



Impacts of Energy Subsidy Reform on MSMEs and their adjustment strategies

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Abstract

This paper based on a study which tries to assess the likely impact of energy price subsidy reform on micro, small and medium enterprises (MSMEs) and how they cope with the impact. The study used a qualitative approach with three methods of analysis: i) desk study on available key literature; ii) field surveys and in-depth interviews; and iii) focus group discussions (FGDs). It shows that MSMEs are sensitive to the increase in the energy prices, although the extent of the impact may vary by firm depending on many factors including type of goods produce and current level of efficiency in using energy which both determine the extent of energy they consume, and their coping measures or their responsiveness to energy price increases. Raising the output price, using energy more efficiently, using other alternative energies, and using alternative raw materials appear to be most often adopted coping strategies.

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Background

Starting in the early 1970s, the Indonesian government has been subsidizing energy for more than 30 years. Windfall profits from rising oil prices in the international market, together with low levels of oil domestic consumption, allowed the government to provide the subsidy for energy, particularly. Although net profits from oil production started to decrease (as the oil production costs started to increase) from 1975, the government kept subsidizing energy with the intention of maintaining the purchasing power of the poor. However, as domestic demand for energy, especially gasoline continued to increase, the government's budgeted amounts for energy subsidies rose significantly. In responding to this development, the government started to reassess the public benefits of energy subsidies and showed its willingness to eliminate energy subsidy and to reform its energy policy in general (Adam and Lestari, 2008). In the aftermath of the 1997-98 Asian financial crisis, as part of a supported adjustment program from the International Monetary Fund (IMF), the government announced on 5 May 1998 an increase in the prices of kerosene by 25 percent, of diesel fuel by 60 percent, and of gasoline by 71 percent. This drastic increase triggered protests in the two weeks after the announcement and, along with a complex range of other factors including dissatisfaction with the government, eventually led to the end of President Suharto's rule (Beaton and Lontoh 2010; IMF, 2013).

Since then, reforming energy price subsidies has been a persistent policy challenge for the Indonesian government. The Indonesian government is determined to continue with energy subsidy reform and to eliminate energy subsidy, not only because of fiscal burden, but also because the government has come to realize that energy subsidies do not benefit the poor and low-income households, the group at which they were aimed.

However, this energy subsidy reform on the one hand, and the volatile international oil price and the exchange rate fluctuations of the Rupiah against the US dollar on the other hand, has worried not only final consumers but also producers and business owners, including in micro, small and medium enterprises (MSMEs).

Overview of MSMEs in Indonesia

As in many developing countries, MSMEs in Indonesia are very numerous, amounting to almost 58 million in 2013 (Table 1). They have always been the main drivers of domestic economic activities, accounting for more than 99 per cent of all existing firms across sectors, and they help diversify economic output. They provide employment opportunity for over 90 per cent of the country's workforce, mostly women and the youth. Especially for low-income households MSMEs generate a significant amount of secondary income sources. Many MSMEs are based in rural areas, so they also play an important role in stimulating rural economic development. The majority of MSMEs in Indonesia are engaged in the agricultural sector, including animal husbandry, forestry, and fisheries. The second important sector for MSMEs is trade, hotel and restaurants.

Table 1 Total enterprises by size category in all economic sectors in Indonesia, 2009-2013 (in thousand units)

Size category	2009	2010	2011	2012	2013
MIEs	52,176,795	53,207,500	54,559,969	55,856,176	57,189,393
Ses	546,675	573,601	602,195	629,418	654,222
Mes	41,133	42,631	44,280	48,997	52,106
Les	4,677	4,838	4,952	4,968	5,066
Total	52,769,280	53,828,570	55,211,396	56,539,559	57,900,787

Sources: Menekop & UKM (www.depkop.go.id) and BPS (www.bps.go.id).

The Importance of Energy in the Cost Structures of MSMEs

Although, it is generally known that MSMEs, particularly SEs, are much less energy intensive in comparison to LEs, energy costs are still significant: running from around 10 per cent to more than 65 per cent of the total cost of production for many MSMEs (USAID, 2008). For MSEs, no national data are available on cost structures or composition of inputs used. There are, however, some case studies based on field surveys which show that energy costs are not the largest component of total production costs for MSEs in Indonesia, although the percentage share varies by group of industry. For instance, findings from a field survey conducted by BI & PS-IUKMPU (2010) show that operation costs are just a small component of total production costs for MSEs in wood processing, food and beverages, textile and footwear industries in some regions in the country, including in West Sumatera and West and East Java (Table 2). Operation costs include energy costs, but energy is not necessarily the dominant component.

