1 INTRODUCTION

Poverty and Social Impact Analysis

Poverty and Social Impact Analysis (PSIA) is an important feature of the new approach to supporting poverty reduction in developing countries, characterised by the development of Poverty Reduction Strategies (PRS). PSIA is defined as the analysis of intended and unintended consequences of policy interventions on the well-being or welfare of different groups, with a special focus on the vulnerable and poor. Well-being or welfare includes the income and non-income dimensions of poverty.\(^1\)

The overarching objective of PSIA is to promote evidence-based policy choices, by explicitly including poverty and social impacts in the analysis of policy reforms, and to build country ownership of policies by informing a public debate on the trade-offs between policy choices.

Analysing poverty and social impacts is not new, but it has yet to be routinely applied to macroeconomic and structural policy measures. In August 2000, the IMF and World Bank agreed to consider the poverty and social impact of major reforms in their lending programmes to poor countries. In 2001, DFID in collaboration with the World Bank undertook to support demonstration studies in six countries where governments and other national stakeholders expressed clear demand for PSIA (including Indonesia, Honduras, Armenia, Uganda, Rwanda, and Mozambique).\(^2\) In October 2002, findings from the DFID- and World Bank-supported pilot studies were brought together at a workshop in Washington DC. Key findings of the workshop include that it is feasible to undertake PSIA using existing data and knowledge in country, and that for PSIA to be effective in informing policy decisions, it needs to be country-owned and embedded in the national PRS process.

The Origins of the Mozambican PSIA

Interest within Mozambique. The Mozambican government was contacted about the possibility of organising a demonstration PSIA because it has developed a high quality Poverty Reduction Strategy Process (PRSP). The government was interested in using the PSIA and was keen to select a topic of strong current interest.

Poverty Reduction Strategy. An interim PRSP was produced in 1999, followed rapidly by a full PRSP (known as the Action Plan for the Reduction of Absolute Poverty, PARPA) covering 2000-05, which included substantial consultation with civil society and donors. The PARPA was produced almost exclusively by government not donors. It includes detailed proposals for prioritised programme spending consistent with the Medium Term Economic Framework (MTEF) and with subsequent budgets.

The PARPA stresses the importance of growth, given the widespread nature of poverty. It also includes:

- a series of prioritised and costed measures, designed to support growth and provide key public services
- targets to reduce poverty from 70% to 50% in 10 years, requiring a reduction in poverty numbers of about 400,000 each year
- reduction in aid dependency by increasing government revenue from 12.4% to 16.7% of GDP, which requires an annual increase in revenue of about 11% raising US$ 200m more in domestic revenue.

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\(^2\) The World Bank undertook to pilot PSIA in an additional six countries.
Choice of Topic. This study considers the impact of a possible rise in fuel tax, which is currently under debate. Any revenue raised from an increased tax would be used to support PARPA spending priorities, either by going directly to road maintenance or by protecting other priorities from a possible reduction in aid. The eventual effect on public finance is largely fungible and the study was restricted to examining the impact of a possible fuel tax change in isolation from alternative revenue sources or implications for expenditure or aid dependency.

At the time of the study many key Mozambican stakeholders were arguing that any increase in the fuel tax would cause a major increase in poverty. However, the share of fuel in the economy is small, which suggests that the net impact would be smaller than feared by stakeholders.

As fuel taxes have remained constant in nominal terms for five years in Mozambique, their real value has declined. The main scenario analysed in the demonstration PSIA is the impacts of increasing the fuel tax inline with the exchange rate, which involves a 101% increase in tax and a 20% increase in the weighted average fuel price. An alternative scenario is included where tax is increased in line with inflation, which has risen by only 65%. The analysis shows that the impact is linearly proportional to the level of price increase.

Fuel taxes have traditionally provided about 10% of government revenue. However, the decline in the real value of the tax has reduced this to 7%. A fuel tax increase of 101% would raise nearly $34 million and would move the budget 17% closer to the PARPA 10 year objective of fiscal balance. The only other ways of raising equivalent additional revenue rapidly would be to increase the rates on VAT, income tax, company tax or trade taxes. However, the government is committed to low general tax rates.

