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# Is there an urban wage premium in Rwanda?



- In brief:**
- Rwanda has prioritised urbanisation as a major driver of growth. Our research uses high quality household data to examine whether similar individuals earn and consume more in Rwanda's cities than would do in its rural areas.
  - We find that nominal urban wages and consumption are larger for urban areas than for rural areas, and larger for bigger cities than for smaller cities.
  - Contrary to evidence for Uganda, Tanzania, and Nigeria, we find an urban wage and consumption premium for women.
  - Including unwaged working-age migrants in the sample reverses the urban wage premium – except for men in Kigali in the 2017 household survey – but not the urban consumption premium.
  - The extent to which migration to urban areas increases wages at a national level depends critically on continued urban job creation.
  - Our evidence suggests that investments in developing Kigali could increase productivity and reduce poverty the most. However, this must be weighed against the political, spatial justice, and social cohesion-related benefits of investments in secondary cities.

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## Background

The influential report “Future Drivers of Growth” (Government of Rwanda and World Bank, 2020) considers urbanisation to be an important source of economic growth that Rwanda should seek to maximise through well-managed urbanisation. Rwanda recognises the importance of urbanisation to overall economic growth and has a target of a 70% urbanisation rate by 2050 according to Vision 2050, starting from a current base of 18.5% according to Rwanda’s fifth household survey (EICV 5). The Government of Rwanda has a National Urbanisation Policy (2015), a strategy to develop both Kigali and the suite of secondary cities and satellite cities, and a division dedicated to urbanisation in the Ministry of Infrastructure.

In theory, urbanisation can indeed be an important driver of economic growth – as countries increase their urbanisation rate, they tend to get richer. A growing literature has found that urban wages in developing countries are consistently higher than rural wages for like individuals - a phenomenon known as the “urban wage premium”. It has also found that larger cities tend to be more productive. Thus, having a higher percentage of the population in cities is in turn likely to reduce poverty and increase incomes and productivity. However, it is not inevitable that this would be the case for all African cities. Page et al. (2020) document a range of challenges that many African cities face that may harm productivity: they tend to be spatially fragmented and have poor levels of accessibility, high costs relative to their level of development, and slow industrial growth relative to cities on other continents.

We wrote a paper, “Is there an urban wage premium in Rwanda” (Bower et al. 2021)<sup>1</sup> that examines urban-rural labour productivity differentials in Rwanda, as well as differences in nominal consumption levels. We ask: do similar individuals earn and consume more in Rwanda’s cities than they do in its rural areas, and how does this fit into the international evidence on how cities increase productivity? Our paper uses household data from Rwanda during the period 2011 to 2017.

We find evidence that confirms the importance of the urbanisation process for productivity and wage growth in Rwanda, and our findings have some interesting nuances. The paper has implications for how, and where, the country seeks to harness urbanisation to drive growth through urban investments and raises further questions about the dynamics of resource transfer around rural-urban migration.

## The economic significance of an urban wage premium

Almost all countries, especially developing countries, have higher wages in urban areas than in rural areas (Bryan et al., 2019). This implies that urban areas are generally more productive than rural areas. There are two possible reasons for this. First, workers with higher productivity – perhaps stemming from higher education or ability - may leave rural areas and go to cities either because they are attracted to the greater amenities that cities offer, or because of greater demand for their skills; this is known as “spatial sorting” in the literature Combes et al. (2008). This has the implication that larger cities will not make workers, or the country, more productive. Second, cities may be inherently more productive places that benefit from agglomeration economies. There are a large number of theories about what might drive these agglomeration economies; a seminal paper by Duranton and Puga (2004) splits these theories into three categories: the larger scale of cities enables sharing of indivisible inputs often with high fixed costs and sharing of gains from specialisation and variety; cities enable better matching of workers to firms, or firms to firms; and cities facilitate learning, through knowledge generation, diffusion and accumulation.

To separate the effect of spatial sorting from the effect of agglomeration economies, we need to take

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<sup>1</sup> Authors listed alphabetically; they are Bower, J., Gupta, S., & Menon, M.

into account (control for) the characteristics of workers. If workers with equal ability, education and other socioeconomic characteristics earn more in urban areas than non-urban areas, we can conclude that cities are in fact inherently more productive. These productivity-affecting characteristics can be split into observable characteristics that can be controlled for in a dataset, such as gender, years of education, age and other factors, and unobservable characteristics – in particular, ability and perhaps health.