Table 2 Cost Structure of MSEs in Selected Group of Industry, 2010

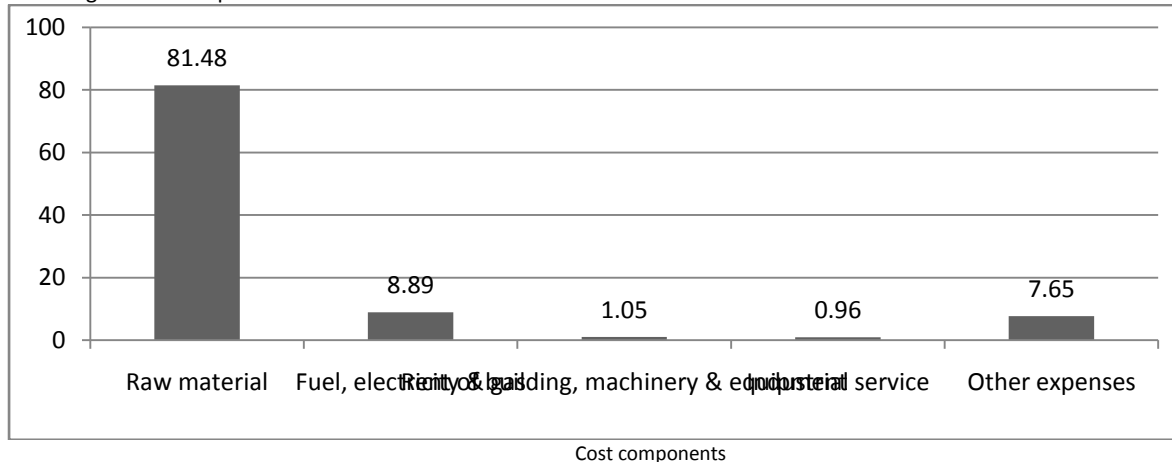
Selected Group of industry	% share				
	Key raw materials	Supporting materials	Labour	Operational	Capital
Wood processing	64.07	4.42	26.40	4.48	0.63
Food and beverages	69.9	11.6	11.2	5.9	1.4
Textile	63.2	7.69	21.51	5.78	1.82
Footwear	56.6	10.3	27.0	4.1	2.0

Source: BI & PS-IUKMPU (2010).

For MEs in the manufacturing industry, there are national data presented by BPS in its annual publication *Statistics for Medium and Large Industry*. It reveals that the cost of energy in MEs is also not the largest component in their total production costs; although the energy cost share varies by group of industry. As can be seen in Figure 1, the largest component of total production costs in this category of manufacturing enterprises is for buying raw materials which is on average around 81 per cent; compared to energy costs only around 8.8 per cent.

Figure 1 Cost Structure of MEs in Manufacturing Industry, 2010

Percentage share of inputs costs in total costs

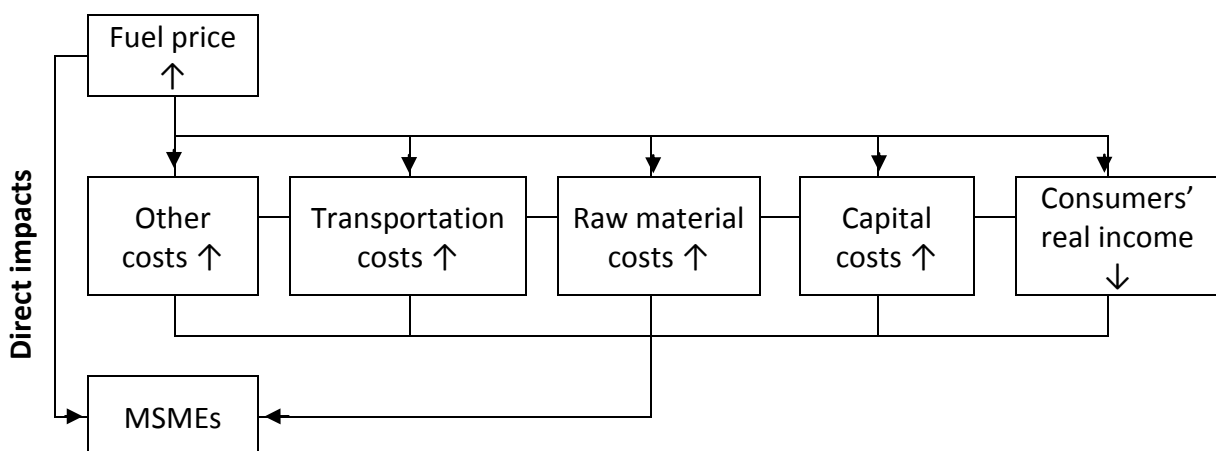


Source: BPS (2010)

