

# Subsistence Wage Employment: Labor Market Dynamics in Urban Ghana

Peter Deffebach

*Boston University*

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## Abstract

The share of workers in wage employment is low in developing countries. Recent research argues high exit rates out of wage employment, rather than low entry rates, drive low levels of wage work overall. I conduct a panel survey of job-seekers and a survey of firms in urban Ghana to explore the causes of elevated exit rates out of wage work in low-income labor markets. I document that while entry rates into employment are equal between the US and Ghana, high exit rates mean Ghanaian job-seekers are only half as likely to be in wage work in the long run. In Ghana, I find exits are dominated by quits while layoffs play a negligible role, in strong contrast with the USA, where layoffs dominate and quits are infrequent. I examine, and reject, informational frictions as a key driver of high quit rates and show self-employment serves at most a moderate role. I show quits are most common among individuals who at baseline are temporarily without flows of non-wage income. To quantify the contribution of changing non-wage income in driving quitting behavior, I build a model of job search in which workers face uncertain non-wage income. In the model, workers accept and quit jobs to cope with temporary losses in income. When calibrated to match the experience of job-seekers in both the USA and Ghana, my model attributes 17% of the difference in exit rates to this mechanism. I conclude in poor countries, wage jobs can act as insurance against risk outside the wage sector.

**JEL Codes:** J63, E24, O17

**Keywords:** Labor market flows, Self-employment, Ghana

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# 1 Introduction

Labor markets in developing countries are characterized by low rates of wage employment, and the cause of such poor labor market performance is a central question of development economics. Recently [Donovan, Lu and Schoellman \(2020\)](#) collected panel data from countries across the development spectrum and showed elevated exit rates out of wage work rather, than low entry rates into wage work, drive differences between countries.

Why, then, are rates of exit out of wage employment so high in poor countries? We have no general evidence on whether exits are due to voluntary quits or involuntary layoffs, nor the causes of either type of exit specifically. [Blattman, Dercon and Franklin \(2019\)](#) and [Boudreau, Heath and McCormick \(2021\)](#), show workers in factory jobs frequently quit jobs due to poor working conditions. Yet these jobs may not reflect the average labor market experience in a poor country, where low-skilled service work dominates over factory employment ([Bandiera, Bassi, Burgess, Rasul, Sulaiman and Vitali, 2021](#)). [Rasul \(2010\)](#) and [Mckenzie \(2017\)](#) show firms are frequently frustrated with the quality of their workers, indicating exits might be driven firm, rather than worker, initiated.

To understand the causes of high exit rates out of wage work, I conduct a new in-depth panel survey of urban job-seekers, along with a survey of firms, in Accra Ghana. My paper documents the importance of exits, rather than entry, in a new setting. More importantly, I document a new fact, that exits are driven by voluntary quits, as opposed to involuntary layoffs, in stark contrast with the USA. I leverage the detailed nature of my survey to argue highly variable income *outside* the wage sector plays a key role in driving quits, and introduce the notion of “subsistence wage employment”, wage work which is taken up only as long as needed to get through hard times. I build a general equilibrium model of unemployment to quantify the importance of this mechanism and show it can explain 17% of the difference in exit rates between the USA and Ghana.

My conclusion that quits, rather than layoffs, drive exits from wage work presents a meaningful break from conventional views of urban labor markets in poor countries. In the classic works of [Lewis \(1954\)](#) and [Harris and Todaro \(1970\)](#), for example, urban job-seekers are confined to an unproductive non-wage sector while queuing for a limited supply of desirable wage jobs. This perspective persists today. [Breza, Kaur and Shamdassani \(2021\)](#) shows workers leave unproductive self-employment as soon as wage jobs are available. I depart in two ways. First, I reinforce the view that labor markets in poor countries are dynamic ([Donovan, Lu and Schoellman, 2020](#)), and show show dynamism

outside the wage sector also drives dynamism inside the wage sector. Second, I show wage work in poor countries is less desirable than previously assumed. Workers may not be “falling off” the job-ladder, but voluntarily lowering themselves away from undesirable jobs. In this way, my results are most consistent with the findings of [Blattman and Dercon \(2018\)](#), who similarly argue factory workers in Ethiopia use wage employment as a safety net while cultivating opportunities in the non-wage sector. I also join [Falco and Haywood \(2009\)](#), who find self-employment is often preferred alternative to wage work in urban Ghana, rather than an occupation of last resort.

To conduct my survey, I recruited individuals looking for wage work, whether currently engaged in employment or not, via online advertising, and conducted two surveys eight months apart. The first painted a detailed portrait of job-seekers’ search strategies, expectations, and outside options, the second assessed labor market outcomes eight months later, documenting wage employment, self-employment, earnings, and more. In between the two rounds of job-seeker surveys, I conducted a separate in-person survey with the hiring managers at formal firms, asking about their experience hiring and retaining workers.

I compare the experience of my jobseekers in Accra with those in the USA by constructing a weighted sample of workers in the Current Population Survey and the Survey of Income and Program Participation. I start by documenting three facts about the difference in labor market flows between the USA and Ghana.

First, I show long-run employment rates among job-seekers without wage work are significantly lower in Ghana relative to the USA and this difference is entirely accounted for by exits out of wage work rather than entry into wage work. Of job-seekers without wage work in Ghana and the USA, nearly everyone in both groups had found *some* wage employment over the next eight months. However in Ghana, half of the workers who attained wage work had subsequently left the jobs they found and were again without wage work eight months later. In the USA, in contrast, workers keep their jobs after finding them and long-run employment rates are high. I show this fact is true using my firm survey as well. Firms in Ghana report significantly higher separation rates relative to firms in the USA.

Second, and in a more significant contribution, I document that the majority of these flows out of wage work were voluntary quits, while only a small portion of transitions out of wage work were due to involuntary layoffs. To my knowledge my study is the first to measure rates of voluntary and involuntary separations in a developing country, despite

these statistics being standard in OECD countries. In the USA, this pattern is reversed. The majority of flows out of wage work are due to involuntary layoffs, and only a small portion is due to quits. My firm survey also confirms this finding: Quits comprise a higher share of separations in Ghana compared to the USA.

Third, I show quits and layoffs are significantly different from one another in Ghana, but in the USA the two forms of exit are similar. Documenting this distinction is important since conventional searching and matching models feature no conceptual distinction between quits and layoffs: Workers and firms jointly choose to separate when joint surplus is low. My evidence suggests this assumption may be reasonable in the USA, but may not hold in my setting. Workers in Ghana face income gains from quits and income losses from layoffs, while in the USA, both quitters and non-quitters experience approximately similar losses in income. In Ghana, jobs ending in a quit pay significantly less than jobs ending in a layoff, while this difference is less stark in the USA.

Having established the role of employment exit, primarily driven by quits, as a cause of low long-run employment rates, I next explore the cause of high quits by examining heterogeneity within my sample. I have three main findings.

First, information frictions do not appear to cause employment exit, voluntary or otherwise. This stands in contrast with a large literature arguing information drives higher labor market churn in poor countries ([Donovan, Lu and Schoellman, 2020](#); [Poschke, 2022](#); [Carranza and McKenzie, 2023](#)), as well as rich ones ([Mukoyama, 2014](#); [Menzio, Telyukova and Visschers, 2015](#); [Brugemann and Moscarini, 2010](#)). My job-seeker survey gives a detailed portrayal of the information sources available to jobseekers and how much they know about likely future jobs, yet I find no correlation between any measures of information levels with employment entry or exit rates.

Second, I show self-employment plays at most a moderate role in driving quits and layoffs. Existing research on job search emphasizes the role of self-employment in driving low wage-employment rates ([Feng, Lagakos and Rauch, 2021](#); [Vollrath, 2009](#); [Herreño and Ocampo, 2023](#); [Bosch and Maloney, 2010](#)). I find that among both quitters and non-quitters, less than half of job-seekers who experienced an employment exit are engaged in self-employment. Financial support from friends and family mediate the difference between quits and layoffs just as much as self-employment.

Third, I document that quits are elevated among job-seekers experiencing a temporary lapse in income at baseline. I use this to argue that variable income streams outside the wage sector play a key role in driving entry and exit into the wage sector. Specifically, I

show job-seekers forced to rely on savings to finance their consumption, as opposed to a stream of income from family support or self-employment, were more likely to experience a separation and are more likely to have quit, conditional on separation. I propose wage work in my context operates as an insurance device against bad times, but is often not more valuable than self employment or non-employment. When faced with the loss of an income stream job-seekers take undesirable jobs before quitting them as circumstances improve.

Finally, I build a general equilibrium structural model of unemployment in the spirit of [Mortensen and Pissarides \(1994\)](#) and [Diamond \(1982\)](#) as a tool to quantify how much variation in non-wage income accounts for differences in exit rates between the USA and Ghana. In the model, workers' non-wage income moves across time. Jobs are heterogeneous decide which job offers to accept and reject based on their current level of non-wage income. Workers accept jobs when their earnings are temporarily low, and quit them when their non-wage income opportunities improve. After matching moments related to employment entry and exit, along with differences between quits and layoffs, I conclude 20 percent of difference in exit rates between the USA and Ghana can be attributed to this mechanism.

## 1.1 Contribution

My project first explores the drivers of low rates of wage work in Sub-Saharan Africa by distinguishing between employment entry and employment exit. I conclude exit, rather than entry, drive low rates of employment in the medium run. In this way my project builds most closely on [Donovan, Lu and Schoellman \(2020\)](#), which compiles labor market surveys from around the world and documents elevated rates of entry as well as exit in less-developed countries. Relative to this work, I trade off breadth for depth, by studying a single context, Accra, Ghana, and painting a more complete picture among my selected sample. In particular, I am able to examine the causes of exit by distinguishing between quits and layoffs and test specific hypothesis related to information frictions and the role non-wage income plays in labor market dynamics. Additionally, [Donovan, Lu and Schoellman \(2020\)](#) says little about labor market flows in Sub-Saharan Africa.<sup>1</sup> In Sub-Saharan Africa, researchers have focused almost exclusively on the margin of entry, where they have tested an array of job search assistance programs (For a review, see [Carranza and McKenzie \(2023\)](#)), with little focus on the role of exit.

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<sup>1</sup>The data set of [Donovan, Lu and Schoellman \(2020\)](#) includes only Rwanda and only in secondary analyses

My findings that quits dominate layoffs as a cause of employment exit is consistent with [Blattman, Dercon and Franklin \(2019\)](#) and [Abebe, Buehren and Goldstein \(2024\)](#), studying factories in Ethiopia, and [Boudreau, Heath and McCormick \(2021\)](#) studying factories in Bangladesh. Relative to this work, I focus on workers in a broader set of jobs. I find quit rates are high across all occupations, including high-skilled services located in offices, showing physical discomfort alone cannot explain high differences in quit rates in poor countries. [Groh, McKenzie, Shammout and Vishwanath \(2015\)](#) documents high quit rates among university graduates in Jordan who are given non-factory jobs. Relative to this work, and evidence from experimental evidence more broadly, I focus on “naturally occurring” matches. It is perhaps not surprising to see high levels of quits from matches which would not have existed without researcher intervention.

My project takes seriously the distinction between quits and layoffs, and documents that quits and layoffs in Ghana are *more different* than quits and layoffs in the USA. Workhorse models of job-search do not distinguish between quits and layoffs, with employers and workers always mutually agreeing to part ways ([McLaughlin, 1991](#)). I show this assumption might be justified in the USA, but needs greater attention in developing countries. In addition, existing work on labor market flows in the USA often treats quits as synonymous with job-to-job flows, and ignores voluntary flows out of employment. My work joins [Bagga, Mann, Şahin and Violante \(2023\)](#) and [Blanco, Drenik, Moser and Zaratiegui \(2024\)](#) which both feature quits to non-employment due to changes in a worker’s outside option, with the former featuring shocks to a worker’s preference for the non-wage amenities of jobs, and the latter featuring changes to a worker’s human capital, prompting them to quit and search for higher-paying jobs.

By documenting employment flows from the firm’s perspective, I also build on a small literature studying labor market dynamics from the firm’s perspective in developing countries. Research has studied barriers firms face in recruiting workers ([Caria and Orkin, 2024](#)), but worker retention has received comparatively little focus. My work complements [Kerr \(2018\)](#) and [Shiferaw and Söderbom \(2021\)](#) in documenting how firms face significantly higher rates of worker separation in Sub-Saharan Africa relative to the USA. By distinguishing between quits and layoffs, I present the first dis-aggregation of labor market flows from a developing country in the style of the USA’s Job Openings and Labor Turnover Survey (JOLTS).