Whilst we have three rounds of cross-sectional household data at the individual level in Rwanda, we do not have access to data on which individuals moved from rural to urban areas, so our analysis is confined to controlling for observable characteristics. However, we do attempt to find proxies that enable us to control for ability.

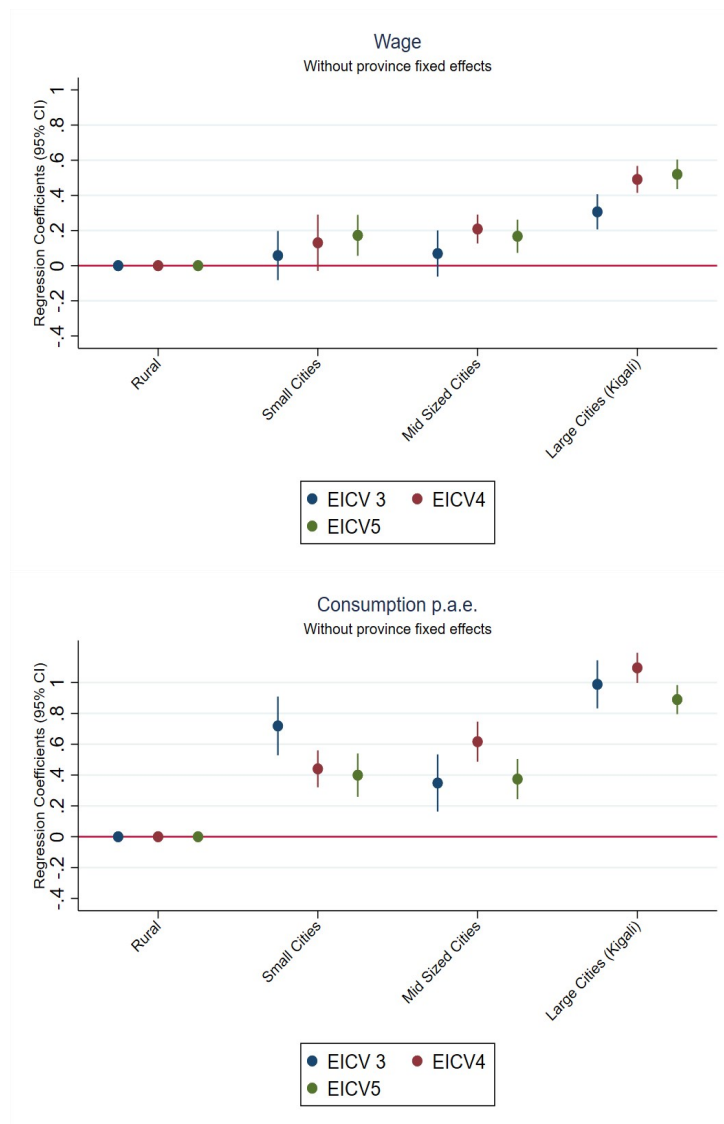
A final important question is whether cities increase real wages and thus have welfare and poverty-reducing benefits for those who migrate. Glaeser and Mare (2001) show that economic theory states that real wages should be significantly higher in cities in which spatial sorting plays a role, but not where agglomeration economies inherent to cities are the driving force, even if the nominal wage premium is higher (the latter still means that cities are more productive). Unfortunately, we are unable to calculate real wage differences for rural and urban areas because of the lack of a price index that is capable of comparing urban and rural prices. Our analysis is thus limited to analysis of nominal urban wage premium.

Understanding exactly what mechanism makes cities more productive would be useful to producing policy implications. However, the effects of different mechanisms behind agglomeration economies (such as sharing, matching, and learning) often look the same in terms of increasing urban wages, and thus the causes of these higher wages are difficult to empirically identify and separate (Duranton and Puga, 2004). However, one interesting mechanism we are able to test in this paper is whether cities increase rural-urban migrants' productivity over time and hence foster learning – one of Duranton and Puga's three mechanisms of agglomeration economies; our results are described below.

