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Real-time economic impacts of COVID-19 in Ghana

In brief

- To better inform policy decisions in response to the COVID-19 pandemic, this project collected high-frequency data and produced economic indicators in real-time during the crisis.
- We focused on two economic indicators: weekly urban employment statistics and monthly electricity usage. Employment statistics are calculated based on weekly online surveys and electricity usage is calculated from grid data.
- Employment statistics reflected the real-time responses of the labour market to the virus' spread and containment policy. During the lockdown, employment rate dropped by 25% but fully recovered two months after the lockdown was eased.
- Electricity usage shows the opposite responses from residential and non-residential users. Reflecting the reduced commercial activities, non-residential electricity usage declined up to 12.7%. Residential electricity usage, in contrast, rose up to 10.4% during the lockdown, reflecting increased time spent at home and, possibly, reduced social activities.
- Ghana's electricity subsidy programme, which provided free or discounted electricity supply to its citizen, seems to have contributed to the large increase in residential electricity usage. Those who were provided free electricity nearly doubled their electricity consumption throughout the year.

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Overview of the research

In response to the worldwide spread of COVID-19, the government of Ghana had to take unprecedented policy measures to contain the virus' spread. Because of the rapid spread of the virus, policymakers were required to adjust their goals frequently, reflecting changing circumstances and private sector's responses to policies. In order to aid the policymakers in Ghana to respond to COVID-19 in a timely manner, we collected and compiled real-time, high-frequency data on key economic variables. Based on the data collected, we generated and disseminated a series of monthly summaries of the economic situation in Ghana.

We focused on two main economic indicators: employment and electricity usage, drawn from weekly surveys of urban employment and monthly data on electricity distribution. Urban employment statistics do not, of course, cover the entire Ghanaian economy. Yet they are available every week and hence provide potentially useful indications of economic performance at a high-frequency. Electricity usage is commonly taken as a proxy for output, at least in the short-run, and can provide early signals about variations in economic output.

The employment survey data come from an online survey of labour market activities, conducted weekly for 500 individuals since the week of 23 March 2020 and targeted to workers in Accra and Kumasi areas. The high-frequency nature of this survey data allows us to observe the immediate impacts of the stay-at-home (lockdown) order on the labour market, as well as the subsequent recovery following the lifting of it. The electricity data cover monthly electricity consumption data across all regions in the country from January 2019 to November 2020, further broken down into residential and nonresidential usage. The dataset is provided by the Electricity Company of Ghana (ECG). Given that indicators of aggregate economy such as GDP are not available at monthly frequency, aggregated non-residential electricity consumption could be used as a proxy for industrial and commercial activities.
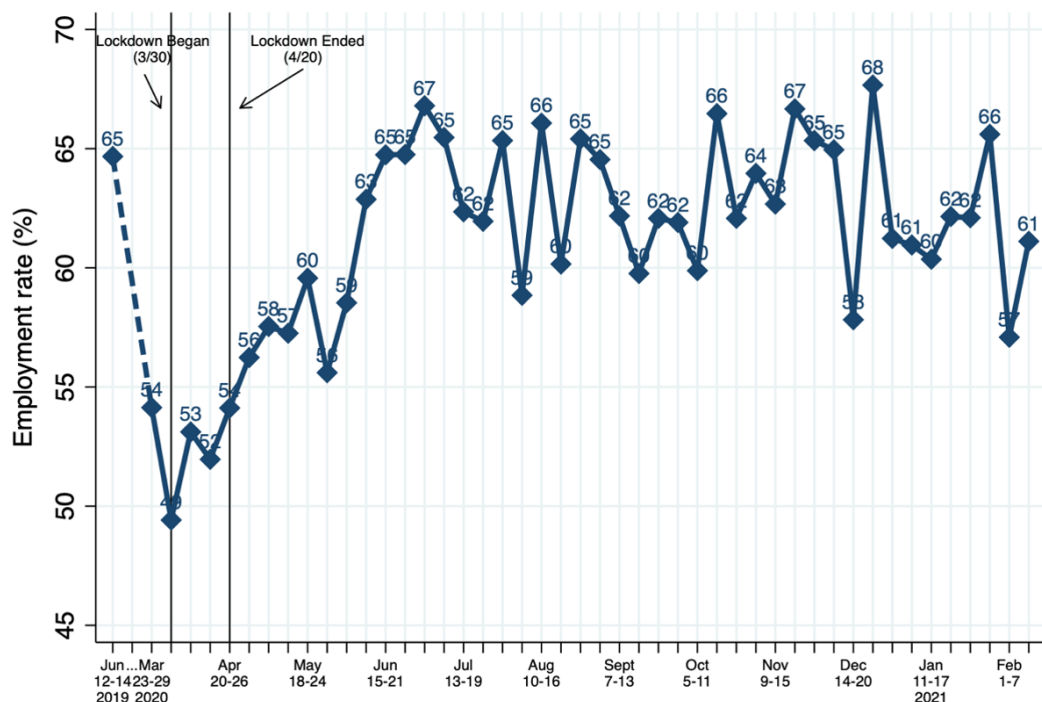
Key research findings