I examine, and reject, information frictions as a cause of employment exits in my setting. Recent years have seen a growth of randomized experiments aiming to improve job-finding and retention by improving mobility and reducing information frictions in



Sub-Saharan Africa.<sup>2</sup> In particular, [Poschke \(2022\)](#) builds a structural model of job search and argues that noisily-observed match quality is the primary driver of higher employment exits in poor countries documented by [Donovan, Lu and Schoellman \(2020\)](#).<sup>3</sup> While this mechanism may be salient in other contexts, the fact that information frictions carry little explanatory power in my setting should prompt policymakers and researchers to focus on alternative methods to reduce job destruction.

Finally, the structural portion of my project builds on a large tradition of two-sector labor market models in developing settings ([Fields, 2010](#)). I build on this literature by emphasizing two forces. First, I emphasize the dynamics of non-wage income and quantitatively assess its importance. Second, I emphasize the role transfers from family and friends play worker's non-wage income in addition to self employment earnings. The core mechanism of my model aligns most closely with that of [Attanasio, Sánchez-Marcos and Low \(2005\)](#), which argues women join the labor force in response to negative household shocks, and [Falco \(2014\)](#), which emphasizes the riskiness of the informal sector in driving labor market choices, but does not address employment exit.

## 2 Data

### 2.1 Original Survey in Accra, Ghana

#### 2.1.1 Job-seeker Survey

In June 2022, I recruited 465 job-seekers for a panel survey through a Facebook, WhatsApp, and flyer campaign. To participate in the survey, respondents must have been actively searching for a job, but could be employed or unemployed, with no other requirements. The survey was conducted by phone and consisted two waves: Baseline, then endline 8 months later.

The baseline survey focused on job search strategies, expectations about future employment, and job-seeker's earnings potential if unable to find wage work. Importantly, the baseline survey painted a complete picture of information sources, i.e. how job-seekers

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<sup>2</sup>[Abel, Burger and Piraino \(2020\)](#), and [Carranza, Garlick, Orkin and Rankin \(2020\)](#), [Bassi and Nansamba \(2020\)](#) alleviate information frictions. [Franklin \(2021\)](#) and [Banerjee and Sequeira \(2021\)](#) alleviates transportation frictions. [Abebe, Caria, Fafchamps, Falco, Franklin and Quinn \(2020\)](#) addresses both. For more discussion, see [Carranza and McKenzie \(2023\)](#)

<sup>3</sup>Information frictions are also commonly used to explain separations in the USA, beginning with [Jovanovic \(1979\)](#). See [Mercan \(2017\)](#) and [Pries and Rogerson \(2022\)](#), which study the decline in separations across time, as two relevant examples.

learn about jobs, wages, and working conditions, as well as the full structure of their social network helping them search for jobs. I elicited expectations about future work using questions Survey of Consumer Expectations (Mueller, Spinnewijn and Topa, 2020). The endline survey assessed outcomes eight months later as well as the labor market experience of workers over the intervening period. I measure employment status, wage and non-wage income, as well as workplace amenities.<sup>4</sup>

How does my sample compare with jobseekers at large in urban Ghana? To answer this, I compare my sample with job-seekers in Ghana using the 2015 Labor Force Survey. Fortunately, the 2015 Labor Force Survey is unique in that it measures on-the-job search, which enables a precise comparison with my sample, which includes many job-seekers currently self-employed or working for someone else. Summary statistics of respondents at baseline are presented in Table 1. My sample is a selected group of urban job-seekers. Respondents are overwhelmingly male (83%), likely due to my online recruitment method. They are also far more likely to have some higher education relative to the job-seeking population at large (47% vs. 7%). The population is also less likely to be without any work at all (66% vs 81%), yet more likely to be working for someone else (45% vs 13%).

A respondent in my sample is 30 years old on average. All respondents in the sample have some work experience, with a median of 5 years work experience. Being relatively old and experienced, my sample bears little resemblance to recent work studying youth low rates of youth employment and first-time job-seekers in Sub-Saharan Africa (Bandiera, Bassi, Burgess, Rasul, Sulaiman and Vitali, 2021; Abebe, Caria, Fafchamps, Falco, Franklin and Quinn, 2020). Overall, jobseekers in my sample are overwhelmingly experienced, working, and seeking to move up the job-ladder.

While my sample is highly selected relative to the urban job-seeking population at large, it has some benefits relative to existing work. Unlike recent RCTs studying job search, my sampling strategy does not depend on job-seekers' existing relationship with government or non-profit programs.<sup>5</sup> Additionally, I am not focused on any particular employment sector, such as the high exit out of factory jobs documented in Blattman, Dercon and Franklin (2019) and Boudreau, Heath and McCormick (2022).

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<sup>4</sup>Physical amenities are measured in a manner similar to Blattman, Dercon and Franklin (2019). I measure dignity in the workplace using questions from Dube, Naidu and Reich (2022)'s work on the working conditions of Walmart workers in the USA.

<sup>5</sup>Carranza, Garlick, Orkin and Rankin (2020) and Bassi and Nansamba (2020) partnered with local non-profits in South Africa and Uganda, respectively. Abel, Burger and Piraino (2020) and Banerjee and Sequeira (2021) partnered with the national unemployment agency of South Africa. Notably, Abebe, Caria, Fafchamps, Falco, Franklin and Quinn (2020) constructs a representative sample of job-seekers.



Table 1: Characteristics of Job-Seeker Sample

Variable	Job-seeker Survey		2015 Labor Force Survey	
	Mean (1)	Median (2)	Mean (3)	Median (4)
Male	0.83	-	0.51	-
Age	29.2	28	36.9	35
Years of work experience	6.0	5	-	-
Any work experience	1.00	-	-	-
Currently working	0.66	-	0.81	-
Currently working for someone else	0.45	-	0.13	-
Currently exclusively in self employment	0.19	-	0.68	-
Any work in past year	0.95	-	-	-
High school or less education	0.40	-	0.89	-
University of more education	0.47	-	0.07	-
Vocational training in past year	0.21	-	-	-
Years living in Accra	18.14	20	-	-
Any dependents	0.61	-	-	-
Is married	0.20	-	0.62	-
Months so far searching for job	28.0	24	12.3	9
Average monthly income (2022 USD)	108.3	87	-	-
Average wage income (2022 USD)	112.2	87	-	-

### 2.1.2 Firm survey

Between the baseline and endline surveys, I conducted a separate survey of 111 firms. Rather than draw a random sample of firms, I prioritized firms who employed workers in positions my job-seekers hoped to find. For example, many job-seekers desired jobs as an office assistant, so enumerators searched for firms employing office assistants, which lead to an over-sampling of firms in high-skilled services and phone-based retail. Enumerators requested to speak with the individual in charge of hiring new employees, which in practice was the establishment manager. The firm survey sought to understand the job search strategies of firms and their experience hiring and retaining workers. I collected data on the hires, quits, and layoffs in a manner comparable to the Job Opening and Labor Turnover Survey (JOLTS) in the USA.

Table 2 shows summary statistics of surveyed firms. Firms are overwhelmingly domestic rather than multinational. The average firm has 50 employees, and the average manager oversees 20 employees, with the latter being the relevant denominator when assessing hiring and separation rates. All firms are formally registered. Despite attempting to over-sample services-related firms, for only 40% of firms was the last position open a services-

based position, and only 15% required some college or more.

Table 2: Firm Characteristics

Variable	Mean (1)	Median (2)
Wholly domestic	0.83	-
Wholly foreign	0.05	-
Joint enterprise	0.12	-
Employees in firm	50.51	12
Number of employees overseen	18.29	10
Last position was a services position	0.40	-
Last position required some college or more	0.15	-

## 2.2 Comparing Job-Seekers with the USA

To evaluate the experience of job-seekers in my sample, I benchmark outcomes against a constructed sample in the USA. I use two sources of data from the USA. The first source is years 2014-2019 of the Current Population Survey (CPS), which I use to analyze long-run job-finding rates among job-seekers. The second is the 2014-2018 panel of the Survey of Income and Program Participation (SIPP), which I use to measure wage and non-wage monthly income. While the SIPP is a monthly panel which measures transitions in and out of employment, it is not suitable for the measurement of employment flows. The survey under-estimates employment entry and exit rates by a factor of three ([The National Academy of Sciences, 2018](#)).

My sample of job-seekers differs dramatically from the labor force in the USA. To compare job-seekers in the USA with my sample, I conduct the following procedure. First, I restrict the CPS and SIPP samples to only those between the minimum and maximum ages which appear in the Ghana sample (between 18 and 58). Next, I keep only individuals who are unemployed at least some point in the period, since on-the-job search – including of the self-employed – is not measured in SIPP nor CPS. In practice, this means I restrict my Ghanaian analysis of employment entry to the 55% of job-seekers without wage work at baseline when comparing to the USA. As my sample reports almost continuous engagement in both employment and job search, I drop individuals who leave the labor force at any point in the sample period. To address demographic differences such as age, gender, and marital status, I weight individuals in CPS and SIPP according to the entropy balancing method of [Hainmueller \(2017\)](#) such that aggregate means and covariances between demographic variables are the same in both my sample and the sam-

ples of USA workers. My methodology to compare firms between Ghana and the USA is discussed in Appendix D.

## 3 Aggregate Evidence

### 3.1 Employment Entry and Exit

*Aggregate Fact 1: Ghana and the USA feature equally high rates of entry into wage employment. However, Ghana features significantly higher exit rates out of wage employment, such that long-run employment rates are double in the USA compared to Ghana.*

How does the experience of my jobseekers compare with those in the USA? I start by exploring entry and exits rates in and out of the wage sector for each country. Starting with job-seekers without wage work in the my Ghanaian sample, I consider two outcomes: (1) whether a job-seeker found any wage employment at all in the subsequent eight months, (2), whether, at the eight-month mark, jobseekers who had found some employment in the previous eight months were *still* employed in a wage job. In other words, the former outcome measures rate of entry into the wage sector, while the latter outcome measures rate of exit out of the wage sector.

Unfortunately, the CPS does not track employment outcomes over a continuous eight months due to it's eight-months on, eight-months off, four-months on rotation scheme.<sup>6</sup> As a consequence, to compare with my Ghanaian sample, I measure twelve-month equivalents of each variable, then solve for their eight-month counterparts according to a procedure described in Appendix A. In brief, I solve for monthly entry and exit rates which are consistent with the twelve-month outcomes from the CPS, construct a monthly transition matrix between wage work and non-wage work states, and predict worker outcomes over the course of 8 months.<sup>7</sup>

Figure 1 documents the employment outcomes of job-seekers without wage work in the USA and Ghana. The sample of Figure 1 is job-seekers without wage work in the USA and Ghana, and error bars report bootstrapped 95% confidence intervals. In the first bar of Figure 1, I show the proportion of such job-seekers who report working for someone

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<sup>6</sup>Respondents are surveyed monthly January-April, then left alone until the following January, and surveyed each month again through April.

<sup>7</sup>An alternative approach would estimate monthly entry and exit rates directly from the CPS and solve for eight-month outcomes. I do not take this approach, as it over-estimates long-run wage employment entry rates. For instance, projecting monthly transition rates forward 12 months predicts 100% of jobseekers find some work in the next 12 months. In practice, I observe 93% of workers find some work. Comparing 12-month transition rates also aligns more closely with my Ghanaian 8-month panel structure.

else at *any* point in the following eight months. Jobseekers without wage work in the USA and Ghana report roughly equal rates of working for someone else over the next eight months. In Ghana, 78% of job-seekers find wage work in the next eight months. In the USA, this figure is 71%. In other words, the two groups have similar rates of labor entry overall.

In the next two bars of Figure 1, I show the percentage of job-seekers who are working in a wage job *at* the eight-month mark, conditional on finding some employment before hand. At eight months, 86% of job-seekers who found some work beforehand were still working at a wage job. Few workers exited the wage sector after entry. In Ghana, by contrast, conditional on entering the wage sector at some point in the previous eight months, only 51% of job-seekers are still in the wage sector at the eight-month mark. After entry, almost half of job-seekers experienced an exit out of the wage sector.

Appendix Table B.1 compares derived monthly entry and exit rates using the outcomes presented in Figure 1 and re-affirms the importance of exit relative to entry in long-run employment outcomes. The estimated entry rate is 19% in Ghana and 15% in the USA. This difference is small compared to the estimated monthly exit rates. Which are 5% in the USA compared to 28% in Ghana. While entry rates in Ghana are 1.2 times those of the USA, exit rates are 5.7 times those in the USA. Appendix Table B.1 also documents the derived long-run wage employment rates in both the USA and Ghana among the samples studied. In the long run, my sample in the USA will spend 76% of their time in wage employment, as opposed to self-employment or unemployment. In Ghana, by contrast, they will spend only 41% of their time in wage work.<sup>8</sup>

Overall Figure 1 demonstrates that differences in exit rates out of wage work are far more important in driving long-run differences in employment rates than differences in entry rates into wage work. This result consistent with the findings of Donovan, Lu and Schoellman (2020), which likewise underscores the relative importance of exit over entry. In the following section, I move beyond aggregate transition rates and explore the causes of high exit rates, something not addressed in existing literature.