2 POVERTY IN MOZAMBIQUE

Mozambique is amongst the poorest countries in the world with some of the lowest human development indicators. About 70% of the population lives below the poverty line.

There are a range of interlocking processes which characterise poverty in Mozambique. Five such processes were considered particularly important:

- limited and uneven market development, which relates to the variable availability of income generating opportunities;
- rural-urban differentiation;
- socio-economic differentiation in control of assets;
- increasing dependency with erosion of social support;
- the corrosion of governance.

3 A PSIA ON A RISE IN FUEL TAX

Methodology

The study started with interviews and discussions involving some of the key decision-makers in government and the private sector. This helped to explain the existing assumptions about the fuel tax, which would provide the basis of policy decisions, in the absence of any PSIA.

A review of existing literature was done to identify explicit and implicit assumptions about the nature of poverty in Mozambique, to identify underlying poverty processes and to develop ideas about the possible nature of impact.

In identifying poverty profiles and processes, the researchers relied primarily on the household survey (IAF), supplemented by the 1997 (Demographic and Health Survey, DHS) and the 1997 population census. The provincial poverty profiles, and two national participatory poverty assessments were also consulted.

Limited qualitative field research was carried out in Zambezia. This was a very rapid appraisal, restricted to a limited set of questions having to do with use of fuel and transport, with a particular interest in identifying vulnerable groups. Discussions were held with traders,
vendors, transporters, pump-owners, provincial directors, NGOs and local officials involved in social provisioning, and with members of rural producers’ associations.

The quantitative analysis looked at the way in which fuel prices would be transmitted through the economy, assuming that all costs are passed on. This was based on an existing Social Accounting Matrix (SAM), using information from 1993–1994. The coefficients in the SAM were modified to a limited extent, to reflect the results of the qualitative fieldwork. Since all fuel is still imported, and data for current fuel imports are reliable, it was possible to verify that the fuel coefficients in the SAM were still approximately valid.

The impact of price rises on households was calculated by using the household consumption data in the 1996/97 IAF. The reduced purchasing power of each household was calculated, and the variation was analysed to pick up variations (eg non-poor/poor/very poor, region, urban/rural, occupation …). The analysis also analysed the way in which demand would fall, using backward multipliers. The analysis attempted to pick up particularly vulnerable groups, guided by the clues from the qualitative analysis.

The qualitative analysis identified a number of activities and processes which could have concentrated longer term effects. These were identified in the study, but it was not possible to incorporate this into the quantitative analysis, because there was insufficient time to develop models of economic growth and social behaviour.

Findings

**Purchasing Power.** Fuel imports have amounted to 3% of GDP in recent years. Before taking account of any knock-on effects, a 20% increase in the price of fuel would therefore amount to about 0.6% of GDP.

The knock-on effects on prices are calculated using Input–Output coefficients in the existing SAM. If businesses passed on the full cost increases, then average prices would rise by 2.6% for transport, 0.18% for agriculture, 0.43% for services, 0.46% for manufactured goods and 2.09% for fish. The average consumer price increase is 0.42% with the increased cost of marketed food accounting for about two-thirds of the increase.

The distribution of the impact can be analysed using the individual expenditure data for each of the 8,250 households in the household survey. This analysis suggests that 28,500 people would be pushed below the poverty line. This increase in the number of poor represents 7% of the annual PARPA target for reducing the number of poor. Perhaps more significantly, over 50,000 people would be pushed into extreme poverty, largely because there is a group of extreme poor who have a high reliance on market sources for their food supplies.

The impact on purchasing power affects most households. Non-poor households are slightly more affected than poor households and there are some minor differences between urban and rural households, between provinces and between occupations. As expected, poorer urban workers are vulnerable to higher transport costs and farmers are less likely to be affected.

