would be able to increase their volumes to ensure sufficient supplies on the markets to increased demand within one week. This indicates that traders do have the response capacity, and that the links with direct suppliers seems to be sufficiently strong to ensure a smooth flow of supplies where the markets indicate healthy demand.

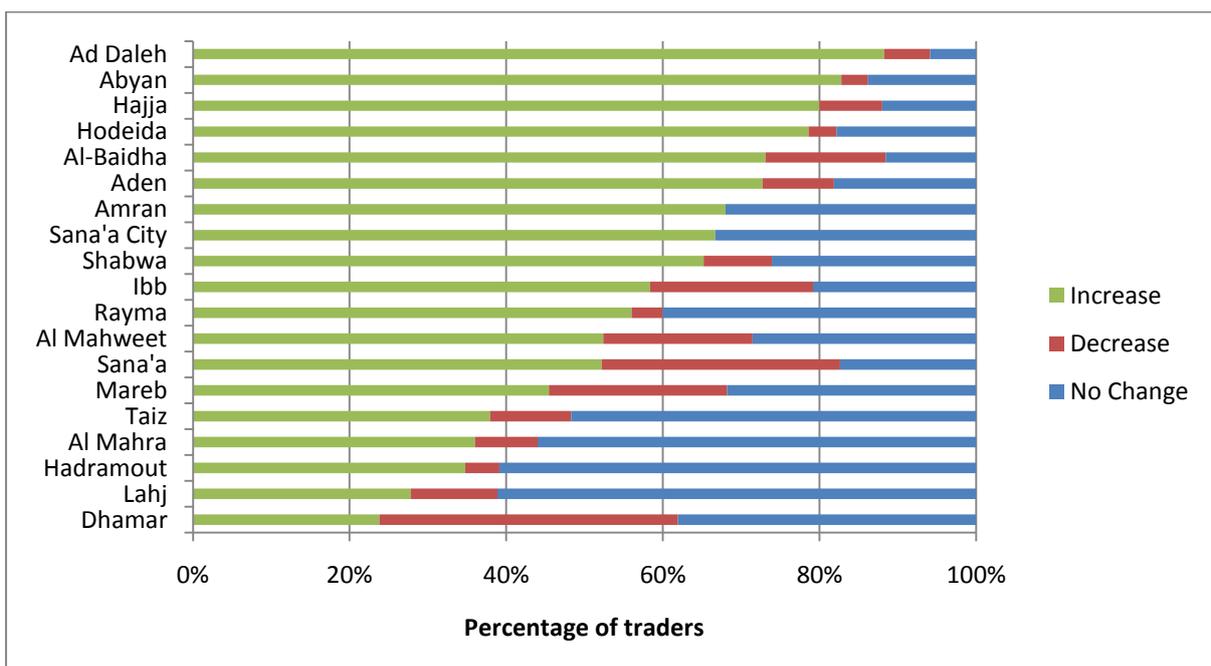
Figure 52 – Trader capacity to deliver supplies to meet 25 percent increase in demand by governorate



However, the analysis on local availability has shown that there are certain governorates in which markets seem not to be functioning very well. In these cases, even where traders indicate the capacity to respond to increased demand, there has to be careful consideration regarding the possibility that these traders do not operate on economies of scale, and that this would therefore lead to increases in prices on the markets.

For all governorates, with the exception of Dhamar, Lahj, Hadramout, Al Mahara, Taiz and Mareb, 50 percent or more of traders indicated that prices would increase if there were a 25 percent increase in demand on the market.

Figure 53 – Perception of price changes with an injection of 25 percent increased effective demand on the market by governorate



This is particularly relevant in governorates where availability problems have been identified, such as Hajja, Amran, Hodeida and Lahj. While traders in these governorates indicate that they would be able to supply the markets should there be an increase in demand, this would also lead to increased prices, most notably in Hajja (where 80 percent of traders indicate a potential increase in prices), Amran (68 percent of traders), and Hodeida (73.1 percent). However, even in those governorates where availability does not seem to be an issue, traders alert a high risk of inflationary pressures – even in Aden, where 72.7 percent of traders indicate that prices would likely increase.