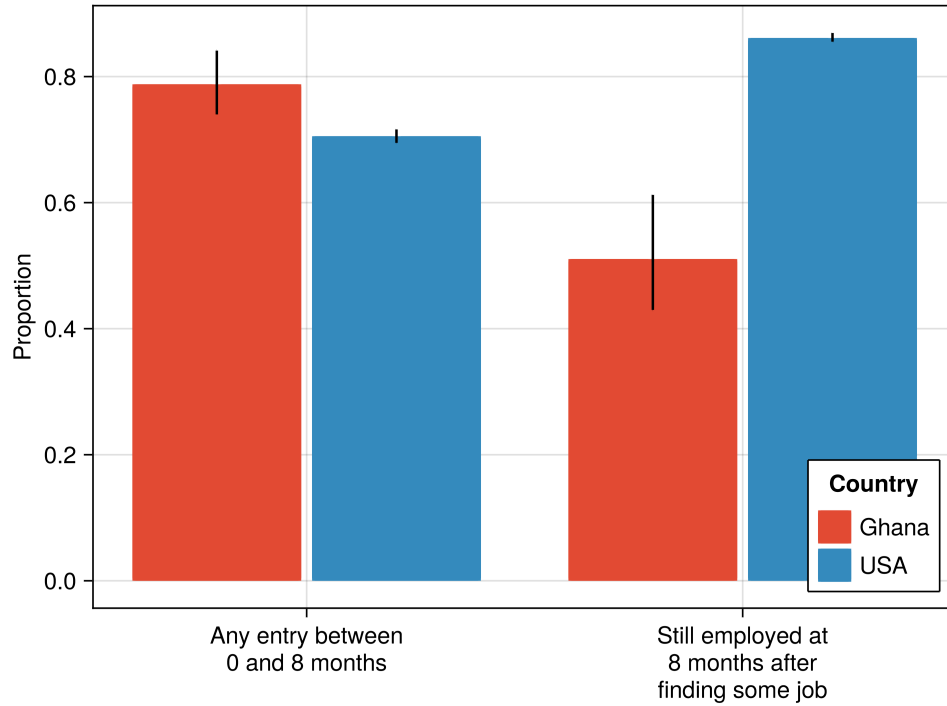
### 3.2 Quits vs Layoffs as Causes of Employment Exit

*Aggregate Fact 2: In Ghana, employment exit mostly occurs through voluntary quits, and only a small proportion of transitions out of wage work is due to involuntary layoffs. In the USA, by*

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<sup>8</sup>Interestingly, 41% is close to the observed share of job-seekers in wage work overall at baseline, which is 45% as reported in Table 1.

Figure 1: Entry and Exit over eight months among job-seekers without wage work



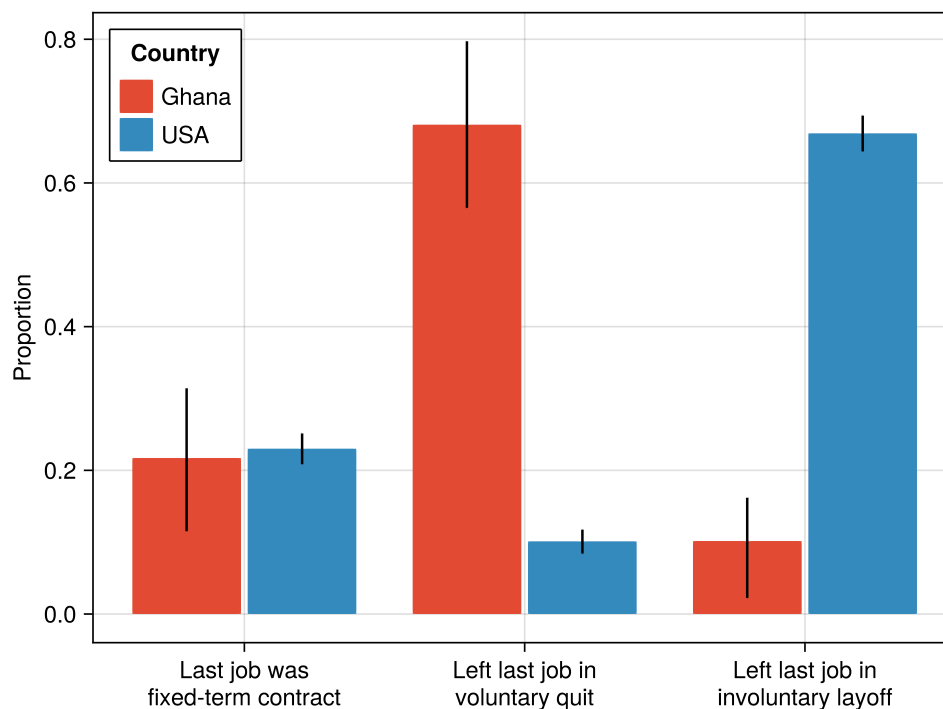
*contrast, the majority of transitions out of wage work are due to involuntary layoffs and only a small portion are due to voluntary quits.*

What are the causes of exits out of the wage sector? To start, I distinguish between three types of exits: voluntary quits, involuntary layoffs, and temporary jobs. Figure 2 starts with the same samples of jobseekers as Figure 1, jobseekers without wage work at baseline in Ghana and the weighted sample of job-seekers from the CPS, and then further focuses on jobseekers who find jobs between 0 and 8 months before leaving them and being outside the wage sector at 8 months. For USA equivalent statistics using the CPS, I start with the unemployed at month zero and then focus on those who are unemployed twelve months later after finding some work in the intervening period. I observe the reason for their unemployment (quit, layoff, or temporary work) at twelve months.

Figure 2 documents that Ghana and the USA have strikingly different causes of employment exit. In Ghana, 68% of employment exits are due to voluntary quits, while this figure is only 10% in the USA. Rates of exits due to temporary work are similar in both the USA and Ghana, at roughly 22% for both countries. Instead, differences are largely driven by involuntary layoffs. In Ghana, 10% of employment exits are due to involuntary layoffs, while layoffs account for 67% of exits in the USA.

Appendix Table B.2 compares derived monthly entry and exit rates distinguishing between quits and non-quits (grouping together layoffs and temporary work) in the USA and Ghana. Overall, Appendix Table B.2 emphasizes the importance of quits compared to non-quits. While the layoff rate in Ghana is roughly double that of the USA, the quit rate in Ghana is a remarkable 39 times larger than in the USA.

Figure 2: Causes of employment exit



### 3.2.1 Evidence from Firms

So far I have shown, using my survey of job-seekers, that exit rates out of wage work are far higher in Ghana relative to the USA, while entry rates are similar. Furthermore, I have shown that exits are driven by quits rather than layoffs, also in strong contrast with the USA. However the selected nature of my sample limits my ability to generalize about the labor market at large in Ghana. In this section I leverage my firm survey, conducted independently of my job-seeker survey, to show that the differences between the USA and Ghana discussed thus far are present from the firm's perspective as well.

In my firm survey, I asked hiring managers at firms about the number of employees overseen, hires and separations in the previous month —distinguishing between quits and



layoffs—as well as the number of workers they were currently seeking to hire.<sup>9</sup> In this way, I can replicate standard statistics reported by the Job Openings and Labor Turnover Survey (JOLTS). Appendix D describes the method for comparing firms in the Ghana and the USA. In short, I construct aggregate entry and exit rates, summing across all firms in my sample. To compare with the USA, I constructed simulated aggregate entry and exit rates, by examining what would happen if firms in Ghana behaved as if firms in the USA behaved.

One notable difference between the firm and job-seeker analysis is the definition of quits. Figure 2 analyzes only transitions out of wage work, and does not address job-to-job flows. Firms, by contrast, generally do not know whether an employee leaving a firm exits to unemployment or to a new job, so “quits” reported by firms in Table 3 encompasses both exits out of wage work as well as movements between jobs.

Figure 3 compares aggregate entry and exit flows between Ghana and the USA, with bootstrapped 95% confidence intervals from both the Ghana sample and simulated sample reported with error bars. Table 3 shows that compared to firms in the USA, firms in Ghana rates of separation an order of magnitude higher, confirming the findings of Section 3.1.

Table 3 also confirms my second job-seeker finding: Quits play a larger role than layoffs in driving job destruction. The rate of layoffs in Ghana is 2.3-times that of the USA, while the rate of layoffs is 4.3-times that of the USA. Quits as a fraction of total separations is 30% higher in Ghana relative to the USA.<sup>10</sup> Interestingly, despite high rates of hiring and separation, firms in Ghana report *lower* vacancy rates compared to firms in the USA. This is further evidence that the rate of matching between firms and workers is not a binding constraint on the size of the wage sector.

### 3.3 Characteristics of Quits and Layoffs

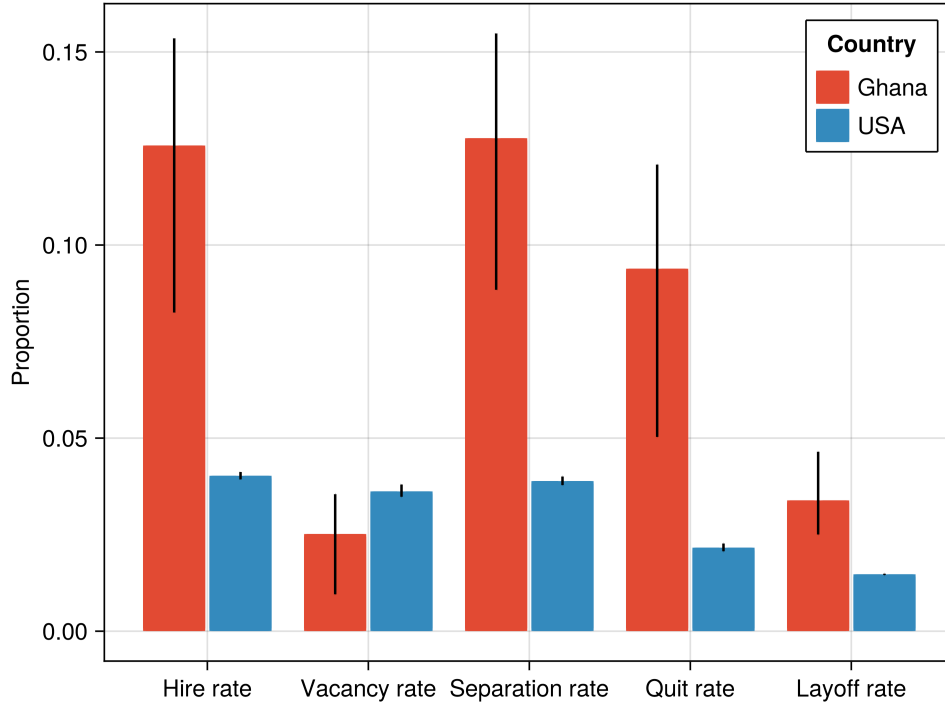
*Aggregate Fact 3: Jobs ending in a quit in Ghana have lower wages than jobs ending in a layoff. This difference is significantly smaller in the USA. In Ghana, quitters see income gains and non-quitters see income losses. In the USA, both groups experience equally large income losses.*

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<sup>9</sup>I did not ask about job destruction due to temporary contracts in order to best compare with JOLTS estimates.

<sup>10</sup>Additional evidence from my firm survey also highlights the elevated role of quits relative to layoffs: Of the *last* person to leave the firm, 65% did so voluntarily, 19% were fired, and 19% left because their temporary contract finished. This is very close to what is reported by job-seekers. No equivalent statistic is tracked in the USA.

Figure 3: Entry and exits reported by firms



A conventional view in the job search literature is that quits and layoffs are not conceptually different (McLaughlin, 1991). For instance, if workers and firms bargain over the surplus of a match, as is common in searching and matching models in the spirit of Mortensen and Pissarides (1994), workers separate whenever joint surplus reaches zero. Because this decision is mutual, it is neither worker-initiated (a quit) or firm-initiated (a layoff). To argue for the importance of the quit-layoff distinction, I first must show the two really are distinct.

