



## Price relations between export and domestic rice markets in Thailand



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### ABSTRACT

Many rice importing countries argue that rice exporting nations isolate their domestic markets through the use of stabilization pricing policies which cause international rice markets to become excessively volatile. For the argument to hold any weight, price transmission between exporting countries' domestic and export markets should be unidirectional whereby export prices are driven by domestic prices but domestic prices are not affected by export prices. The study tests the hypothesis on Thailand, traditionally the world's largest rice exporter. The results from the causality tests are not entirely clear, however the results from the impulse response functions show that while the shocks originating in the domestic market are higher in magnitude in the export market in the short-run, the shocks originating in the export market are more persistent in the domestic market. This suggests that although Thailand's domestic policies are somewhat effective in the immediate months after the shock they allow price transmission from its export market to transfer over to its domestic market in the long-run. The results therefore imply that Thailand's domestic pricing programs are not heavily distorting world rice markets.

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### Introduction

The paper is concerned with the argument raised by many net rice importing countries that rice exporting nations are not committed to their export markets because they prioritize supplying their domestic market at the expense of their foreign markets through imposing restrictions on their own exports. If the importers' argument is to hold any weight then simple microeconomic theory implies that demand or supply shocks in the domestic market should affect price movements in the export market, however shocks in the export market should have less effect on the domestic market. This is because any effort by the exporting nation to stabilize its domestic prices would transfer the volatility to the export market, assuming stocks are not used.

The most suitable manner of tackling such an argument would be through using a causality test which is one of the common estimation techniques used for assessing the direction of price transmission. Impulse response functions can also provide insights into the relations between markets which cannot be observed from the commonly practiced cointegration tests and error correction models, such as the magnitude and persistence of shocks originating from other markets.

The significance of the study is particularly important in recent times. For instance, a consequence of the 2007–2008 food crisis has been an all time low in rice importing countries' confidence in the

international rice market which may be seen as justified considering that almost every major rice exporting country used restrictions of some sort during the recent crisis (Demeke et al., 2011).

An implication of such a pessimistic view of the reliability of the world rice market has been calls for promoting rice self-sufficiency by traditional rice importers. This is seen as a worrying outcome by many researchers who believe that government intervention can lead to an even worse situation due to its adverse effects such as the heavy costs involved, including the misallocation of scarce resources in inefficient projects (Xuifang and Dwyer, 2008), market distortions and their apparent ineffectiveness of stabilizing prices (Byerlee et al., 2006; Dorosh, 2009; Tanaka and Hosoe, 2011), which may actually increase rice price volatility (Siamwalla and Haykin, 1983; Hosoe, 2004; Gilbert and Morgan, 2010).

Understanding the price relations between export and domestic markets is therefore necessary for a clearer picture to be made as to the extent of isolation which the domestic markets of rice exporting nations have.

The paper aims to shed some light on this issue by testing for the extent of exogeneity which exists between the domestic and export markets through causality tests and impulse response functions which simulate the impact of shocks in each of the markets.

The hypothesis is tested on Thailand, a rice exporting nation which is seen as a country whose agricultural markets are well integrated with world markets (Sharma, 2002; Conforti, 2004; Ghoshray, 2011). Sharma (2002) and Conforti (2004) used cointegration techniques to analyze price relations between Thai domestic rice markets with international rice markets prior to 2000 and both found that the two sets of prices were cointegrated

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suggesting that Thai domestic prices followed world prices closely. By estimating the speed of adjustment of the cointegrated prices, Sharma (2002) was able to report that Thai domestic prices even followed world rice prices very closely in the short-term whereby it took just 2 months for the full amount of price transmission to take place. Studies investigating price transmission between the Thai domestic rice market and the international rice market include Dawe (2008) who reported that from 2003 to 2007 price transmission between these two markets was high. Ghoshray (2011) who also looked at price transmission between Thai and international rice prices in recent times agrees that despite the Thai government intervening in its domestic market Thailand's domestic rice market tends to follow world prices.

The objective of the paper is therefore to examine the direction, magnitude and persistence of price transmission which takes place between the Thai domestic and export markets. If evidence is found which suggests that price relations are uncompetitive whereby the Thai domestic market has a certain level of exogeneity towards the Thai export market, it would appear that Thailand's domestic rice market is to some extent isolated from foreign competing markets, giving some support to the argument that domestic policy even in more open rice exporting economies plays a role in why international rice markets are distorted and therefore seen as unreliable.