## Results

### 1. Urban wages and consumption are larger for bigger cities in Rwanda and have risen over time, when all employed people are included

Figure 1: Urban wage premium and consumption premiums by city size in Rwanda



Source: Bower, Gupta & Menon (2021). “EICV 3” represents the result from 2011 household survey data, “EICV 4” is from 2014 and “EICV 5” is from 2017

We find that both nominal wages and nominal consumption per adult equivalent are higher in urban areas; this relationship is much stronger for Rwanda than for developed countries. In particular, for individuals with similar characteristics, wages are between 31% and 52% higher in Kigali than Rwanda’s rural areas,<sup>2</sup> and 13% to 21% higher in Rwanda’s small and mid-sized cities (in EICV 4 and 5; it is lower in EICV 3) as shown in Figure 1. This finding is in line with the correlation between wages and city size found in the literature. We also find that the urban wage premium has risen over time for Kigali, from

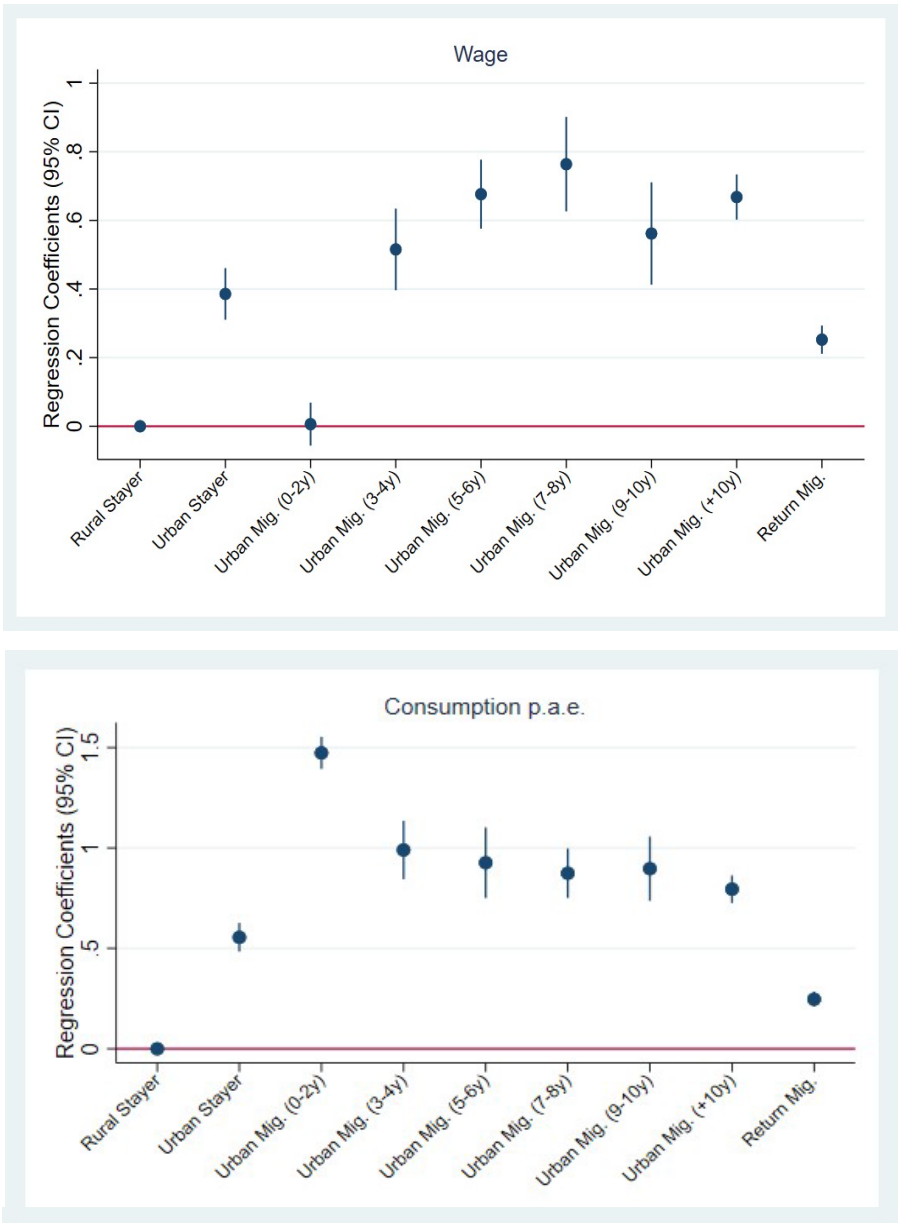
<sup>2</sup> This is an approximation from log points to percentage.