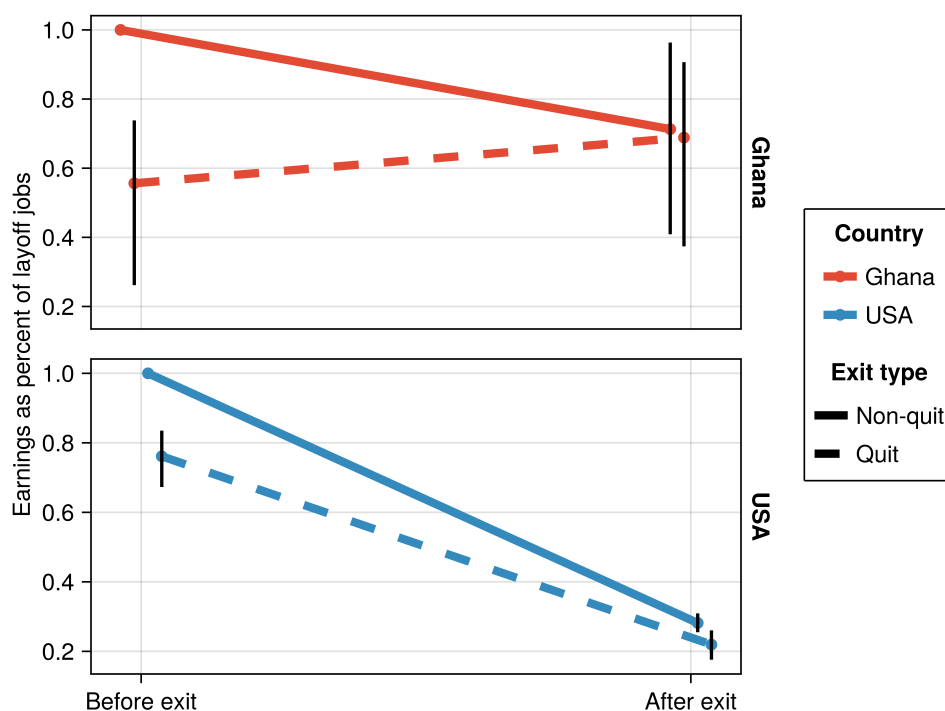
To assess the difference between quits and layoffs, I assess the earnings, both wage and non-wage, of workers before and after an exit out of wage work, distinguishing between quits and layoffs. I consider four outcomes (1) the wage of a worker at a job that will soon end in a layoff; (2) the wage of a worker at a job that will soon end in a quit; (3) the non-wage income of a worker without wage work after a quit; and (4) the non-wage income of a worker without wage work after layoff. Figure 4 demonstrates these outcomes separately for the USA and Ghana. For ease of exposition, I normalize all outcomes relative to the wages of jobs that will soon end in a layoff. Table C.3 presents the same outcomes as Figure 4 in tabular format.

Figure 4 shows that conventional wisdom about the similarity between quits and layoffs

holds true in the USA. In Ghana, however, quits and layoffs are highly distinct. As shown on the left of each graph, jobs ending in a quit pay only 55% of the wages of jobs ending in a layoff in Ghana. In the USA, by contrast, this difference is less stark, and jobs ending in a quit pay 78% as much as jobs ending in a layoff.

Turning to the right of Figure 4 we see again that quits and layoffs are more different in Ghana relative to the USA. In Ghana, workers who quit their jobs see income gains on the order of 12%, while workers who exit due to a non-quits see income losses of 13%. In the USA, by contrast, both quits and layoffs lead to large changes in total income, with drops due to quits and layoff of 54% and 72%, respectively.

Figure 4: Income before and after a quits and layoffs



### 3.4 Discussion of Aggregate Evidence

Job-seekers in Ghana and the USA have drastically different trajectories. Both countries see similar entry rates into wage employment, however in Ghana, elevated employment exit rates mean 8-month wage employment rates are only half of those in the US: This suggests employment exit is likely the cause of low employment rates in Ghana relative to the USA, consistent with the findings of [Donovan, Lu and Schoellman \(2020\)](#). Moving beyond the findings of [Donovan, Lu and Schoellman \(2020\)](#), I show that not only are

exits out of wage work elevated in Ghana relative to the USA, the composition of these exits are drastically different as well: Quits dominate in Ghana, while layoffs dominate in the USA. Finally, I show that quits and layoffs are meaningfully different in Ghana, as measured by the income gain of quitters vs. non-quitters and the average difference in wages of quit vs. non-quit jobs. In the USA, by contrast, this difference is less stark.

In sum, job-seekers in my sample have been searching for work for an average of two years and profess a strong desire to move into the wage sector. Yet when they secure wage work, a large portion quit their jobs. Why are they quitting at such high rates? More puzzling, workers in Ghana are frequently able to see income gains after a quit. Why, then, take these jobs at all? In the following section I explore the causes of high rates of quits by exploiting heterogeneity within my Ghana sample to answer these questions.

## 4 Within-Sample Heterogeneity

In this section, I examine heterogeneity across workers to workers so frequently exit wage work voluntarily. First I examine, and reject, information frictions as the leading cause of employment exit in my sample. Next, I examine, and reject, profitable self-employment as the cause of quits, although show self-employment plays a key role in supporting income after layoffs and quit. Finally, I document a new fact, which is that quits are concentrated among workers who, at baseline, are forced to rely on savings to get by, as opposed to flows of income from family support or self-employment.

A discussion of demographic correlates of exit out of wage work and the characteristics of quit vs. non-quit jobs, is given in Appendix E. Appendix Table E.1 shows, somewhat surprisingly, baseline demographic characteristics do not correlate strongly with exits nor quits. Table E.2 shows exits and quits are high across in all occupations, even ex-ante desirable jobs in high-skill services. Consistent with Blattman and Dercon (2018), exits are more concentrated in manual labor jobs, a category which includes wage work, but high exits are primarily driven by layoffs rather than quits.

### 4.1 Information Frictions

*Heterogeneity Fact 1: Information frictions do not correlate with job destruction or quit rates.*

Beginning with Jovanovic (1979), a large literature has argued information frictions—the inability for workers and firms to learn about the quality of their match before agreeing to an employment contract—drives employment exit (Mercan, 2017; Brügemann and

Moscarini, 2010). If characteristics related to the job are experience goods, a worker and firm may agree to employment initially and then later separate as they observe the true, low, quality of the match later on. Recent research has argued that information frictions are a key driver of high worker exit rates out of employment in developing countries (Abebe, Caria, Fafchamps, Falco, Franklin and Quinn, 2020; Abel, Burger and Piraino, 2020; Carranza, Garlick, Orkin and Rankin, 2020; Bassi and Nansamba, 2020; Poschke, 2022).

Structural models featuring information frictions do not normally distinguish between quits and layoffs. However, it is easy to informally adapt the logic of Jovanovic (1979) in such a way that information frictions lead to both higher employment exit as well as a higher rate of quits vs. layoffs. I hypothesize workers may imperfectly observe non-wage characteristics of the job. Upon entering a job, they learn the true (low) quality of non-wage characteristics and quit. In this section I test the plausibility of this story, and I conclude it carries little explanatory power.

My survey provides a uniquely comprehensive view into the level of information jobseekers have about potential jobs and the labor market at large. At baseline, I asked workers about expected wages and whether they learn about jobs and wages from social connections, online, or other sources. In addition, I observed whether workers are in contact with employees at firms in which they would like to work.

I assess whether workers who appear to be well informed about potential jobs are more likely to exit employment conditional on finding work. To measure a job-seekers level of information about the labor market in general, I aggregate eight baseline measures into a single “information” index. For example, a job-seeker has higher baseline information if a friend helps the job-seeker find a job at a place where the friend works, or if friend helps a job-seeker learn what jobs they would be best at. Table F.3 describes these variables in detail.

Table 3, shown in the previous section, analyzes the job market outcomes of the “low” and “high” information groups. Each row analyzes a different outcome at endline. Column (4) runs a regression with “High information” as a binary variable, controlling for baseline characteristics.<sup>11</sup> Table 3 shows job-seekers with higher ex-ante baseline information about jobs are not more likely to find jobs, not more likely to experience job destruction, and conditional on job destruction, no more likely to have quit their job. Overall, endline employment outcomes are virtually identical between the two groups. High-information

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<sup>11</sup>The baseline controls are Age, Gender, University or more education, Years of work experience, if the job-seeker has dependents, a normalized assets index, and Baseline income.

workers are not more likely to exit conditional on taking up a job, and not more likely to quit conditional on exit.

In Appendix F, I assess the effect of information frictions on employment exit through a secondary specification. Instead of measuring a job-seeker’s general level of information about the labor market, I examine the accuracy of job-seeker’s baseline beliefs about particular non-wage characteristics of jobs. In Appendix Table F.1, I show workers who are over-optimistic about the level of physical comfort at future jobs and workers who are over-optimistic about the cost of commuting are no more likely to exit, conditional on any labor market entry. Appendix Table F.2 shows neither group is more likely to quit, conditional on entry, as well.

Table 3: Job outcomes by baseline information score

Outcome at eight months	Overall Mean (1)	Mean by group		Regression (4)
		Low information (2)	High information (3)	
Any employment entry since baseline	0.79	0.82	0.76	-0.059 [0.060]
Any exit conditional on entry	0.49	0.51	0.47	-0.051 [0.088]
Quit conditional on exit	0.68	0.74	0.61	-0.091 [0.123]
Total income at endline	1,255.21	1,258.39	1,251.84	2.149 [174.669]
Wage earnings at endline if employed	1,443.82	1,404.73	1,485.14	-88.396 [236.050]

## 4.2 Self-Employment and Non-Employment

*Heterogeneity Fact 2: Quitters are not more likely to be self-employed after an exit than non-quitters. Self-employment income and transfers from family and friends play roughly equal roles in mediating the differences in income changes after a quit vs. non-quit.*

Having assessed, and rejected, one standard view for the cause of higher employment exit in low-income settings, I next assess another standard view: That workers’ exits from wage employment are driven by profitable self-employment opportunities. Donovan, Lu and Schoellman (2020) finds a large share of employment flows can be attributed to movements between wage work and self-employment. Models of job search tailored to developing countries feature self-employment opportunities as the sole driver of voluntary exit out of the wage sector (Poschke, 2022; Herreño and Ocampo, 2023; Boschma, Eriksson and Lindgren, 2014). Finally, Falco and Haywood (2009) finds evidence from



Ghana that self-employment is not an occupation of last resort, but is often profitable relative to wage work. Self-employment is common among job-seekers in my sample: at both baseline and endline, roughly 20% of my sample is engaged in some form of self-employment. Could it be the case that workers quit frequently to pursue profitable self-employment opportunities?

Table 4 analyzes the endline outcomes of workers who exited out of wage work between baseline and endline, distinguished by whether this exit was due to a quit or a non-quit. Columns (2) and (3) show group means of outcomes, while Column (4) shows a regression difference adjusted for baseline covariates. Table 4 uses the same sample as Figure 2: job-seekers without wage work at baseline, who found some job between zero and eight months, but who were exit that job and were again without wage work at eight months.

Are quitters more likely to end up in self-employment? If quits are driven by self-employment, we would expect a higher share of quitters to be in self-employment than non-quitters. Table 4 shows that among both the quitters and non-quitters, only a minority of jobseekers are engaged in self-employment at endline. After adjusting for covariates, quitters are 12pp more likely to be engaged in self-employment at Endline, but this difference is not statistically significant.

Are quitters less likely to be searching for a job? If quitting were driven by profitable self-employment opportunities, we would expect to observe quitters as less likely to be currently searching for jobs at endline. I do not observe this. Among both quitters and on-quitters the overwhelming majority are currently searching for a job, and self-employed quitters are more likely to be searching than self-employed non-quitters. This finding is consistent with arguments, notably [Donovan, Lu and Schoellman \(2020\)](#), that self-employment is similar to unemployment in poor countries.

Is self-employment among of quitters more profitable than self-employment among non-quitters? If quits were driven by profitable self-employment opportunities, we might expect quitters to have higher self-employment income than non-quitters. Table 4 shows only suggestive evidence this may be the case. Without adjusting for covariates, self-employed quitters earn about the same amount as self-employed non-quitters. After adjusting for covariates, self-employed quitters appear to earn more than self-employed non-quitters, but estimates are noisy.

Figure 4 demonstrates quitters see income gains after exits, while non-quitters see income losses. To what extent are these income gains driven by exits to self-employment? Table 4 shows among the self-employed at endline, both quitters and non-quitters see

income gains, while among the non-self-employed, both quitters and non-quitters see income losses. However the difference between quitters and non-quitters in this regard is strongest among the non-self-employed. Non-quitters who are not self-employed at endline face steep income losses, on the order of 985 Cedis (\$65 USD a month), while quitters who are not self-employed face a very small loss, on the order of only 80 Cedis (\$5 USD a month). Transfers from friends and family can almost entirely supplement the income losses from an exit in the absence of self-employment opportunities.