Impact of Energy Price Increases on MSMEs: A Theoretical Framework

An increase in energy prices will have two major effects on firms, i.e. direct and indirect effects (Figure 2). Direct effects occur when an increase in energy prices directly affects firm's energy cost. Indirect effects are the ones that affect firm's production costs through increases of prices of raw materials and transportation costs.

Figure 2 Key Channels of the Impact of the Increase in Fuel Price on MSMEs





Evidence from Indonesia

Direct effects

The degree of an increase in energy cost and hence its total operational costs of a firm caused directly by an increase in energy price will of course vary by group of industry, according to the amount of energy and the type of energy used. Braithwaite et al. (2012) conducted a study that assessed the possible responses of firms to cope with energy subsidy removal in Indonesia. Specifically for fuel or gasoline, as generally expected, sectors such as public transport e.g. taxis, buses, and ferries, are against the reduction of subsidy as it will certainly increase their operational cost. Also car producers/assemblers, although they use electricity as their main energy, are against the removal of oil subsidy because they are concerned that, as an indirect effect, their car sales are likely to decline as potential buyers may postpone buying new cars when fuel is expensive.

MSMEs making bread in Indonesia are very dependent on LPG. Energy costs represent 7 to 8 per cent of the total cost of bread production. The 35 per cent price rise of 12 kg-cylinder LPG in March 2013 caused an increase in the cost of bread production by 2 per cent. -Total energy costs, which included increases in the cost of electricity, rose by 10 per cent (Citra Indonesia, 2013).

Indirect effects

Transportation fare price increases

Indirect impacts occur through the knock-on effects that fuel price rises have on other aspects of MSME businesses. When the government decided to increase fuel price in July 2013, transportation fares went up. According to Organisation of Land Transportation, transportation fare could have increased up to 35 per cent, but the government capped the increase -to maximum 20 per cent (Republika Online, 17 June 2013). The November 2014 reforms led to an increase of public transportation fares by Rp 1,000 (US\$ 0.08) (reference) (Kompas, 22 November 2014). Recently the government reduced the price of fuels but not all prices of these items declined. This does not come as a surprise given the long experience showing that prices of many goods always went up along with the increase in energy prices; but when the fuel prices backed to their previous levels, not all prices of these goods also declined. This phenomenon is also known as price-stickiness or asymmetric pricing (Casier & Beaton, 2015).

Raw material price increases, inflation and less disposable real income

An increase in transportation fare caused by an increase in fuel price usually cause prices of raw materials and various food items to increase too, and the increase varies by region. A survey conducted by the Ministry for Cooperatives and SMEs in 2006 (cited in Sinaga, 2013), show that product costs and business incomes were affected considerably. This survey covered 37,950 MSMEs in over 33 provinces that use kerosene, solar oil and gasoline in a range of businesses, including food processing, rice milling, fishery, food stalls, batik (Indonesian traditional cloth), industries producing simple building materials like tiles and brick, and city transportation. It found that production costs increased by an average of 28.1 per cent (in MIEs by 34 per cent; in SEs by 24.6 per cent; and in MEs by 29.6 per cent) and that net income dropped by 18.37 per cent (Sinaga, 2013). About 76.8 per cent of the total number of MSMEs surveyed increased their sales prices; 45.4 per cent reduced the size or

quantity of their products; 63.6 per cent reduced quality of their products; 39.7 per cent reduced their profit margins; 39.7 per cent had increased production cost efficiency; and 6.11 per cent had pursued “other” strategies in addition to the above (Sinaga, 2013).

The increase in fuel prices also leads to a rise in general prices which reduces the real disposable income of employees or workers, which in turn generates pressure on the firms to increase wages (UNDP, 2014). In November 2014 workers from many factories went on the street in Jakarta and some other cities in Java demanding higher wages (Kompas, 22 November 2014).