31% in 2011 to 52% in 2017; it has also strengthened for small and mid-sized cities. The urban premium for consumption per adult equivalent is even more striking: 89% to 110% higher for Kigali and 35% to 72% higher for secondary cities, although its trend over time is less clear.<sup>3</sup>

However, the urban premiums for both wages and consumption drop significantly in Kigali when we control for the average level in the same province, while they maintain a similar level in secondary cities. This implies that the large Kigali premium is actually a province-level premium, which means that the wage and consumption-increasing effects of urban Kigali also spread to the rural parts of the province.

2. Spending more time in the city increases wages but not consumption; this implies that learning increase wages over time; these wage increases over time are correlated with computer literacy over time

Figure 2: Urban wage and consumption premiums by time in urban areas in Rwanda



We then examine the urban wage premium based on duration in the city, and find that urban wages are

<sup>3</sup> Even if urban consumption levels remain constant over time, an increasing proportion of people living in urban areas has still contributed to an increase in average consumption and reduction in poverty nationally

similar to rural wages for the first two years, but increase greatly over time until migrants have been in the city for 7-8 years. This can be interpreted as a learning effect from being in cities and supports a central hypothesis of Glaeser and Mare (2001), but in a developing country context. We also found that (self-reported) computer literacy, but not the stated ability to do a written calculation, increases with duration in the city. Thus, computer literacy may be a “learning” channel through which urban migrants progressively obtain an urban wage premium, but other urban learning factors may be important.<sup>4</sup> However, we do not find that consumption per adult equivalent increases with urban experience, which could be the case for a number of reasons; this topic warrants further research. Return urban-rural migrants also earn more even after controlling for education, so appear to retain the benefits of their experience in the city.

### **3. Including the unwaged in the sample reverses the urban wage premium but not the urban consumption premium, except for men in Kigali in the latest data**

Our main sample includes only those who have worked at least an hour in a week.<sup>5</sup> We then include those who receive no wage in the sample; these people comprise an average of 5% of the urban population for all three household surveys, compared to a rural average of 1%. We find that the urban wage premium turns negative and significant, except for men in urban Kigali in 2017 who retain a positive and significant urban wage premium. However, our findings on the urban consumption premium hold just as strongly as before, showing that even when the unemployed or unwaged are included, a move to cities significantly increases consumption.

The findings on wages are consistent with the finding that many migrants try to enter cities, but fail to find sufficient employment and return home (Bundervoet et al., 2017). It is not clear from our results whether this increase is driven simply by the increased cost of moving to and living in a city, or could signify that cities reduce poverty. The findings on wages and consumption together imply that those who remain in the city must undergo a period of “investment” in which they earn low wages and must therefore be supported in a household with consumption levels high enough to sustain them, but their wages generally increase over time. Our findings point to a need for further research on the pattern of resource transfers around the rural urban migration process.

### **4. Given currently available data it is impossible to measure the real wage premium; this underlines the need for a price index that compares urban and rural areas**

One important question is whether Rwandan cities increase real wages and thus have welfare and poverty-reducing benefits for those who migrate. Does the urban wage and consumption premium that we find, also signify an increase in real wages and real consumption, and therefore, welfare? Do cities reduce poverty? Unfortunately, we are unable to answer these questions in our data, which are purely nominal. Whilst Rwanda has a national, urban, rural and province-specific price index, to our knowledge there is not currently a way to directly compare the urban and rural price indices, and thus it is impossible to estimate real wage differences between urban and rural areas. This would be useful if it was possible.

