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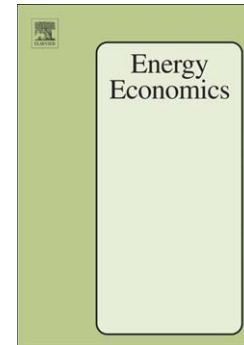
How natural gas tariff increases can influence poverty: Results, measurement constraints and bias

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## How natural gas tariff increases can influence poverty: Results, measurement constraints and bias

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*Abstract.* Energy tariff increases are generally essential to address environmental and fiscal concerns but they can also push households into poverty. This paper estimates the expected poverty and distributional effects of a significant natural gas tariff reform in the context of Armenia that increased the country's residential tariff by about 40%. It is the first paper in the literature on energy tariff reforms to *simultaneously* try and control for substitution between all major energy sources (not just some), to take into account the seasonality of consumption over the *full* annual cycle, and to apply different methods to assess changes in household consumption on natural gas and shifts in natural gas between main and supplementary heating sources. Existing papers thus generally overestimate the potential effects of energy price increases on household welfare. The results here – which face, like any statistical study, a set of important methodological constraints – suggest nonetheless that this significant tariff increase led to an estimated 8% of households shifting away from gas, mainly towards wood, as their heating source. It consequently resulted in an estimated 2.8% of households falling below the national poverty line, while likely also influencing non-monetary human welfare that cannot be well captured econometrically. Finally, methodological assumptions and limitations in assessing these relationships, as well as potential policy implications are outlined.

*Keywords:* energy price reform; gas tariff increase; methodological issues; methods; poverty; Armenia

*JEL codes:* Q41; Q48; D12; D60; B4; C18

### 1. Introduction

Governments regularly face the challenge of increasing energy prices. Many important reasons for raising tariffs exist including to ensure that they cover the costs of generation and distribution, to adapt to increases in global energy prices, to internalise environmental costs into energy tariffs and to mobilise sufficient resources to invest in more efficient generation capacity. Over time, inflation can present another reason for increasing energy tariffs in order to reflect real prices, while a rise in gas prices can in turn increase inflation (see also World Bank 2013). Reducing energy subsidies is also crucial to ensure inequality is not exacerbated, as energy subsidies are often highly regressive and thus benefits are disproportionately captured by richer households. But fuel subsidies – while often leading to large public sector deficit – are commonly justified on the grounds that they help the poor. For all households, low or subsidised

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