The above figures illustrate the cost-push pressures in the economy. An analysis of the statistical relationship between fuel price and Consumer Price Index (CPI) over the past 5 years does suggest that, on average, a 20% increase in fuel price has resulted in a 2% rise in CPI. However, the confidence limits for this relationship are wide. Even if the relationship were more statistically significant, it would still not provide evidence of the net effect of the fuel tax on inflation, since the price rises in recent years have been due to rises in world prices.

A rise due to a tax increase would generate government revenue, which would probably be spent on expenditure programmes, thus...
boosting demand elsewhere in the economy, to compensate for the reduced consumption from households. Therefore, it is not possible to provide any clear indications of the likely impact of a fuel tax increase on inflation.

**Impact on Demand.** The above analysis of purchasing power assumes that physical consumption declines in proportion to the increase in prices. This reduction has a number of knock-on effects on the demand for other intermediate products and for labour. Backward multipliers can be derived from the Input–Output coefficients which suggest that the net effect on the economy could be as much as 3 times higher than the initial effect on purchasing power (ie. nearly 2% of GDP).

In practice, the economy has various ways of moderating the extent of this shock, as consumers will switch to alternative products and producers will use different combinations of inputs and factors of production. Estimating the magnitude of this moderating influence would require a computable general equilibrium (CGE) model with a set of supply and demand elasticities. No new CGE analysis has been possible, but there is some existing CGE work on marketing efficiency, which suggests that the net effect of all the equilibrium processes would result in a contraction in GDP of 1.25 times that suggested by the first round knock-on effects (i.e. an additional 7,000 poor).

**Producer Response.** The above analysis assumes that producers will respond to demand by making adjustments in the factors of production. Qualitative analysis suggests that some economic activities could be more vulnerable to fuel prices and could collapse much more rapidly than the fall in demand. For example:

- Diesel-powered grain mills have been spreading through rural Mozambique in recent years, providing cheaper milling and releasing women from the burden of hand milling. Diesel is a high cost in grain milling making it vulnerable to an increase in fuel tax.
- The emergence of small trading, especially in rural areas, has been playing an important role in providing market opportunities and cheaper consumer goods, as well as providing a source of employment. The qualitative evidence suggests that small trading is a fragile activity, but the extent to which it is vulnerable to transport and fuel costs is less clear.
- Fishing could be vulnerable because fuel accounts for a high proportion of costs for fisherman (both modern artisanal and commercial) and there is strong international competition. Artisanal fishing provides the main source of employment in some communities and fish is a significant component of marketed food purchases, even in poor households.
- Other vulnerable activities include irrigated crops, export crops and mining, all of which provide low-wage employment for poor households.

It would be extremely difficult to administer special mitigating measures for these vulnerable activities.

**Poverty Processes.** The above sections analyse the available information on access to markets and employment opportunities, which is the major process determining the extent of poverty in Mozambique. There are a number of additional poverty processes which may be affected by the proposed change in fuel tax. The disruption of these processes could lead to shifts in longer-term trends in poverty. These include:

- Social services will require increased budget if they are not to suffer. Even if the Ministry of Finance allows transport/fuel budgets to rise, Ministries will also have to ensure that these resources are made available at local levels.
- Although the household survey suggests that direct spending on transport is low, most journeys will contribute to the coping strategies of several households by providing market information, facilitating
remittances and exchange of food and other goods between rural and urban areas and enabling cross-community links to be developed. Increased transport costs will reduce the frequency of these benefits.

- Increased transport costs will reduce the proportion of emergency flood and drought relief which benefits the poor.
- The reduced ability to purchase marketed consumption goods, and possible increases in the cost of accessing social services, may result in other increases in women’s work, including time spent on food-processing and home-based health care.

**Policy Conclusions.** In summary, the PSIA concludes that the aggregate short-term impact of a rise in fuel tax on poverty is modest. There is some qualitative evidence of pockets of concentrated longer-term impact on vulnerable activities or poverty processes. Aggregate statistics suggest the combined impact of these specific concerns may not be large, but further work is required to study this and to consider whether the accumulated effects over time might be more serious. In any case, the level of any increase in fuel tax is constrained by consistency with South African prices, which are already slightly lower than prices in Mozambican.