Sharp decline in employment statistics during the lockdown and slow recovery.
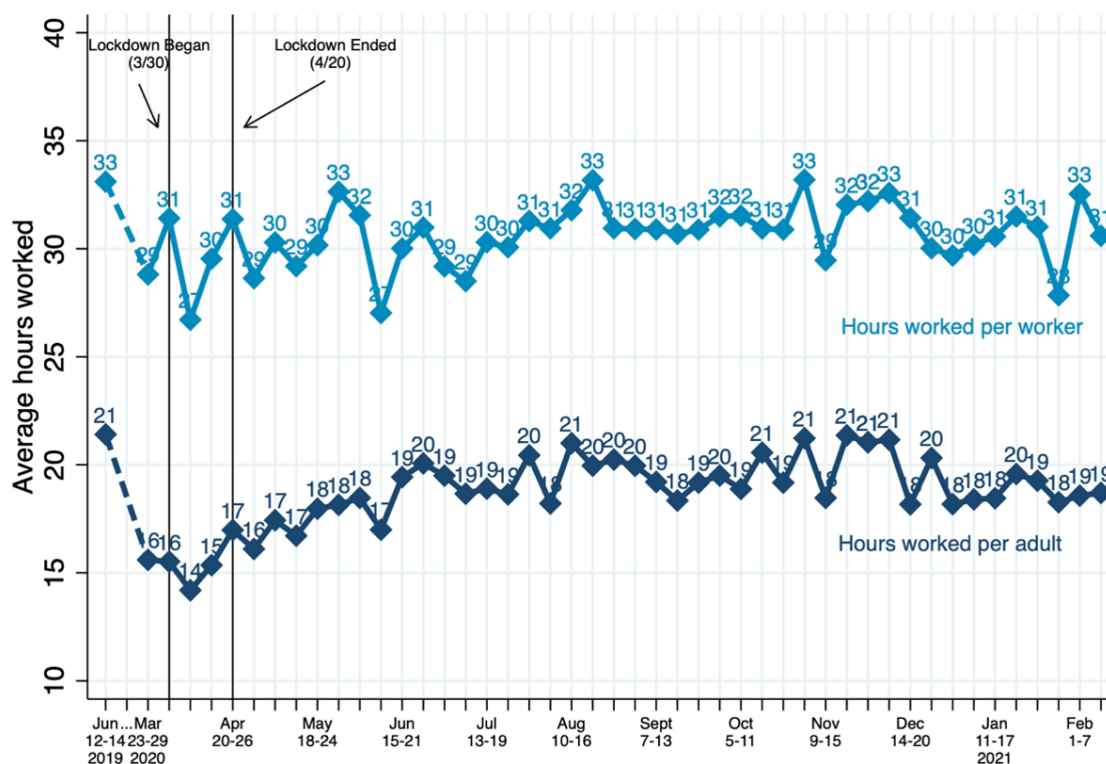
Figure 1 and 2 show the time series of urban labour market statistics. We calculated three labour market statistics: employment rate, average hours worked per worker, and average hours worked per adult. Employment rate is defined as the %age of survey respondents reporting that they worked for pay or profit in the last 7 days. Average hours worked per worker is the average of reported hours worked among those working at least one hour in the past 7 days. Average hours worked per adult is the average of reported hours from all respondents, including those working zero hours.

