

## Online Appendix

### Estimates of the Effects of the Policy Reform from the Before-After Approach

In this appendix, we report the estimates from the before-after (BA) approach and discuss the sources of bias in these estimates. Recall that our main interest is the direction of *change* in the pass-through rate, i.e., the sign of  $\theta_3$  in equation (36) in the main text. Denoting the coefficient on oil import price in a regression of  $C_t$  on  $P_{tm}$  by  $\rho_k$  in regime  $k$ , the estimated pass-through rate is  $\hat{\beta}_k = \beta_k(1 + \rho_k)$ . If the correlation between  $C_t$  and  $P_{tm}$  did not change as a result of the reform, i.e.,  $\rho_a = \rho_b$ , we can infer the direction of change in pass-through rate from a before after comparison. More generally, if  $\rho_a \geq \rho_b$  and  $\rho_a \geq 0$ , we have  $\hat{\beta}_a < \hat{\beta}_b$  only if  $\beta_a < \beta_b$ . Hence under this assumption we would be able to still reject the standard model despite the lack of cost data, if the estimated pass-through rate falls after the reform.

Data on diesel prices provide evidence in favor of the assumption that  $\rho_a \geq \rho_b$  and  $\rho_a \geq 0$ . The correlation between diesel price and crude oil import price was virtually zero in pre-reform period as government controls decoupled the domestic diesel price from the fluctuations in international prices. During the post-reform period, the correlation was 0.45 as international oil prices eased, whence the government allowed more flexibility in price setting at gas stations.

A limitation of this approach is that the correlation of the oil import price with other sources of domestic processing and distribution costs cannot be assessed and thus the direction of omitted variables bias remains unknown. Moreover, it does not permit any inferences concerning changes in the intercept term, which is relevant to assessing the impact of the reform on the level of downstream prices. The bias in the BA estimate of the intercept term in regime  $k$  equals  $\beta_k C^0_k$  where  $C^0_k = (\bar{C}_k - \rho_k \bar{P}_{mk})$  denotes the intercept term in the regression of distribution costs  $C_t$  on the crude oil import price  $P_{tm}$  in regime  $k$ . Inferring the direction of change in the intercept term is therefore not possible, without making assumptions regarding the before-after difference in average distribution costs.

An alternative way of dealing with the bias in the BA estimates is to control for variables that proxy for refining and distribution costs, such as the diesel price and exchange rate.<sup>39</sup>

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<sup>39</sup>Most of the trucks run on diesel and the privately owned electricity generators also use diesel. Electricity

Table T1 reports the estimates from the BA approach: the first two columns contain the estimates for wholesale price and the last two the estimates for retail (consumer) prices. The estimates consistently show that the reform increased the intercept and reduced the passthrough rate, and these conclusions are valid for both the wholesale and retail (consumer) prices.

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outage and load shedding were common in Bangladesh during the study period. Since almost all transport equipment are imported into Bangladesh, exchange rate changes can directly affect a major component of costs in the transport sector.

**Online Appendix Tables (Not for Publication)**

**Table T1: Before-After Analysis**  
**Dependent Variable: Wholesale price of Palm oil**

	Estimated Effects before-after analysis (1-year pre-reform and high price sample)			
	Wholesale Price		Retail Price	
	(1)	(2)	(3)	(4)
Reform Dummy	29.87**	31.73**	23.66**	24.77***
	(13.47)	(12.56)	(10.22)	(9.465)
<b>Reform Dummy * Palm World Price</b>	<b>-0.279*</b>	<b>-0.256*</b>	<b>-0.221*</b>	<b>-0.204*</b>
	<b>(0.159)</b>	<b>(0.148)</b>	<b>(0.123)</b>	<b>(0.115)</b>
Palm World Price	0.812***	0.730***	0.732***	0.676***
	(0.0892)	(0.101)	(0.0648)	(0.0719)
Intercept	20.32**	98.02***	32.44***	83.44***
	(8.025)	(25.65)	(5.791)	(18.05)
Observations	426	426	426	426
Year and Quarter dummies	Yes	Yes	Yes	Yes
Ramadan Dummies	Yes	Yes	Yes	Yes
Proxies for Distribution Costs	No	Yes	No	Yes