#### *Thailand's domestic rice price policies*

Thailand is unique compared to the majority of the major rice exporting nations as it has not used explicit quantitative restrictions on its rice exports in recent times. While tougher restrictions have been used in the past such as an export tax, since 1986 the Thai government's agricultural policy has switched to a pro-producer one (Poangpongsakorn and Isvilanond, 2008). The major tool for helping paddy farmers has been the Paddy Pledging Program (PPP) which provides Thai farmers with a loan so they do not have to sell their crop straight after the harvest when prices are low. The idea is that the loan can be used to pay for the farmer's costs and that their crop is used as collateral on the loan. The farmer then has the choice, up until the end of the loan period, to either redeem or forfeit their crop which they would usually decide depending on the difference between the price they can get for their crop in the market and the pledging price of the loan they received (Poangpongsakorn, 2010).

Since 2001–2002, the objective of the PPP has grown in importance by being used as a tool to help increase paddy farmers' income. This was done by allowing the value of the loan to equal and sometimes exceed the market price of the crop. Since they now receive more attractive pledging prices, more farmers prefer to forfeit their crop which means that the amount of rice the government procures has risen sharply in the last decade. Poangpongsakorn (2010) showed that the amount of pledged paddy rose from several thousand tonnes at the introduction of the PPP to 8.65 million tonnes in 2004–2005. This has made the Thai government by far the largest stockholder of rice in the country.

Offering such attractive prices to such a large number of farmers has meant that the program incurs large fiscal costs to the economy. The behavior of the government has been to hold large stocks rather than to sell its stock of rice at a lower level than the pledge price (Poangpongsakorn, 2010). Through the PPP and its use of stockholding, the government is able to distort domestic prices by keeping them high, which means the pledge price the farmers receive from the PPP can be higher and therefore allows them to earn a higher income. At the same time, the government can hold large volumes of rice when world rice prices are low and then release these stocks when world prices are high so as to recover as much of the cost of the PPP as possible. This is exactly

what Thailand did during the rice price hikes in 2008. The Thai government can therefore affect its domestic and export prices by adjusting the pledging price as well as by deciding whether to hold or release its rice stocks into either its domestic or export markets.

It is important to acknowledge that even for a relatively open economy like Thailand vis-à-vis most other developing countries the Thai government has an incentive to distort domestic rice prices to support its farmers. While past studies unanimously report that there is strong price transmission between Thailand's domestic rice market and international markets, since there is an incentive for distortion it seems intuitive that a certain amount of exogeneity may exist between the two markets.

## **Methods**

### *Stabilization programs affecting price transmission*

Within the study of price transmission and market integration, much attention has been given to try and understand why markets are not integrated and many factors have been suggested. One of the most commonly argued factors has been domestic policy. For instance, it is widely argued that domestic policies weaken the extent of price transmission from international to domestic markets, which is a direct result of countries aiming to stabilize domestic markets in staples, like rice (Mundlak and Larson, 1992; Quiroz and Soto, 1996; Sharma, 2002; Rapsomanikis et al., 2003; Ghoshray, 2011; Gilbert, 2011). This area of research shows the importance of considering national price stabilization policies when evaluating international price transmission in food staple markets such as rice. The number of policies at the disposal of governments is vast and includes price support mechanisms such as export subsidies and domestic floor prices, and border policies such as export and import tariff and non-tariff restrictions, including ad valorem and fixed tariffs, tariff rate quotas, and technical barriers.

Some border policies should have no effect on price transmission at all and instead can be seen as part of the transaction cost (Conforti, 2004). Fixed and ad valorem tariffs will be fixed and proportional transaction costs respectively, and will allow the full transmission of price changes to enter the domestic market, as long as tariff levels are not set at excessive levels which dissuade trade from taking place (Rapsomanikis et al., 2003). As for tariff rate quotas, price transmission will depend on whether the volume of imports is inside or outside the quota and therefore tariff rates will be variable which means price transmission will be affected.

Intervention mechanisms such as floor prices could lead to domestic prices being completely unrelated to world prices or being related in a non-linear way (Rapsomanikis et al., 2003). Price transmission will only take place if the world price is above the domestic floor price. Domestic stock control is also an important policy for stabilizing domestic markets for both exporting and importing nations, however like subsidies; these policies may only be seen as short-term solutions to stabilizing domestic prices (Ghoshray, 2011). In the case of Thailand, public stock control combined with the Paddy Pledging Program is the government's only domestic policy tool which can distort price transmission between its domestic and export markets.

### *A framework for Thailand's domestic rice price policy distortions*

Assuming the Thai export price reflects movements in the world price, the Pledging Price (PP) and use of government stockholding may distort domestic prices at least in the short-run. Without the PPP Thai farmers would have no other choice but to sell their crop at the market price which would be reflected in world rice market

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