We classify the movements in the urban labour market statistics into the following three stages: anticipation, lockdown, and recovery. It seems that the labour market was anticipating the lockdown restriction and reacting prior to the implementation. Although the lockdown took its effect on 30 March 2020, the data shows that both employment rate and hours worked per adults were already declining well before it. Once implemented, lockdown successfully suppressed commercial activities. Employment and hours worked per adult both declined by 25% in the first week of the lockdown and stayed at a lower level for the entire three-week period of the lockdown. Finally, once the lockdown was lifted on 20 April, the indicators started to climb back to their previous levels and fully recovered eventually. However, it took around two months for both employment rate and hours worked to recover to their previous levels and stabilise afterwards.

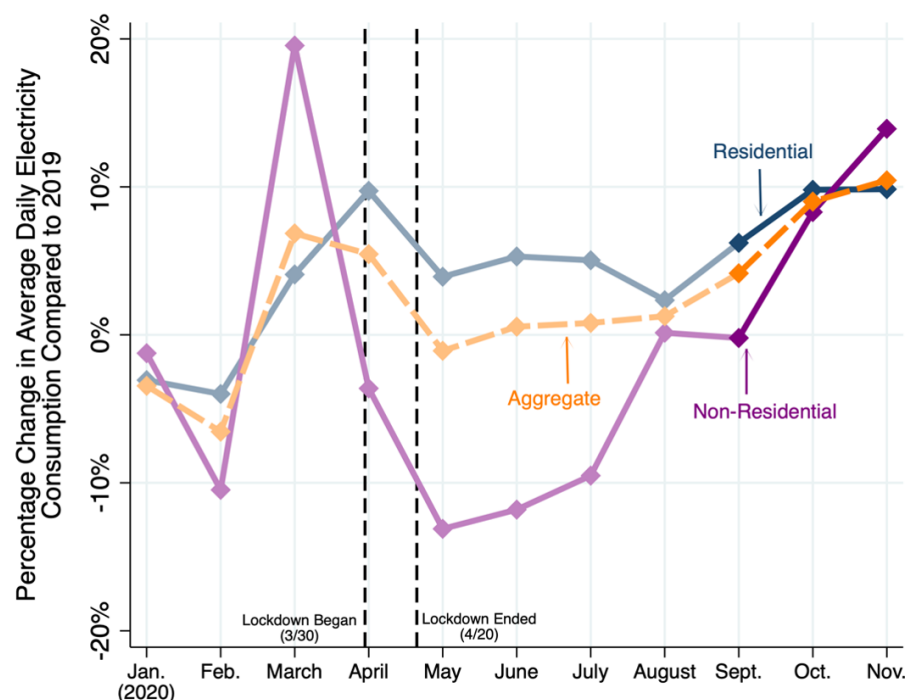Figure 1: Employment rate in Accra and Kumasi

Figure 2: Average Hours worked in Accra and Kumasi

Large drop in non-residential electricity consumption, partially offset by an increase in residential electricity consumption.

As shown in Figure 3, Ghana's nonresidential electricity consumption dropped sharply after the lockdown as commercial activities froze up. Compared to the same month in 2019, nonresidential electricity usage was lower by 3.9% in April and 12.7% in May. What's notable is a large increase in residential electricity consumption under the lockdown. During April and May, residential electricity usage was above the past year's level by 10.4% and 4.9%, respectively. As a result, Ghana's aggregate electricity consumption in the second quarter actually increased by 2.2% compared to 2019.

Figure 3: Year-to-year change in monthly electricity consumption: Ghana '20

Electricity subsidy programme significantly raised residential electricity usage, especially among poor households.