**Notes:** (1) The reform dummy=1 if an observation is from after the date of the actual reform: June 21, 2011. (2) The sample consists of the period from June 3, 2010 to October 4, 2012, but the announcement phase (90 days) is excluded. Observations for palm, wheat and lentil: Pre-reform: 175; Post reform: 251. (3) Unit for Palm is Litre. (4) Proxies for distribution costs include diesel price and exchange rate. (5) Standard errors are in parentheses and are corrected using Newey-West (1987) procedure for heteroskedasticity and autocorrelation, assuming AR (3) process. (6) Augmented Dickey-Fuller and Panel Unit Root Tests Reject the Null Hypothesis of Unit Roots in the Residuals. (7) \*\*\* denotes significant at the 1 percent, and \*\* at the 10 percent level.

**Online Appendix Table T2: DiD Estimates Allowing for Different Passthroughs for Wheat and Lentil**

VARIABLES	1-year pre-reform sample			2-year High price
	Main Sample	Incl Announce.	Incl. low price	Sample
	(1)	(2)	(3)	(4)
Policy Reform Dummy	-1.263 (1.497)	-3.650*** (1.057)	-0.866 (1.464)	1.702 (1.396)
<b>Reform Dummy*Palm Dummy</b>	<b>49.71***</b> <b>(7.147)</b>	<b>51.16***</b> <b>(7.011)</b>	<b>37.17***</b> <b>(6.629)</b>	<b>72.29***</b> <b>(7.063)</b>
<b>Reform Dummy*Palm Dummy*World Price</b>	<b>-0.546***</b> <b>(0.0971)</b>	<b>-0.564***</b> <b>(0.0944)</b>	<b>-0.369***</b> <b>(0.0893)</b>	<b>-0.817***</b> <b>(0.0967)</b>
Reform Dummy*World Price	0.0252 (0.0166)	0.0334** (0.0150)	-0.0233 (0.0159)	-0.00122 (0.0211)
World Price*Palm Dummy	0.493*** (0.151)	0.619*** (0.152)	0.341** (0.137)	0.580*** (0.141)
World Price	0.293** (0.148)	0.165 (0.150)	0.404*** (0.140)	0.488*** (0.138)
Palm dummy	5.182 (3.851)	2.918 (3.863)	10.90*** (3.234)	-13.14*** (3.906)
Lentil Dummy	38.33*** (5.160)	37.66*** (4.706)	36.14*** (5.422)	32.13*** (5.847)
Lentil Dummy*World Price	-0.128 (0.174)	-0.0281 (0.169)	-0.148 (0.174)	-0.127 (0.171)
Constant	95.69*** (16.58)	81.36*** (15.34)	66.20*** (19.14)	102.9*** (16.17)
Observations	1,090	1,258	1,252	1,391
Year and Quarter dummies	Yes	Yes	Yes	Yes
Ramadan Dummies	Yes	Yes	Yes	Yes
Proxies for Distribution Costs	Yes	Yes	Yes	Yes

**Notes:** (1) The reform dummy=1 if an observation is from after the date of the actual reform: June 21, 2011. (2) The sample consists of the period from June 3, 2010 to October 4, 2012, but the announcement phase (90 days) is excluded. Observations for palm, wheat and lentil: Pre-reform: 399; Post reform: 691. (3) Unit for Palm is Litre and for Wheat and Lentil Kg. (4) Proxies for distribution costs include diesel price and exchange rate. (5) Standard errors are in Parenthesis and are corrected using Newey-West (1987) procedure for heteroskedasticity and autocorrelation, assuming AR (3) process. (6) Augmented Dickey-Fuller and Panel Unit Root Tests Reject the Null Hypothesis of Unit Roots in the Residuals. (7) \*\*\* denotes significant at the 1 percent, and \*\* at the 10 percent level.