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<sup>4</sup> Our tests for the urban wage premium control for skills and education, and also remove those controls, and find that the urban wage premium is robust to these controls, but is slightly higher without them, implying that workers acquire more education in urban areas and then benefit from it in their wages

<sup>5</sup> Jones et al (2017) include those who work at least twenty hours per week – this makes our conclusion about the urban wage premium stronger than theirs

## **5. Unlike for some other African countries, Rwanda has an urban wage premium for women, and an urban consumption premium that may be larger for women**

On gender, we find, unlike Jones et al. (2017) for Uganda, Tanzania and Nigeria, that the urban wage premium is statistically positive and significant for women as well as men, although it is 32% to 50% lower for women than for men in Kigali. However, where the unwaged are included, it is always negative and significant for women – but still positive and significant for unwaged men in Kigali for EICV 5 (2017). The urban consumption premium, however, is higher for women than for men whether the unwaged are included or not.

## **Policy reflections**

### **1. The extent to which migration to urban areas continues to increase average national wages is critically dependent on continued urban job creation**

Taken together, these findings suggest that migration to Kigali, and investments that promote it, will continue to increase nominal wages and consumption of migrants provided that jobs can be created fast enough. It is certainly the case that the expansion of Kigali has made its rural periphery much richer. Our evidence shows also that secondary cities do enhance the productivity of rural migrants who can get work too, but to a lesser extent than Kigali.

### **2. Our evidence suggests that investments in developing Kigali would probably increase productivity and reduce poverty the most**

To maximise growth and poverty alleviation, urban policies and investments should seek to enhance the productivity-enhancing properties of all urban areas, but might be weighted towards Kigali for maximum economic benefit. Moreover, given the significance of urban unemployment, and the learning benefits that urban jobs - or at least continued residence in a city - appear to confer, any urban policies and investments should seek to incorporate a strong job creation and retention objective in ways that can include rural-urban migrants.

### **3. However, a Kigali focus has to be weighed against the political, spatial justice and social cohesion-related benefits of investments in secondary cities**

Our evidence shows that Kigali gives the highest returns, but that investments in secondary cities are also worthwhile. Social return on public investment is therefore highest in Kigali. However, maximising economic growth and poverty reduction is not the only policy goal of value: the Government of Rwanda also has serious political will to develop the country's secondary cities. Whilst Kigali is the national engine of growth, Rwanda has a Spatial Development Framework incorporating secondary cities, a National Land Use and Development Master Plan for 2020-2050 that implies very serious investments in secondary cities, and other initiatives to promote secondary cities; it is also asking donors such as the World Bank and Enabel to support infrastructure development in these cities. A key question is how to balance these priorities and the need to avoid the potential costs of neglecting the economic "periphery", with the need to ensure social return on public investment, which may be higher in Kigali, as well as the need to not waste public resources and escalate government debt.

Another key question is how to increase the return on public investment in secondary cities and lead to job creation; part of the answer to this will be to make these investments data-driven and tailored to the



economic contexts of these secondary cities. what the returns to urban investments in secondary cities will be, and how to not waste resources but to tailor them to the economic contexts of these cities.

#### **4. A price index that directly compares rural and urban areas is needed to get insight into whether rural-urban migrants are better off in cities in welfare terms**

As noted, we were unable to calculate the welfare impact of moving to a city – or the urban real wage (and consumption) premium – due to data constraints. It would be useful to establish a price index or indices that would enable direct comparison of urban and rural price levels, so that the impact of higher costs in cities could be captured. This would enable insight into the extent to which cities in Rwanda increase real incomes, consumption and welfare and reduce poverty. The release of EICV 6 and later editions, coupled with the release of a price index that enables comparison of urban and rural price levels, provide an opportunity for ongoing tracking of the urban wage premium, both in its nominal and real forms. Ideally the Government could track this in-house, using or building on the regression specification in Bower et al (2020).

### **Useful avenues for further research**

Further opportunities for useful research may be as follows: i) to examine the rural-urban migration process and provide a better picture of resource transfers between migrants who travel from rural to urban areas; ii) to examine the nature of the learning gains of rural-urban migrants in cities – but also those who return to rural areas; iii) to study whether, as in Bryan et al. (2014), paying a small stipend to urban migrants would induce economically beneficial migration by removing financial barriers to the migration of high ability individuals who would benefit from urbanisation; iv) further analysis of the way in which urban economic benefits spread to rural areas.

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