In sum, Table 4 provides mixed evidence on the role of self-employment in driving quits. Workers do not appear to be quitting to particularly profitable opportunities, and even the self-employed are still looking for employment. However quitters appear to be in marginally more profitable self-employment opportunities relative to non-quitters. Overall, Table 4 highlights the role of income outside self-employment in driving the differences between quits and layoffs. This heterogeneity is explored in the following section.

Table 4: Outcomes of Quitters and Non-Quitters Conditional on Exit

Outcome at eight months	Overall Mean (1)	Mean by group		Regression (4)
		Non-quit (2)	Quit (3)	
Self-employed at endline	0.43	0.36	0.47	0.120 [0.134]
Searching for a job	0.81	0.73	0.85	0.220 [0.095]**
Searching if self-employed	0.70	0.38	0.82	0.305 [0.173]*
Searching if not self-employed	0.90	0.93	0.88	0.100 [0.112]
Total income at endline	1,227.39	1,256.82	1,213.62	200.736 [248.076]
Total income if self-employed	1,760.00	1,887.50	1,713.64	558.084 [497.341]
Total income if not self-employed	817.69	896.43	773.60	-36.742 [217.333]
Difference in income: Current minus last job	-2.61	-505.91	232.98	713.864 [287.976]**
Difference if self-employed	520.67	333.75	588.64	145.622 [494.804]
Difference if not self-employed	-405.13	-985.71	-80.00	581.709 [365.228]

### 4.3 Temporary Lapses in Income

*Heterogeneity Fact 3: Quits are concentrated among workers facing temporary lapses in income at baseline.*

In this section I document a novel source of heterogeneity driving both employment exit and higher quits. Quits are concentrated among job-seekers who are forced to rely on savings to get by at baseline, as opposed to income flows from family or self-employment.

At baseline, I asked respondents without wage work about how they pay for daily necessities in their life: self-employment earnings, transfers from friends and family, or drawing down savings.<sup>12</sup> I divide respondents into two groups, those who with a “flow” of income at baseline, grouping together those who receive family transfers and self-employment, and those without.

First, I demonstrate that relying on savings at baseline, as opposed to other sources of income flows, likely represents the temporary absence of income at baseline, rather than higher savings in general or other differences in underlying characteristics. Table 5 reports baseline differences between the two groups, using the same sample as Figure 1, those without work at baseline. Overall, the two groups are broadly similar across demographic characteristics. Importantly, the savings and non-savings groups have similar levels of durable assets. The only statistically significant difference between the two groups is income levels: The savings group has significantly lower income at baseline.

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<sup>12</sup>No respondents mentioned unemployment insurance or other government transfers.

Table 5: Baseline differences between savings and non-savings groups

Baseline characteristic	Overall Mean (1)	Mean by group		Regression (4)
		Income flows (2)	Savings (3)	
Age	29.73	29.37	31.23	1.861 [1.211]
Male	0.77	0.76	0.83	0.072 [0.079]
University of more education	0.50	0.47	0.60	0.128 [0.094]
Years of work experience	6.15	5.95	6.97	1.025 [0.845]
Any dependents	0.55	0.53	0.66	0.129 [0.094]
Assets index at baseline	4.12	4.14	4.06	-0.082 [0.313]
Total income from all sources past month	714.36	777.36	455.14	-322.218 [136.791]**

Table 6 compares outcomes at endline between the two groups. As with Tables F.1 and 4, Column (4) reports a regression difference, controlling for the covariates analyzed in Table 5.

Comparing the two groups, there is little difference in job-finding between the non-savings group and the savings group (77% vs. 86%). Conditional on finding work, however, the savings group is significantly more likely to experience job destruction (73% in savings group vs. 42% in non-savings group). This difference in job destruction is almost entirely explained by higher quits. Conditional on finding a job, 53% of the savings group later quit their job, compared with 28% in the non-savings group. Due to similar job-finding rates yet different job destruction rates, the non-savings group is significantly more likely to be employed at endline relative to the savings group (44% for non-savings vs 23% for savings).

Finally, Table 6 shows that relying on savings to get by is a temporary state. Of those relying on savings to get by at baseline, only 30% were still relying on savings to get by at endline, conditional on non-employment. Not only did many job-seekers exit the “savings” state, new job-seekers also entered this state. Of those with income flows at baseline, 12% of the non-employed were forced to rely on savings at endline.

Appendix 4.3 shows that the high relative exit rate and quit rate of the savings group is driven both by a contrast with job-seekers self-employed at baseline as well as a contrast

with job-seekers relying on social transfers at baseline. In Table G.1 I present the same outcomes as in Table 6, but I omit job-seekers reliant on social transfers at baseline, such that I only compare job-seekers relying on savings at baseline with job-seekers reliant on self-employment income at baseline. The savings group has higher rates of exit (75% vs 41%) and higher rates of quits (53% vs 24%).

In Table G.1, perform the opposite exercise, by omitting the self-employment group and comparing only the savings group with job-seekers reliant on social transfers at baseline. When compared only to the social transfer group, the savings group also experiences higher exits (73% vs 43%) and quits (53% vs 32%). Consistent with discussion on self-employment, in Table 4 above, Table G.1 shows transfers from friends and family might be just as important in driving quitting behavior as self-employment. The stability of outside income, not its source, appears to drive heterogeneity in exit out of wage work.

Table 6: Employment Exit by Reliance on Flow Income

Outcome at eight months	Overall Mean (1)	Mean by group		Regression (4)
		Income flows (2)	Savings (3)	
Any employment entry since baseline	0.79	0.77	0.86	0.056 [0.077]
Any exit conditional on entry	0.49	0.42	0.73	0.306 [0.103]***
Any quit conditional on finding work	0.33	0.28	0.53	0.257 [0.098]***
Any non-quit conditional on entry	0.16	0.14	0.20	0.048 [0.077]
Employed at endline	0.40	0.44	0.23	-0.230 [0.093]**
Relies on savings at endline if not in a wage job	0.17	0.12	0.30	0.142 [0.082]*

## 4.4 Discussion of Within-Sample Heterogeneity

Why is job destruction, primarily through quits, high among job-seekers in my sample? Evidence from Sections 4.1, 4.2, and 4.3 gives a parsimonious set of facts to discipline a theoretical explanation. First, Section 4.1 presents evidence against information frictions being the cause of job destruction. Section 4.2 demonstrates that workers are more likely to quit low-wage jobs and they are than able to recuperate lost income after job loss, even in the absence of self-employment. Third, and finally, Section 4.3 shows workers with temporarily lower flows of income at baseline are more likely quit work conditional on finding employment.

If workers who quit their jobs are able to *increase* their incomes after quitting their previous employment, why accept these jobs in the first place? Similarly, why are job-seekers in a seemingly vulnerable position, without flow income at baseline, more likely to quit work? I argue these findings are consistent with a model in which quits are driven by movement in a worker's non-wage income across time.

## 5 Model

In this section, I build a general equilibrium model of job search to formalize this intuition that workers accept and quit jobs to cope with drops in non-wage income. The goal of this model is two-fold. First, I aim to quantify what proportion of quits is due to my proposed mechanism. Second, my model allows comparison of what underlying features of the labor markets in Ghana and the USA drive differences in entry and exits.

**Agents and States** Time is continuous and continues forever. There are two agents in the economy, workers and firms. Both parties are risk-neutral and discount the future at rate  $\rho$ . Workers can be in either the wage sector, that is working for a firm and earning a wage, or the non-wage sector. The non-wage sector represents both unemployment and self-employment while searching for work, but the model abstracts from the distinction between self-employment and unemployment. There is no on-the-job search. Similarly, positions posted by firms can either be vacant or filled with a worker.

**Non-wage income flows** When not in wage work, job-seekers face a stream of income outside of the wage sector that changes with time according to a Poisson process. A worker with variable income  $\psi$  receives shocks to their non-wage income at rate  $\varphi$ . When a shock arrives, they draw a new value of non-wage income  $\psi' \sim F_\psi(\psi' | \psi)$ . Non-wage income  $\psi$  represents any source of non-wage income, such as transfers from family and friends as well as earnings from self-employment. I do not explicitly model the distinction between self-employment and social transfers.

**Matching and production** Firms and workers meet according to a continuous returns to scale matching function.

$$\mathcal{M}(u, v) \equiv \chi u^\gamma v^{1-\gamma} \tag{1}$$

Where  $u$  is the mass of workers in the non-wage sector,  $v$  is the mass of vacancies. This matching function induces job-finding for workers  $q^w$  and worker-finding rate for firms



$q^f$  as a function of market tightness  $\theta \equiv \frac{v}{u}$

$$q^w \equiv \chi\theta^{1-\gamma} \quad q^f \equiv \chi\theta^{-\gamma} \quad (2)$$

When firm and worker meet, they jointly draw a productivity  $z$  unconditionally from distribution  $F_z(z)$  and produce according to a linear production function. Wages are exogenously determined, such that workers are assigned a proportion  $\delta$  of flow-output. Firms must pay flow cost  $c$  while posting a vacancy.

**Wage work entry and exit** Employed workers do not earn non-wage income  $\psi$  while employed at a job, yet they always reserve the right to leave their current employment and take advantage of their non-wage income opportunities. Workers in the non-wage sector decide whether to accept or reject jobs based on the job's productivity  $z$  and their current non-wage income  $\psi$ . Similarly, employed workers decide whether to stay at or quit a job according to their current potential non-wage income  $\psi$  along with the job's productivity  $z$ . A job's wages are exogenously determined by match productivity  $z$ , which does not change across time, while employed worker's potential non-wage income changes with time even while employed at a job. Consequently, a worker may enjoy a job at one moment and then quit it the next. In addition to wages, workers receive a non-wage amenity of employment which is constant across all matches,  $\nu$ .

I refer to quits caused by changes in a worker's outside option as “endogenous” quits, because these choices are a consequence of a worker's optimal quit-stay decisions. Contrasted with endogenous quits are “exogenous” exits. Exogenous quits—exits which are driven by forces not modeled by the researcher—and exogenous layoffs happen at rate  $\lambda^w$  and  $\lambda^f$ , respectively.

When matches are dissolved, firms exit the labor market entirely, such that the continuation value to the firm of a dissolved match is zero. Firms always prefer employment to non-employment.

**Worker value functions** A worker in the non-wage sector with non-wage income  $\psi$  has a present discounted value given by  $U(\psi)$ , while an employed worker with non-wage earning potential  $\psi$  in a match with productivity  $z$  has a present discounted value given

by  $W(\psi, z)$ .  $U(\psi)$  is defined recursively according to

$$\begin{aligned} \rho U(\psi) = & \psi \\ & + q^w \int (\max \{W(\psi, z), U(\psi)\} - U(\psi)) f_z(z) dz \\ & + \varphi \int (U(\psi') - U(\psi)) f_\psi(\psi' | \psi) d\psi' \end{aligned} \quad (3)$$

While employed present-discounted value is defined recursively according to

$$\begin{aligned} \rho W(\psi, z) = & (1 - \delta)z + v \\ & + (\lambda^f + \lambda^w) (U(\psi) - W(\psi, z)) \\ & + \varphi \int (\max \{W(\psi', z), U(\psi')\} - W(\psi, z)) f_\psi(\psi' | \psi) d\psi' \end{aligned} \quad (4)$$

**Firm value functions** Denote  $u(\psi)$  the mass of workers in the non-wage sector with current non-wage income less than  $\psi$ . The value of a vacancy is given by

$$\begin{aligned} \rho V = & -c \\ & + q^f \int \int J(\psi, z) \times \mathbb{I}(W(\psi, z) > U(\psi)) u(\psi) f_z(z) du dz \end{aligned} \quad (5)$$

while the present-discounted value of a firm employing a worker with outside option  $\psi$  and productivity  $z$  is

$$\begin{aligned} \rho J(\psi, z) = & (1 - \delta)z \\ & - (\lambda^f + \lambda^w) J(\psi, z) \\ & + \varphi \int J(\psi', z) \times \mathbb{I}(W(\psi', z) > U(\psi') - J(\psi', z)) f_\psi(\psi' | \psi) d\psi' \end{aligned} \quad (6)$$

**Equilibrium** I consider a steady state equilibrium, defined as masses of non-wage workers  $u(\psi)$  and employed workers  $e(\psi, z)$ , along with value function  $W(\psi, z)$ ,  $U(\psi, z)$ ,  $J(\psi, z)$ , such that workers optimally choose to accept and reject jobs according (Equations 3 and 4), the free entry condition holds, such that the value of a vacancy (Equation 5) is equal to zero, and net flows in and out of all states are zero.