Increase in interest rate and difficult access to credit

An increase in fuel price could also lead to an increase in interest rate as normally the monetary authority increases interest rate in responding to the increase in general prices (inflation) (Mishkin, 1992), which means higher capital costs for MSMEs which finance their operations with loans. For instance, as a response to the increase in the inflation rate, and also to the continued depreciation of the rupiah, the Indonesian monetary authority has decided to increase the Bank of Indonesia (BI) interest rate from 6.0 per cent in June 2013 (or 5.75 per cent in May 2013) to 6.5 per cent, which means the cost of capital or credit has become more expensive than before (Bank of Indonesia, 2013)

This can be a serious indirect effect on bank loans depending-MSMEs, though in Indonesia as in other developing countries they are only a small percentage of total MSMEs. However, MSMEs not depending on capital from banks may also be affected if they have business or production linkages with formal credit depending-LEs (e.g. trading companies and large-sized assembling cars producers). If those firms have financial problems caused by higher loan interest rates, and therefore have to reduce production or even go out of business, their subcontracted or business-related MSMEs will also go down with them.

Empirical Evidence from Field Surveys: Findings and Discussions

Profiles of respondents

Table 3 provides information regarding four key profiles of the respondents, namely gender, market orientation, changes in revenues and cost components of energy in their total production costs.

Table 3 Key Profiles of the Respondents in the Four Locations, 2014

Aspects	Unit	Solo	Semarang	Jakarta	Padang
Ratio female to male	Person	11/18	16/9	35/64	28/12
Market orientation:	Person				
-Only domestic market		12	23	94	40
-Only foreign market		3	-	-	-
-both markets		14	2	5	-
Revenue during 2012-2013:	Person				
- relative stable		9	3	23	9
-increased		11	16	55	16
-declined		9	6	21	15
Cost components of Energy:	%				
-Petroleum: -average per respondent:		2.6	3.2	5.8	9.4
-maximum:		10.0	20	40	50
-minimum:		1.0	2	0.8	5
-LPG: -average per		1.5	12.4	8.99	9.1
		10	30	35	70

respondent:		2	1	0.5	5
-maximum:		11.5	13.3	12.3	9.1
-minimum:		25	30	60.0	80
-Electricity: -average per respondent:		0.8	2	1.44	5
-maximum:					
-minimum:					

Source: field surveys November-December 2014, and January-February 2015

Findings

Impact of Energy Price Increases

Table 4 may suggest that in general an increase in energy price will have an impact on firms, but not always significant, at least not directly. Only a small number of respondents (i.e. 15 respondents for future increase and 24 respondents for the past experiences) in all cities surveyed said no impact. While the majority of the remaining respondents who said that the previous increases of energy prices had some impact, the impacts were considered small. They also expect that in the future the impact will be small, at least with respect to direct effects.

The importance of indirect effects will depend, however, on type of energy. In Solo, for instance, the respondents are producers of textile or garments, and electricity is their most important energy source. While in Semarang, the respondents are food and beverages industries and LPG is their main energy. From their experiences with price increases of *Premium* which occurred several times in the past, the impact was mainly through higher transportation costs that they had to pay for bringing their products to their markets. Some of them also said that in the past few years, prices of some materials they used also increased.

Table 4 The Impacts of Energy Price Increases on Respondents' Businesses (Person)

	Solo	Semarang	Jakarta	Padang	Across the different regions
Future Increase					
-No impact	-	-	10	5	15
-Production volume would decline very much	12	13	33	9	67
-Production volume would decline slightly	17	12	56	26	111
Total	29	25	99	40	193
Past Experiences					
No impact	-	5	13	6	24
-Production volume declined very much	5	10	20	7	42
-Production volume declined slightly	24	10	66	27	127
Total	29	25	99	40	193

Source: Field survey, November-December 2014 and January-February 2015

The respondents were also asked to envisage possible impacts at different hypothetical price increase levels per year over the next 5 years on their businesses. The findings show that the majority of the respondents said that their production will not be affected if the price of energy increases less than 5 per cent. However, this figure drops sharply when the price increases more than 5 per cent (Table 5).