Providing electricity at a cheaper price was one of the major policy responses that the Government of Ghana undertook. In early April 2020, the Government announced an electricity subsidy programme, providing free electricity for three months to "lifeline consumers", who consumed less than 50 kWh in the month of March. Households that consumed more than the lifeline amount were promised a 50% reduction in the cost of electricity over the same time period. On 23 July 2020, an extension of the electricity relief programme was announced under the government's Ghana Coronavirus Alleviation & Revitalisation of Enterprises Support (CARES) Obaatanpa Programme. The extended programme was to retain free electricity for all lifeline consumers for the rest of the year but removed the 50% absorption of electricity fee for the non-lifeline consumers.

Figure 4: Average daily electricity consumption by residential lifeline and non-lifeline consumers in Ghana, Jan-Nov 2020
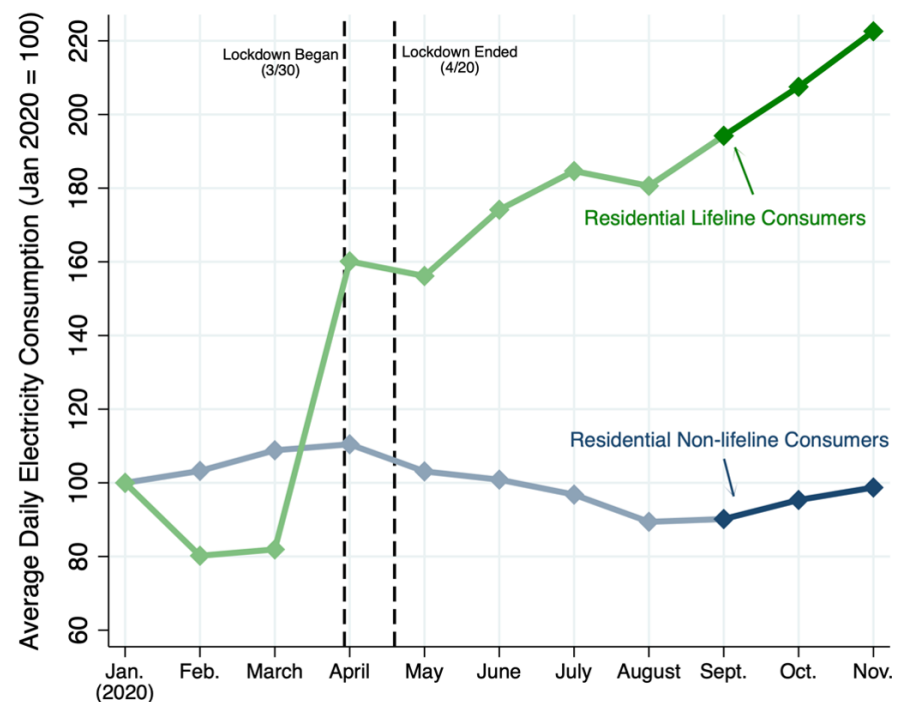
Figure 4 shows the time series of residential electricity consumption, separately for lifeline and non-lifeline consumers. Two findings are worthwhile to mention. First, the time series pattern highlights profound impact of the initial electricity subsidy programme on the residential electricity consumption of lifeline consumers. After the initial announcement of the programme in March, residential electricity consumption from the lifeline consumers nearly doubled in April and stayed at the higher level for a prolonged period of time. Consumption from non-lifeline consumers increased as well, but not as dramatically. Second, the patterns after July indicate that there could have been a negative impact of the termination of the subsidy programme for the non-lifeline consumers, although in a small magnitude. While the electricity consumption from lifeline consumers continued to increase throughout the year, those from the non-lifeline consumers decreased to below the January 2020 level in August and slowly recovered.

Policy recommendations

- Our high-frequency employment survey data are proven to be reflecting the economic situation of Ghana accurately. High-frequency survey data as a supplementary source for policy guidance could be useful, especially during a time when frequent policy adjustments are necessary.

- Subsidies for essential goods, such as residential electricity, could be an effective way to distribute funds to people during crisis. The large increase in residential electricity usage among the lifeline consumers indicate that the subsidy programme was successfully reaching those most in need. The lowered cost of residential electricity might have reduced in-person contacts outside of homes and contributed to mitigation of the virus' spread. Nevertheless, further research is needed to investigate whether there were any unintended adverse effects of the subsidy programme, such as crowding out industrial electricity usage.