## 5.1 Mechanisms and Predictions

The key mechanism of my model is as follows: Because of variable non-wage income, workers frequently find themselves with temporarily low non-wage income and take

low-wage jobs. When their non-wage incomes improve, workers quit such low-wage jobs to take advantage of improved non-wage opportunities and search for different, better employment. In this section I illustrate how a stylized parametrization of my model emulates this core logic.

**Baseline stylized model** Consider a simple economy in which  $\psi$  can take one of two values, low value  $\psi_l$ , and high value  $\psi_h$ . Similarly, there are two wages  $z_l$  and  $z_h$ . Together,  $\psi_l$ ,  $\psi_h$ ,  $z_l$ , and  $z_h$  are such that

$$U(\psi_l) < W(\psi_l, z_l) < U(\psi_h) < W(\psi_h, z_h)$$

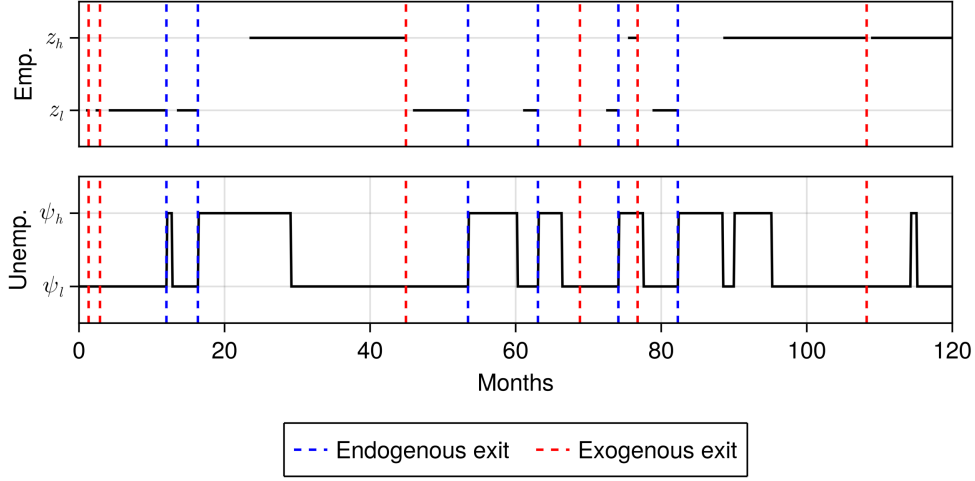
In other words, the worker prefers to work at  $z_l$  when their non-wage incomes are  $\psi_l$ , but will quit such a job if their non-wage income rise to  $\psi_h$ . Job  $z_h$  is preferred to the non-wage sector for all values of non-wage income.

In Figure 5, I plot the trajectory of a worker starting in the non-wage sector with non-wage income  $\psi_l$  over the course of 10 years while they accept and leave jobs, and their non-wage income fluctuate across time, show in the x-axis. On the y-axis of the bottom panel of Figure 5 is a worker's non-wage income state  $\psi$ , which moves between the high state  $\psi_h$  and low state  $\psi_l$ . On the y-axis of the top panel is the worker's employment state, which likewise fluctuates across time (and is blank when the worker is unemployed). Red dashed lines indicate an exogenous exit out of wage work, while blue dashed lines indicate an endogenous exit.

As shown in the bottom panel of Figure 5, the worker faces large fluctuations in their non-wage income. When their non-wage income is in the low state, the worker accepts low-wage jobs. However if they are in a low-wage job and their outside option improves, the worker then quits their current position and chooses to re-enter unemployment, illustrated by the blue-dashed lines, representing exogenous quits, which appear when a worker's outside option spikes and the worker is employed at a low-wage job. High-wage jobs, by contrast, never end with an endogenous quit, instead only ending through an exogenous exit, represented with red dashed lines.

**Volatility of wage earnings** In the top panel of Figure 6, I increase the rate of shocks to a worker's non-wage income  $\varphi$  by a factor of four. When working at job  $z_l$  (and by necessity, with unemployment earnings  $\psi_l$ ), workers are far more likely to experience a jump in earnings from  $\psi_l$  to  $\psi_h$  in this new economy relative to the baseline case presented in Figure 5. As a consequence, endogenous quits occur more frequently, as illustrated by the increased density of blue dashed lines. The overall increase in exits is driven exclusively

Figure 5: Baseline example economy



by endogenous quits from the low-wage job.

In the lower panel of Figure 6, I conduct the opposite exercise, reducing the arrival rate of non-wage income shocks to zero. This counterfactual might correspond to an unemployment insurance program, such that workers have guaranteed stable earnings throughout their unemployment spell. As expected, workers in this counterfactual economy never voluntarily exit wage employment, if a worker prefers a job when entering wage employment, their valuation of this job relative unemployment never changes.

Table 7 shows, in the baseline economy, 30% of exits are caused by endogenous quits. Because endogenous quits are driven by exits from relatively low-productivity jobs, the average earnings gain after a quit is less negative than after a layoff (-0.41 compared to -0.63). In the second economy, with frequent shocks to a worker's non-wage income, not only do endogenous quits constitute a larger share of exits (45%), this is reflected in the average earnings gains after quits and layoffs as well. Quits are *more different* than layoffs in the High- $\varphi$  economy compared to baseline. This difference mirrors the facts observed in Figure 4, which shows quits and layoffs are more different in Ghana relative to the USA. In the final counterfactual, which does feature any endogenous quits, changes in income after a quit and layoff are identical, since exogenous quits and exogenous layoffs function identically in the model. In sum, Table 7 shows differences in the changes in income after a quit and layoff inform the prevalence of endogenous exits.

Figure 6: Counterfactual example economies

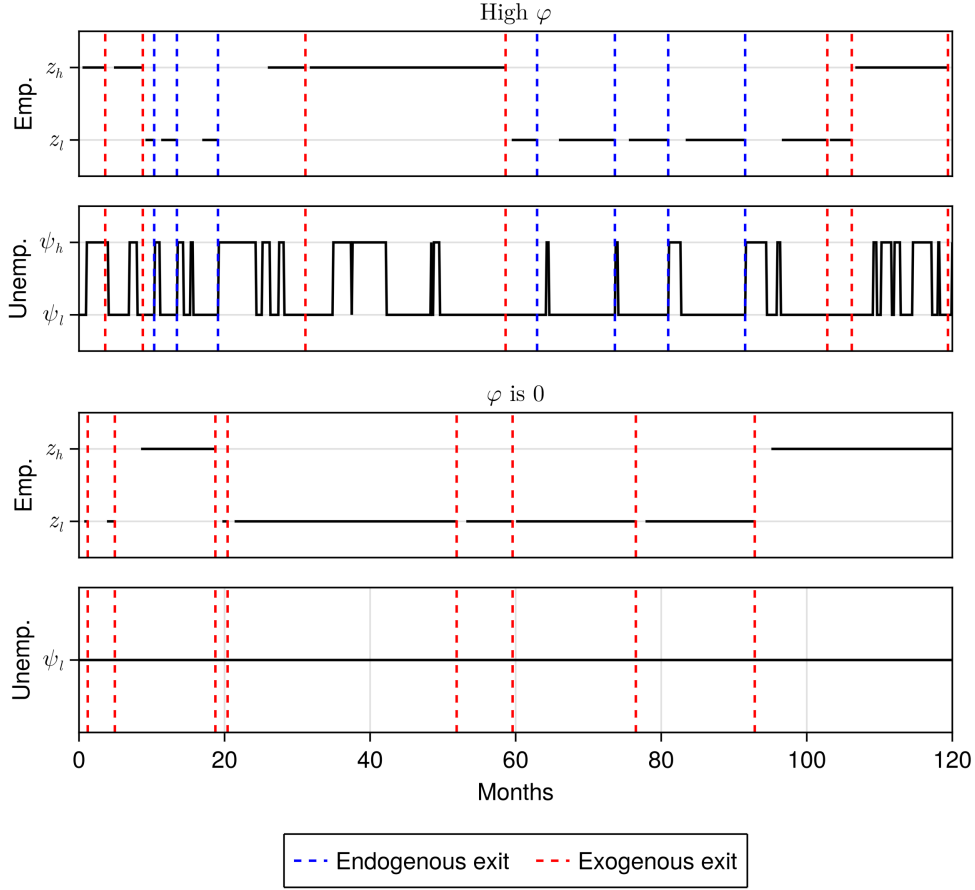


Table 7: Endogenous exits and gains and losses from quits and layoffs

Model	Outcome		
	Endog. quits / exits (1)	Average earnings gain after a quit (2)	Average earnings gain after a layoff (3)
Baseline	30	-0.41	-0.63
High $\varphi$	45	-0.37	-0.61
$\varphi$ is 0	0.0	-0.89	-0.89

## 6 Quantitative Analysis

I have described a model of unemployment and shown, through a stylized parametrization, it has the potential to match key patterns described in the data. In this section I calibrate my model to the experiences of both Ghana and the USA in order to quantify the role that variation in non-wage income plays in driving employment exit differences

between the two countries.

## 6.1 Parametrization

I begin by parametrizing the distribution of non-wage income  $\psi$ . I assume  $F_\psi(\psi' \mid \psi)$  is independent of  $\psi$ . In this way, the rate of shocks to re-draw non-wage income,  $\varphi$ , exclusively determines the persistence of non-wage income  $\psi$ . I assume  $\psi$  is drawn from a log-normal distribution, however I normalize the log-mean of  $\psi$  to zero.

$$\psi' \sim \log \mathcal{N}(0, \sigma_\psi) \quad (7)$$

I parametrize the distribution of match-specific productivity  $z$  be log-normal as well

$$z \sim \log \mathcal{N}(\mu_z, \sigma_\psi) \quad (8)$$

I choose the unit of time to be a week, and consequently set the monthly discount rate of workers and firms to the value  $\rho = \frac{0.05}{12} \approx 0.004$ . Following [Feng, Lagakos and Rauch \(2021\)](#), set the curvature of the matching function  $\gamma$  to 0.7. Finally, I choose the worker's share of production,  $\delta$ , to be 0.5.

## 6.2 Moments

The model features nine remaining parameters, which I match to nine moments, calibrating values separately for the USA and Ghana. Chosen parameters are given in [Table 8](#), and model fit is given in [Table 9](#).



Table 8: Parameter choices

Parameter	Description	Value	
		Ghana (1)	USA (2)
Panel A: Pre-assigned parameters			
$\rho$	Discount rate	0.0042	0.0042
$\gamma$	Matching curvature	0.70	0.70
$\mu_\psi$	Mean of unemployment income	0.0	0.0
$\delta$	Worker share of production	0.50	0.50
Panel B: Calibrated parameters			
$\lambda^f$	Layoff rate	0.12	0.050
$\lambda^q$	Quit rate	0.11	0.0041
$\sigma_\psi$	Std. dev. of unemployment process	0.61	1.3
$\varphi$	Arrival of outside option shocks	0.14	0.0097
$\mu_z$	Mean of productivity	0.037	-0.078
$\sigma_z$	Std. dev. of productivity	0.71	1.4
$\nu$	Amenity value of unemployment	0.70	16
$\chi$	Matching efficiency	1.7	5.3
$c$	Cost of posting vacancy	45	230

**Moments related to entry and exit** The first three moments in Table 9 concern the end-line outcomes of job-seekers without work at baseline: whether they are employed, experienced job destruction conditional on entry into employment at some point, whether employment exit was due to a quit or non-quit, conditional on an exit. Moments in the data for the USA and Ghana correspond exactly to the values presented in Figure 1 (entry and exit at large) and Figure 2 (quits as a share of exits). In the USA, all three moments are taken from the CPS. I simulate these moments in my model by estimating the aggregate continuous Markov transition matrix, accounting movement in  $\psi$ , job offers, and job-seeker's optimal choices. Among job-seekers without wage work, and for each initial state  $\psi$  I start with the stationary distribution of job-seekers not in wage work and project their outcomes over the following eight months.

**Moments related to earnings processes** The next three movements bound the distribution of non-wage income  $\psi$  and the distribution of productivity  $z$ .<sup>13</sup> First, I estimate the correlation of log unemployment earnings across the span of eight months using both data from my Ghanaian jobseekers as well as the SIPP.<sup>14</sup> To account for persistent dif-

<sup>13</sup>Unlike other moments, these three moments are presented only for the purposes of calibration, and do not appear in other tables or figures in this paper.