The fuel tax PSIA was deliberately undertaken in isolation from analysis of alternative sources of revenue or of expenditure implications. Without evidence from such comparative PSIA, it is difficult to provide firm recommendations. However, the PARPA targets provide a yardstick against which the fuel tax can be compared: in total, PARPA fiscal targets involve an increase in revenue of US$ 200m associated with a reduction in the number of poor of about 1.5m, at a ‘fiscal:poor ratio’ of about 150; the fuel tax has a fiscal:poor ratio of about 1,300, suggesting that far more people can be lifted out of poverty through PARPA expenditure than are pushed into poverty by raising the tax.

Any changes in fuel taxes could be introduced at times when world prices are falling, to minimise disruption. However, this could be used as an excuse to delay fuel tax rises indefinitely and a clear plan is needed to avoid this risk. It may also be useful to coordinate the timing of changes in fuel tax with changes in South African fuel prices, or in exchange rates.

**Methodological Lessons Learnt**

Fieldwork is required to pick up the huge diversity of Mozambique. Original fieldwork will be essential for most PSIA because the available data will have weaknesses and will not pick up the full complexity of social situations, especially in view of the fast moving situation in Mozambique. The wide regional differences mean that good fieldwork should cover several areas, which is expensive and time consuming. Fieldwork should be done at an early stage in the PSIA, to provide time to incorporate the results in quantitative analysis.

The study suggests that data is available on which to perform some of the standard quantitative techniques of short-term impact analysis. Simple analysis of the first-round effects on purchasing power should be the starting point for this analysis and more complex analysis should then build on this. It is possible to adjust the data to reflect qualitative evidence about detailed changes for some goods and services. However, aggregate economic data does provide valid estimates of the order of magnitude of total impact, and qualitative adjustments should remain consistent with the aggregate situation, even if some pockets of concentrated impact are identified.

Many major economic reforms are designed to produce longer term changes, which require detailed and intuitive understanding of how key economic activities will respond to emerging market conditions. This suggests that future PSIA may need to draw on techniques of market research and sector studies at least as much as the more traditional analysis of poverty impact demonstrated in this study.

This study has shown that it should be possible to make future PSIA directly comparable by producing conclusions on the impact on the number of the poor. The number of poor people is a crude indicator, and may not be the most
important result of any particular PSIA. However, it does provide a single comparative number which can be linked directly to national strategies and international indicators.

4 INSTITUTIONAL IMPLICATIONS

PSIA provides a challenge to bring together studies on different macroeconomic policies in order to provide a balanced perspective. To achieve this, it will be necessary to:

- encourage the use of common approaches to methodology;
- provide a synthesising function to facilitate comparative work;
- select topics which address government priorities, whilst also building a balanced and complementing range of analysis;
- incorporate the latest broader thinking on research and techniques, whilst retaining the focused character which typifies more commercial consultancy and also recognising the importance of commercial and civil society operators;
- ensure that studies are independent of government influence.

The challenges of applied economic research have long demanded the attentions of government, civil society, the private sector and donors. There have been a long string of proposals for marginal reforms and new institutions, several of which are actively being pursued. There is now an emerging movement towards PSIA as an essential supporting activity for longer-term improvements in PARPA and in the international funding of macroeconomic support.

Caution must always be taken in suggesting the creation of new institutions. However, there is a flourishing culture of open policy debate in Mozambique, with some capacity outside established institutions. The PSIA momentum provides a unique opportunity to boost economic analysis in Mozambique by creating an institution in between government, the university, civil society and the private sector, with PSIA as its core work programme. Such an institution would bridge the two existing proposals for new institutions linked to the University and to Government and could be based on similar institutions in other African countries. It would draw on the theoretical insights and innovations of academia whilst retaining the practical focus of applied government work and respecting the interests of the private sector and civil society.