The traders indicated a variety of reasons for this perceived increase. The most oft cited reasoning included the instability of prices due to the rapid and continued depreciation of the rial, insecurity, monopoly practices of big traders, and in certain cases availability problems on the market. Thus in many market across Yemen, there is the perceived risk of inflationary impact due to cash/voucher intervention. As far as the monopolistic behaviour is concerned, this can be mitigated with the assurance of stability in price-setting across the chain.

## Conclusions and Recommendations

The market conditions in Yemen present a confluence of various factors, which have to be carefully considered when taking programming decisions. The fact that the macro-economy has been defined by high inflation rates, price volatility and continued high price levels indicates the need to strengthen market monitoring systems.

Furthermore, it has been identified that the livelihoods group with the greatest prevalence of food insecurity as measured by the food consumption score are those households who are dependent on wage labour. There is currently no system monitoring unskilled wage labour on the markets, and this should be undertaken as part of any coherent food security monitoring system that is being considered in-country.

Although terms of trade seemed to have ameliorated compared to the same time in 2009, it will be important to monitor the situation if prices of the main consumed products continues to increase in the coming months, as expected by traders. Thus, it would be important to consider monitoring the trends in terms of trade as part of the market monitoring system, including the terms of trade of between livestock, wage labour, agricultural crops and wheat/wheat flour or bread.

The integration of markets through this vertical system of agents has specific implications for any market monitoring systems towards food security purposes. The most important markets identified through this analysis means that the markets of Aden, Hodeida and Sana'a should continue to be actively monitored. However, in addition to monitoring prices of basic commodities, it will also be important to monitor the relevant transportation costs between these markets and markets which highly depend on these markets for their supply – Rayma, Amran, Abyan, Lahj and Shabwa. In addition to these, it is important to monitor the markets in Taiz, Hajja and Hadramout as they seem to be fairly independent catchment areas in terms of supply.

In addition, there is a strong indication that in many governorates the greatest problems impacting markets relate to household purchasing power, or food access, with concomitant decrease in credit availability and increased requests for credit extension along the supply chain. This indicates the high potential for WFP to pursue cash or voucher interventions. However, there are particular risks that need to be carefully monitored, and there are certain governorates in which it is not advisable to pursue cash or voucher interventions.

In terms of the identified risks, there is a clear indication that the presence of monopolistic behaviour on the markets across the country will increase the probability of an inflationary impact on the markets where a cash or voucher system is implemented. However, given that there is high vertical integration along the supply chain, it is possible to mitigate this impact using the large importers as an entry point for negotiation along the chain. Given, however, that retailers also seem to enjoy high margins on the markets, a price increase of a certain degree is to be expected. This should be carefully monitored as part of the monitoring and evaluation system of the project.

In addition, there is the risk of continued volatility and instability of prices on the markets. The presence of volatility on the markets has been identified, though it seems to be diminishing into 2010. This should be carefully monitored, as it will impact whether or not cash or quantity-based vouchers might be most appropriate in governorates where there is no identified availability problem. If volatility continues its declining trend, then cash transfers or value-based vouchers can be considered. However, if volatility continues to increase on the market, quantity-based vouchers are deemed more appropriate to ensure that the value and the benefit to the beneficiaries remain constant through the implementation of the project.

However, there are certain governorates in which the implementation of cash or vouchers is not recommended. Hajja, Amran and the districts in Hodeida bordering the former two governorates display availability and market functioning problems which indicate that continued food assistance is more appropriate. Also, insecurity and related availability problems in Lahj, Abyan and Shabwa increase the risks associated with implementing a cash/voucher intervention. With particularly high instability that has a negative impact on market functioning, thus jeopardising the continuous availability of food could mean that food assistance is more appropriate. Finally, should communities in Rayma and Abyan be targeted for a cash/voucher, there should be a quick micro-study on availability on these markets conducted due to the contradictory indications from key informants and traders on the food availability situation.

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