<sup>14</sup>The CPS does not measure unemployment earnings

ferences in unemployment income due to demographic characteristics, I residualize log earnings on age, gender, years of education, and marital status.

Next, I estimate the standard deviation of log unemployment earnings and log wage earnings. To accomplish this, I exploit the panel nature of my data in both my Ghana survey as well as the SIPP. I run the following panel regression containing jobseekers at zero and eight months

$$\log \text{Income}_{it} = \beta_0 + \beta_1 \text{Employee}_{it} + \gamma_j + \lambda_i + \epsilon_{it} \quad (9)$$

where  $i$  indexes workers and  $t$  represents time (zero month baseline and eight month end-line). I produce residuals  $\hat{\epsilon}_{it}$  and report the standard deviation of  $\hat{\epsilon}_{it}$  among the employed and unemployed.

While  $\varphi$ , the frequency of non-wage income shocks,  $\sigma_\psi$  the standard deviation of non-wage income, and  $\sigma_z$ , the standard distribution of productivity, naturally correspond to these three moments, they cannot be estimated from the data directly because the distribution of observed earnings among those with and without wage employment is conditional on selection into each outcome. I account for this selection process by, again, simulating the eight-month outcomes of job-seekers at baseline. I start with the stationary distribution, over non-wage income  $\psi$ , of job-seekers without wage work and assess the distribution of wage and non-wage income after eight months later.

**Moments related to the difference between quits and layoffs** The next two moments are the average earnings gain after a quit and the average earnings gain after a layoff. These moments are derived from Figure 4, and in the USA, they are taken from the SIPP. They are emulated in the model by taking the stationary distribution of employed workers, across  $\psi$  and  $z$ , and examining the non-wage income among the unemployed one month later, separating by whether they left work according to a quit or layoff.

These three moments are the most important in quantifying the role changes in non-wage income play in driving employment exits. If, the income change from a quit and a layoff were identical, we would conclude that quits were all exogenous (driven by  $\lambda^w$ ) and changes in non-wage income played no role in driving exits.

**Vacancies as a share of employment** All the moments described above are estimated from the worker data alone and can be calibrated without appealing to the general equilibrium nature of the model. To calibrate firm-side parameters  $c$ , as well as back out the matching efficiency  $\chi$ , I leverage my firm survey and the JOLTS data, presented in Figure

3, in the following way. Calibrating the model to the experience of job-seekers only gives an estimate of job-finding  $q^w$  and the unemployment rate  $u$ . Let  $\hat{r}$  represent the ratio of vacancies to employed workers in the economy such that

$$\hat{r} = \frac{v}{1 - u} \quad (10)$$

Given we observe  $\hat{r}$  in Ghana and the USA, we can solve for  $v$  and consequently  $\theta$ . Given that  $q^f = \theta q^w$ , we can back out  $q^f$  and leverage the free-entry condition to estimate vacancy cost  $c$ . Knowing vacancies as a share of employment also allows us to measure  $\chi$ , which is set according to Equation 1 given our knowledge of  $v$  and  $q^w$ .

Table 9: Model fit

Moment	Ghana		USA	
	Data (1)	Model (2)	Data (3)	Model (4)
Any wage employment since Baseline	0.79	0.69	0.71	0.77
Exit conditional on finding work	0.49	0.48	0.13	0.14
Fraction exits from quits	0.68	0.59	0.10	0.092
Correlation of unemployment earnings	0.31	0.30	0.62	0.91
Std. dev. of unemployment earnings	0.50	0.63	1.5	1.5
Std. dev. of employment earnings	0.50	0.51	0.60	0.57
Average earnings gain after a quit	0.13	0.14	-0.54	-0.51
Average earnings gain after a layoff	-0.29	-0.19	-0.72	-0.77
Vacancies as a share of employment	0.025	0.024	0.035	0.035

### 6.3 Quantifying the importance of non-wage income flows

The purpose of my model is to quantify the importance of non-wage income flows in driving differences in exit and quit rates between jobseekers in Ghana and the USA. My model is well equipped to perform this task. My model features both quits and layoffs for exogenous reasons, unrelated to income flows (via  $\lambda^f$  and  $\lambda^w$ ), such that it is not ex-ante designed to attribute all quits to the mechanism I highlight. Further more, I demonstrate in Section 5.1 how the changes in worker income before and after an exit identify the importance of quits due to changing non-wage income. In this section I take the model to task and assess the contribution of non-wage income flows in driving quits, layoffs, and equilibrium wage employment rates.

**Shutting down changes to non-wage income** To isolate the importance of non-income flows I shut down changes in worker's income across time in two ways. First, by re-

ducing  $\varphi$ , the frequency of arrival of shocks which change a worker's non-wage income flows. This counterfactual preserves permanent differences in income, and workers are less likely to move between states. Second, I reduce the variance of  $F_\psi$ , the worker's new non-wage income after an non-wage income re-evaluation shock. In the limiting case where I set the variance of  $F_\psi$ , my model reduces to a conventional Diamond-Mortensen-Pissaredes model with exogenous wages.

Table 10 analyzes the baseline calibrated models in the USA and then conducts two counterfactuals. Rows represent outcomes, analyzing rate of quits that occur due to changes in worker's non-wage income, the rate of quits at large, and the rate of exits at large. Column (1) shows the value of the outcome in the USA under each counterfactual, Column (2) shows the value for Ghana, Column (3) shows the difference in the outcome in the two counterfactuals, and Column (4) shows the percent reduction in the difference in the outcome between the two countries in the counterfactual relative to the baseline calibration. For simplicity, I only report differences in the total rate of exit between the two economies.

Specifically, denote outcome  $y_{\text{USA}}$  to be the value of outcome  $y$  in the baseline calibration in the USA, and  $y'_{\text{USA}}$  the outcome in the USA in some counterfactual. Define analogous measures for Ghana, then we define the percentage of the difference explained as

$$\% \text{ Explained} = \frac{y'_{\text{USA}} - y'_{\text{Ghana}}}{y_{\text{USA}} - y_{\text{Ghana}}} \quad (11)$$

A value of “% Explained” at 100 represents the entire difference in outcome between the USA and Ghana can be accounted for by the proposed counterfactual. A negative value indicates the gap between the two countries *increases* in the counterfactual.

Table 10 shows that when the arrival rate of non-wage earnings shocks  $\varphi$ , is reduced to zero, the quit rate reduces in Ghana from 15.1 to 11.4, and the total exit rate reduces from 26.7 to 22.9. In the USA, by contrast, this reduction is small, shutting off the endogenous quits channel reducing entry and exit by only 0.1. Overall, the gap in total exit rates decreases by 17% when we shut down variance changes in non-wage income, this indicates my proposed mechanism accounts for 17% of the difference in exit rates between the two countries. Shutting down the variance of  $F_\psi$  has an analogous effect. I analyze partial equilibrium, which hold the job-finding rate of workers  $q^w$  fixed, in Appendix Table H.1. Results are virtually identical, indicating a negligible role of firm-side response in driving observed effects.

Table 10: Effect of reducing non-wage income shock arrival rate  $\varphi$  on quits and exits

Outcome	Value		Difference (3)	% Explained (4)
	USA (1)	Ghana (2)		
Baseline				
Quit rate	0.5	15.1	14.6	-
Exit rate	5.4	26.7	21.2	-
Reduce $\varphi$ 50 percent				
Quit rate	0.4	13.4	12.9	-
Exit rate	5.4	25.0	19.5	7.9
$\varphi$ is zero				
Quit rate	0.4	11.4	11.0	-
Exit rate	5.4	23.0	17.6	17.1
Reduce variance of $F_\psi$ 50 percent				
Quit rate	0.5	14.0	13.5	-
Exit rate	5.4	25.6	20.1	5.1
Constant $\psi$				
Quit rate	0.4	11.4	11.0	-
Exit rate	5.4	22.9	17.6	17.1

**Comparing the USA and Ghana** What differences in the underlying structural parameters between the USA and Ghana drive differences in exits? In Table 11 I iteratively set various features of Ghana's economy to the estimated value in the USA. I conduct five exercises. In the first two, I give Ghana USA's non-wage income shock arrival  $\varphi$  and distribution of non-wage incomes  $F_\psi$ , respectively. In the third, I re-assign both  $\varphi$  and  $F_\psi$ . In the next two, I alter the desirability of employment. I give Ghana the USA's distribution of wages, then assign Ghana the USA's estimated value of the non-wage amenity of employment.

Table 11 shows that multiple structural differences between the two countries can reduce exit rates due to changes in non-wage income. When  $\varphi$  is changed to the level of the USA, the overall difference in exits reduces by 16%, consistent with Table 10. However modifying parameters related to the wage sector also reduces the difference in exit rates between the USA and Ghana. The reason for this is simple: As jobs are more valuable, workers are less likely to find the non-wage sector preferable to the wage sector, and thus quit less. When the distribution of wages in the wage sector in Ghana is replaced with that of the USA, the difference in exits between the USA and Ghana reduces by 11.4%. When the value of non-wage amenity  $\nu$  is set to the level of the USA, endogenous quits in Ghana are eliminated entirely, and the gap in exit rates between the USA and Ghana shrinks

by 17.5%. Table 11 underscores the interaction between the wage and non-wage sector in driving exits. Changes in non-wage income only affect employment decisions to the extent the non-wage sector is a desirable option relative to wage employment. Overall, Table 11 supports the idea that decline in exits discussed in Donovan, Lu and Schoellman (2020) may arise from secular improvements in the relative productivity of the wage sector, such as biased structural change discussed in Feng, Lagakos and Rauch (2021). Appendix Table 11 explores partial equilibrium effect only, and reports similar results.

Table 11: Effect of setting parameter values in Ghana to those of the USA on exits

Outcome	Value		Difference (3)	% Explained (4)
	USA (1)	Ghana (2)		
Baseline				
Quit rate	0.5	15.1	14.6	-
Exit rate	5.4	26.7	21.2	-
Ghana, $\phi_{\text{USA}}$				
Quit rate	-	11.7	11.2	-
Exit rate	-	23.2	17.8	16.1
Ghana, $F_{\psi,\text{USA}}$				
Quit rate	-	16.9	16.5	-
Exit rate	-	28.5	23.1	-8.7
Ghana, $\psi_{\text{USA}}, F_{\psi,\text{USA}}$				
Quit rate	-	11.8	11.3	-
Exit rate	-	23.4	17.9	15.5
Ghana $F_{z,\text{USA}}$				
Quit rate	-	12.7	12.2	-
Exit rate	-	24.2	18.8	11.4
Ghana $\nu_{\text{USA}}$				
Quit rate	-	11.4	10.9	-
Exit rate	-	22.9	17.5	17.5

## 7 Conclusion

To understand why poor countries have such high exit rates out of wage employment, I conducted panel survey of job-seekers and a supplementary survey of firms, in Accra, Ghana. I compare the experiences of jobseekers and firms in my sample using administrative data in the USA. Entry into employment is similar between Ghana and the USA, but high employment exit rates mean the long-run level of wage employment in Ghana is half that of the USA. In the primary contribution of this paper, I show quits, rather than

layoffs or temporary employment are the dominant cause of job destruction. I also show quits are more distinguished from layoffs in Ghana relative to the USA.

Exploring within-sample heterogeneity, I examine, and reject, two leading theories for higher job churn in poor countries. I find no evidence to support information frictions as the cause of job destruction, and find only moderate evidence that quits away from wage work are driven by profitable opportunities for self employment. I find that quits are primarily due to workers leaving low-paying jobs and find that quits are more prevalent among those facing temporary lapses in income at baseline.

I argue this is consistent with a model in which time-varying non-wage income causes individuals to accept low-productivity jobs, and then quit them as outside options improve. I build a partial equilibrium model of job search to benchmark the role that changes in non-wage income plays in quitting behavior, and can attribute 17% of the gap in exit rates between the USA and Ghana to this mechanism.

Given quits drive a quantitatively large difference in exits between the USA and Ghana, what can firms and policymakers do to reduce worker exits? My structural model suggests reducing the risk workers face in the non-wage sector has the potential to reduce exits. Reducing worker turnover may be an un-examined benefit of cash transfers and unemployment insurance.

Firms can also reduce exits by improving working conditions. Unfortunately, we have scant evidence on which interventions firms can undertake to reduce quits. In particular, because I find quits are high even outside of uncomfortable factory work, policies to reduce quits may require changes in management, and not simply the physical conditions of the workplace. One promising avenue is the “worker voice” intervention studied in [Adhvaryu, Molina and Nyshadham \(2020\)](#), in which a survey allowing workers to give feedback to managers reduced quits by 20%.