Table 5 Possible Impact at Different Hypothetical Price Increase Levels of Energy (person)

Energy price increases by Type of impact	SOLO					
	<5%	5-10%	10-15%	15-20%	20-30%	>30%
No impact	23	6	1	1	-	-
Production volume declined very much	1	7	18	28	28	29
Production volume declined slightly	5	16	10	-	1	-
Total	29	29	29	29	29	29
SEMARANG						
No impact	20	11	1	-	-	-
Production volume declined very much	-	5	16	14	24	25
Production volume declined slightly	5	9	8	11	1	-
Total	25	25	25	25	25	25
JAKARTA						
No impact	71	32	10	2	-	-
Production volume declined very much	7	23	54	72	82	95
Production volume declined slightly	21	44	35	25	17	4
Total	99	99	99	99	99	99
PADANG						
No impact	38	27	4	-	-	-
Production volume declined very much	-	-	5	23	32	37
Production volume declined slightly	2	13	31	17	8	3
Total	40	40	40	40	40	40
ACROSS THE DIFFERENT REGIONS						
No impact	152	76	16	3	-	-
Production volume declined very much	8	35	93	137	166	186
Production volume declined slightly	33	82	84	53	27	7
Total	193	193	193	193	193	193

Source: Field survey, February 2015

Reactions to Energy Price Increases

How a firm copes with the shock of a price increases is crucial as it will determine the extent or the seriousness of its impact on the firm. During the survey, the respondents were asked about their possible responses with respect to different rates of energy price increases. A multi-optional question was designed with a set of 10 alternative mitigation measures. The findings are presented in the following tables.

Table 6 Types of Coping Measures Selected by the Respondents with Different Rates of Energy Price Increases, Solo (%).

Energy price increases by Type of coping measures	<5%	5-10%	10-15%	15-20%	20-30%	>30%
Doing nothing	46.5	-	-	-	-	-
Raising output price	6.98	40.0	29.6	7.7	7.7	-
Fostering energy saving or using more efficiently	6.98	36.0	22.2	15.4	7.7	-
Using other alternative energies	4.7	8.0	14.8	15.4	15.4	7.7
Reducing production volume/scale	2.3	-	11.1	15.4	0	15.4
Using energy-saving technology	11.6	8.0	-	23.1	7.7	7.7
Producing other less energy used products	6.98	-	11.1	-	15.7	7.7
Reducing other cost components (e.g. less workers)	6.98	-	3.7	7.7	7.7	30.8
Using alternative raw materials	6.98	8.0	7.4	15.4	30.8	15.4
Close operation	-	-	-	-	7.7	15.4
Total	100.0	100.0	100.0	100.0	100.00	100.0

Source: Field survey, November 2014



Table 7 Types of Coping Measures Selected by the Respondents with Different Rates of Energy Price Increases, Semarang (%).

Energy price increases by	<5%	5-10%	10-15%	15-20%	20-30%	>30%
Type of coping measures						
Doing nothing	44.4	10.0	-	-	-	-
Raising output price	33.3	32.5	35.7	32.2	28.8	32.6
Fostering energy saving or using more efficiently	14.8	12.5	16.1	13.6	12.1	8.7
Using other alternative energies	-	10.0	8.9	6.8	6.1	-
Reducing production volume/scale	-	7.5	10.7	11.9	10.6	13.0
Using energy-saving technology	3.7	15.0	8.9	6.8	6.1	2.2
Producing other less energy used products	-	2.5	1.8	1.7	4.6	6.5
Reducing other cost components (e.g. less workers)	3.7	-	1.8	10.2	13.6	10.9
Using alternative raw materials	-	10.0	16.1	16.95	18.2	17.4
Close operation	-	-	-	-	-	8.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field survey, December 2014

Table 8 Types of Coping Measures Selected by the Respondents with Different Rates of Energy Price Increases, Jakarta (%).

Energy price increases by	<5%	5-10%	10-15%	15-20%	20-30%	>30%
Type of coping measures						
Doing nothing	50.0	23.2	7.2	0.8	0.6	1.1
Raising output price	22.0	34.8	39.2	29.1	23.4	29.2
Fostering energy saving or using more efficiently	5.9	13.0	18.1	16.1	13.5	12.9
Using other alternative energies	2.5	2.2	7.8	9.8	8.7	3.9
Reducing production volume/scale	5.9	7.3	9.6	11.8	11.5	9.0
Using energy-saving technology	5.1	6.5	6.6	15.0	14.1	13.5
Producing other less energy used products	-	-	0.6	5.1	7.7	2.8
Reducing other cost components (e.g. less workers)	5.1	8.7	7.2	8.7	11.9	9.6
Using alternative raw materials	3.4	4.4	3.6	3.5	8.7	5.1
Close operation	-	-	-	-	-	12.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field survey, January 2015

Table 9 Types of Coping Measures Selected by the Respondents with Different Rates of Energy Price Increases, Padang (%).