**Table T.3: Summary Statistics during pre-reform and post-reform periods**

	Samples consist of post-reform plus					
	1-year Pre-reform		2-Year Pre-reform		Post-Reform	
	Mean	SD	Mean	SD	Mean	SD
<b>Palm</b>						
Wholesale price	76.96	10.56	68.48	11.93	92.27	4.05
Retail price	80.11	10.58	71.61	11.92	97.43	3.07
World Price (4 week lagged)	65.22	13.31	57.75	12.81	78.42	5.32
World Price (Current)	69.12	14.18	59.92	14.46	78.70	6.74
<b>Wheat</b>						
Wholesale price	25.42	1.00	25.42	1.00	23.32	2.05
Retail price	27.86	0.95	27.86	0.95	25.97	2.50
World Price (4 week lagged)	18.84	1.26	18.84	1.26	18.50	1.63
World Price (Current)	18.74	1.46	18.74	1.46	18.85	2.81
<b>Lentil</b>						
Wholesale price	68.67	1.85	74.25	7.29	65.58	5.21
Retail price	76.06	1.10	81.02	6.68	73.13	4.57
World Price (4 week lagged)	59.27	4.45	61.72	4.92	54.60	3.44
World Price (Current)	59.71	5.81	61.80	5.66	54.35	3.92

Notes: (1) SD stands for Standard Deviation. (2) The “1-year pre-reform” Includes 1 year before the announcement date of reform, “2-year pre-reform sample” spans 2 years before the announcement date of reform. The announcement period (90 days) is excluded from both samples. The 1-year pre-reform sample covers June 3, 2010 to October 4, 2012, and the 2-year pre-reform sample covers from May 31, 2009 to October 4, 2012. There are gaps in data due to weekends and festivities. (3) Unit for Palm is Litre, and for Wheat and Lentil Kg. (4) All prices are in the local currency, Taka.

Figure F1: Impact of Reform on Pass-through

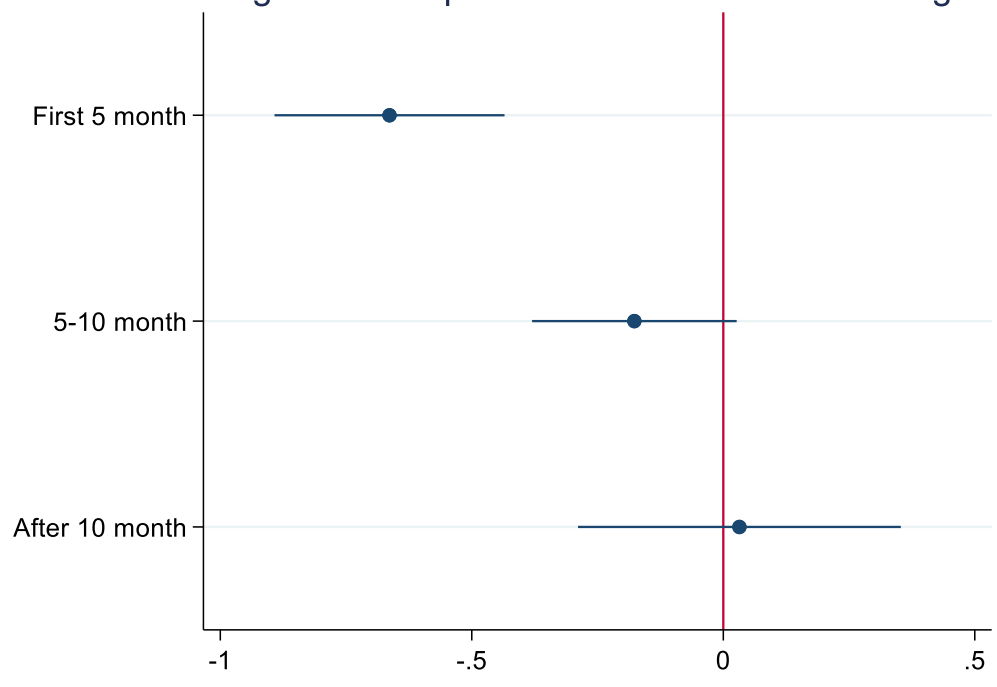


Figure F2: Impact of Reform on Intercept