Energy price increases by	<5%	5-10%	10-15%	15-20%	20-30%	>30%
Type of coping measures						
Doing nothing	100.00	27.8	9.7	-	-	-
Raising output price	-	27.8	25.7	17.2	12.9	4.4
Fostering energy saving or using more efficiently	-	23.6	20.4	15.0	12.2	4.4
Using other alternative energies	-	15.3	15.9	15.4	12.6	4.4
Reducing production volume/scale	-	2.8	12.4	15.0	12.6	4.4
Using energy-saving technology	-	2.8	11.5	13.2	12.6	4.4
Producing other less energy used products	-	-	3.5	11.9	12.6	4.4
Reducing other cost components (e.g. less workers)	-	-	0.9	8.8	11.9	
Using alternative raw materials	-	-		3.5	11.5	
Close operation	-	-		-	1.1	73.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field survey, February 2015



Table 10 Types of Coping Measures Selected by the Respondents with Different Rates of Energy Price Increases Across the Different Regions (%).

Energy price increases by	<5%	5-10%	10-15%	15-20%	20-30%	>30%
Type of coping measures						
Doing nothing	59	20.4	3.4	0.4	0.3	0.7
Raising output price	16.8	33.1	34.8	24.2	19.2	24.3
Fostering energy saving or using more efficiently	6.2	17.8	19.1	15.4	12.7	9.5
Using other alternative energies	1.3	7.3	12	11.9	10.2	3.5
Reducing production volume/scale	3.5	5.5	11.1	13.2	11.7	9.5
Using energy-saving technology	5.3	6.9	8.3	13.6	12.6	9.9
Producing other less energy used products	1.3	0.4	2.6	7.4	9.6	3.9
Reducing other cost components (e.g. less workers)	4.4	4.4	4.3	8.9	12	9.9
Using alternative raw materials	3.1	4.4	5.1	5.2	11.2	6.7
Close operation	-	-	-	-	0.6	22.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Field survey, February 2015

The producers were also asked whether they would be able or have no serious difficulties to cope with volatile prices, and if not, what are the main reasons. As can be seen in Table 15, the majority of total respondents in all cities (i.e. 142) have no difficulties to cope with energy price increases. Those who said that they would not be able to cope with energy price increases the main reason for most of them is difficulty in raising their output prices as they may face risk of losing their market competitiveness and market share.

Table 15 Respondents' Capacity to Response (person)

	Solo	Semarang	Jakarta	Padang	Across the different regions
Able to cope (have no difficulties)	19	22	67	34	142
Not able to cope (have difficulties)	10	3	32	6	51
Main Reasons:					
- has no enough resources (especially capital) to cope with	2	3	5	4	14
-difficulty in making a price adjustment due to heavy market competition	8	-	23	1	32
-has no other options left to make more efficient in using energy	-	-	4	1	5
-other reasons	-	-	-	-	
Total	29	25	99	40	193

Source: Field survey, November-December 2014 and January-February 2015

Conclusion

The overall impacts of energy price increases as a consequence of energy subsidy reform on MSMEs depends on the capacity to mitigate the impact of subsidy and consequently price reforms. The capacity to cope with the increases varies across MSMEs but all emphasized the dependency on (1) availability of financial resources to make internal adjustments in e.g. production process, composition of raw materials/inputs, types of machines or tools to be used and (2) on the current level of market competition which determines to what extent the MSMEs can increase their selling prices, reduce the size of the production of their goods, change the composition of raw materials in their products, or shift to alternative energy sources, without losing their customers or market shares;

Based on the data collected in this study, indirect impacts of energy price increases have the most serious effects on MSMEs: Higher transportation costs (especially land transportation), higher prices of raw materials, and higher inflation have a very significant impact. These three transmission channels are more obvious in the case of fuel price increases than in the case of electricity fare increases. With respect to the inflation, as MSMEs (especially MSEs) serve mainly low-income market segments, higher inflation can become a serious problem for these enterprises.

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