Overall, over 80% of the difference in exits between the USA and Ghana remains unexplained even after accounting for differences in the movement of non-wage incomes between the two countries. While this paper focuses on quits, layoffs are also far higher in Ghana relative to the USA. There remains considerable scope for research describing additional sources of worker exit.



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# Appendix

## A Estimating Flows From 8 and 12-month Transitions

In this section I describe my procedure for recovering 8-month employment outcomes from the 12-month outcome reported by the CPS as reported in Section 3.1. In the process, I also describe how I recover estimated monthly entry and exit rates from long-run transitions in and out of wage work.

In the January CPS survey, I start with an unemployed worker. To assess if that worker has taken *any* job over the next 12 months (regardless if they stay in the wage sector or leave) first I check if they employed in February, March, or April, which I observe directly. Next, I use the retrospective question asked the following January if the worker was employed in the previous 12 months. If they answer “Yes”, then they are considered to have worked in the previous year, even if I don’t observe any employment during the first round of surveys. To assess if a worker is in the wage sector after 12 months, I simply check their employment state in the following January.

I observe 93% of job-seekers find *some* work between 0 and 12 months, yet after 12 months, only 78% of these jobseekers are currently employed. To estimate 8-month outcomes from 12-month outcomes, consider the Markov process where one moves between wage work, according to entry rate  $q$  and exit rate  $\lambda$

$$\Pi \equiv \begin{array}{cc} & \begin{array}{cc} \text{Not wage sector} & \text{Wage sector} \end{array} \\ \begin{array}{c} \text{Not wage sector} \\ \text{Wage sector} \end{array} & \begin{pmatrix} q & 1-q \\ 1-\lambda & \lambda \end{pmatrix} \end{array}$$

I estimate monthly transition rates  $q$  and  $\lambda$  by solving

$$\begin{bmatrix} 1 & 0 \end{bmatrix} e^{\Pi \times 12} = \begin{bmatrix} 0.93 \\ 0.78 \end{bmatrix}$$

And then evaluate 8-month rates according to the following expression:

$$\begin{bmatrix} \text{Not employed in wage work at endline} \\ \text{Employed in wage work at endline} \end{bmatrix} = \begin{bmatrix} 1 & 0 \end{bmatrix} e^{\Pi \times 8}$$

The outcome “Found any wage work at all in previous 8 months” is constructed through the same procedure, where  $\Pi$  is modified such that employment is an absorbing state. Let  $\Pi'$  be this modified transition matrix, such that the second row of  $\Pi'$  is  $[0 \ 1]$ , allowing us to generate the following outcomes

$$\begin{bmatrix} \text{Never found any wage work at all in previous 8 months} \\ \text{Found any wage work at all in previous 8 months} \end{bmatrix} = \begin{bmatrix} 1 & 0 \end{bmatrix} e^{\Pi' \times 8}$$

## B Additional Tables Measuring Entry and Exit Rates

Table B.1: Comparison of flows

Outcome	Mean		Difference (3)	Ratio (4)
	Ghana (1)	USA (2)		
Monthly entry rate	0.19 [0.16, 0.22]	0.15 [0.15, 0.16]	0.041 [0.0093, 0.073]	1.3 [1.1, 1.5]
Monthly exit rate	0.28 [0.19, 0.36]	0.048 [0.046, 0.052]	0.23 [0.15, 0.32]	5.7 [4.1, 7.7]
Stationary rate of wage work	0.41 [0.32, 0.47]	0.76 [0.75, 0.77]	-0.35 [-0.41, -0.25]	0.54 [0.47, 0.66]

Table B.2: Comparison of quit and layoff flows

Outcome	Mean		Difference (3)	Ratio (4)
	Ghana (1)	USA (2)		
Monthly entry rate	0.19 [0.15, 0.23]	0.15 [0.15, 0.16]	0.041 [0.0098, 0.084]	1.3 [1.1, 1.6]
Monthly layoff rate	0.088 [0.043, 0.12]	0.043 [0.041, 0.046]	0.045 [0.0082, 0.090]	2.0 [1.2, 3.1]
Monthly quit rate	0.19 [0.10, 0.25]	0.0049 [0.0040, 0.0057]	0.18 [0.12, 0.27]	39 [26, 58]

## C Additional Tables Documenting Results Described in Figures

Table C.1: Comparison of entry and exit

Outcome	Mean		Difference (3)	Ratio (4)
	Ghana (1)	USA (2)		
Any wage job at 0 months	0.0	0.0	-	-
	-	-	-	-
Any entry between 0 and 8 months	0.79	0.71	0.082	1.1
	[0.74, 0.84]	[0.69, 0.72]	[0.027, 0.13]	[1.0, 1.2]
Employed in wage job at 8 months	0.40	0.61	-0.21	0.66
	[0.34, 0.47]	[0.60, 0.62]	[-0.28, -0.14]	[0.55, 0.77]
Exit conditional on entry	0.49	0.14	0.35	3.5
	[0.39, 0.57]	[0.13, 0.14]	[0.27, 0.45]	[2.9, 4.2]
Still employed at 8 months after finding some job	0.51	0.86	-0.35	0.59
	[0.43, 0.61]	[0.86, 0.87]	[-0.45, -0.27]	[0.48, 0.69]

Table C.2: Comparison of quits and layoffs

Outcome	Mean		Difference (3)	Ratio (4)
	Ghana (1)	USA (2)		
Last job was fixed-term contract	0.22	0.23	-0.013	0.95
	[0.12, 0.31]	[0.21, 0.25]	[-0.12, 0.098]	[0.51, 1.4]
Left last job in voluntary quit	0.68	0.10	0.58	6.7
	[0.57, 0.80]	[0.084, 0.12]	[0.46, 0.69]	[5.3, 8.5]
Left last job in involuntary layoff	0.10	0.67	-0.57	0.15
	[0.022, 0.16]	[0.64, 0.69]	[-0.63, -0.49]	[0.061, 0.27]

Table C.3: Comparison of income changes after quits and layoffs

Outcome	Mean		Difference (3)	Ratio (4)
	Ghana (1)	USA (2)		
Average income of non-quit jobs	1.0	1.0	-	-
	-	-	-	-
Average income after a non-quit	0.71	0.28	0.43	2.5
	[0.41, 0.96]	[0.26, 0.31]	[0.18, 0.74]	[1.6, 3.7]
Income difference after a non-quit	-0.29	-0.72	0.43	0.40
	[-0.59, -0.037]	[-0.74, -0.69]	[0.18, 0.74]	[-0.024, 0.75]
Average income of quit jobs	0.56	0.76	-0.20	0.73
	[0.26, 0.74]	[0.67, 0.84]	[-0.41, 0.092]	[0.49, 1.1]
Average income after a quit	0.69	0.22	0.47	3.1
	[0.37, 0.91]	[0.18, 0.26]	[0.25, 0.79]	[2.0, 4.8]
Average difference after a quit	0.13	-0.54	0.67	-0.24
	[-0.035, 0.28]	[-0.61, -0.46]	[0.51, 0.87]	[-0.55, 0.027]

## D Additional Details on Firm Survey Comparison

Here I describe the methodology I use to compare firms between the USA and Ghana.

My goal is to compare standard measures of aggregate hiring, separation, quit, and layoff rates between the USA and Ghana. My firm survey consists of firm-level outcomes — for each firm, the number of employees overseen, the number of hires in past month, etc. Comparison with the USA is complicated on two dimensions. First, I do not have access to firm-level data from the USA, and cannot match USA and Ghanaian firms using the weighting method of [Hainmueller \(2017\)](#), as I did with jobseekers. Second, JOLTS statistics are aggregates, not averages. That is, the hiring rate does not correspond to the average of firm-level hiring rates, but rather the number of hires across all firms divided by the total employment across all firms.

I construct comparable statistics in the following way. First, I assign USA hiring rates to my Ghanaian firms by matching on establishment size. Next, I generate simulated USA aggregate flows by assuming firms in Ghana experienced hires and separations “as if” they were USA firm. In other words, I ask “what would the aggregate hiring rate of firms in my Ghanaian sample be if they behaved similar firms in their same size bracket behaved?”.

Let  $H_{i,Ghana}^s$  be the number of hires for a firm  $i$  of establishment size  $s$  in Ghana. Similarly let  $E_{i,Ghana}^s$  be the equivalent number of employees overseen by such a firm. Let  $h_{USA}^s$  be the hiring rate for firms in the USA of size  $s$ . Define the observed aggregate hiring rate in Ghana as

$$h_{Ghana} = \frac{\sum_s \sum_i H_{i,Ghana}^s}{\sum_i E_{i,Ghana}^s}$$

$h_{Ghana}$  corresponds to the hiring rate for Ghanaian firms reported in Figure 3. Now define the aggregate hiring rate among my sample if they behaved *as if* matched firms in the US did.

$$h_{USA} = \frac{\sum_s \sum_i h_{USA}^s E_{i,Ghana}^s}{\sum_i E_{i,Ghana}^s}$$

$h_{USA}$  corresponds to the hiring rate for USA firms reported in Figure 3.



## E Additional Tables Showing Baseline Correlates with Exit

Table E.1: Demographic characteristics and exit

Baseline characteristic	Proportion exit conditional on entry			Proportion quit conditional on exit		
	No (1)	Yes (2)	Partial effect (3)	No (4)	Yes (5)	Partial effect (6)
Greater than 30 years old	0.466	0.528	-0.070 [0.154]	0.732	0.607	-0.194 [0.224]
Male	0.444	0.500	0.083 [0.109]	0.583	0.702	0.167 [0.155]
University of more education	0.522	0.459	-0.083 [0.098]	0.686	0.676	0.087 [0.131]
Married	0.491	0.486	-0.093 [0.128]	0.750	0.471	-0.300 [0.161]*
Any dependents	0.439	0.524	0.087 [0.102]	0.720	0.659	-0.026 [0.138]
Above median assets index	0.526	0.444	0.091 [0.148]	0.732	0.607	0.080 [0.215]
Higher than median income	0.484	0.494	0.095 [0.130]	0.645	0.711	0.077 [0.184]

Table E.2: Job characteristics and exit

Baseline characteristic	Proportion exit conditional on entry			Proportion quit conditional on exit		
	No (1)	Yes (2)	Partial effect (3)	No (4)	Yes (5)	Partial effect (6)
High-skill services	0.529	0.368	-0.113 [0.102]	0.685	0.643	0.023 [0.158]
Low-skill services	0.504	0.308	-0.205 [0.150]	0.688	0.500	-0.178 [0.254]
Manual labor	0.412	0.684	0.272 [0.100]	0.714	0.615	-0.190 [0.134]***
Retail	0.470	0.525	0.037 [0.106]	0.638	0.762	0.156 [0.137]
Teaching	0.504	0.273	-0.243 [0.160]	0.662	1.000	0.346 [0.291]
Earnings greater than median	0.558	0.406	-0.146 [0.091]	0.791	0.500	-0.286 [0.136]**

Table E.3: Demographic Differences between Job-Exiters and Job-Stayers

Baseline characteristic	Overall Mean (1)	Mean by group		Regression (4)
		Did not exit (2)	Exited (3)	
Age	29.73	29.29	30.43	1.144 [0.990]
Male	0.77	0.74	0.83	0.090 [0.065]
University of more education	0.50	0.50	0.49	-0.007 [0.077]
Years of work experience	6.15	5.99	6.39	0.404 [0.690]
Any dependents	0.55	0.50	0.64	0.138 [0.076]*
Assets index at baseline	4.12	4.15	4.07	-0.082 [0.255]
Total income from all sources past month	714.36	701.09	735.51	34.416 [113.172]

Table E.4: Demographic Differences among Quitters and Non-Quitters Conditional on Exit

Baseline characteristic	Overall Mean (1)	Mean by group		Regression (4)
		Did not quit (2)	Quit (3)	
Age	29.73	31.36	30.00	-1.364 [1.676]
Male	0.77	0.77	0.85	0.078 [0.099]
University of more education	0.50	0.50	0.49	-0.011 [0.131]
Years of work experience	6.15	7.05	6.09	-0.955 [1.081]
Any dependents	0.55	0.68	0.62	-0.065 [0.126]
Assets index at baseline	4.12	4.50	3.87	-0.628 [0.355]*
Total income from all sources past month	714.36	693.18	755.32	62.137 [192.035]

Table E.5: Differences between Exited Jobs and Non-Exited Jobs

Characteristic of last or current job	Overall Mean (1)	Mean by group		Regression (4)
		Did not exit (2)	Exited (3)	
High-skill services	0.27	0.33	0.21	-0.082 [0.074]
Low-skill services	0.09	0.12	0.06	-0.068 [0.050]
Manual labor	0.27	0.17	0.38	0.196 [0.072]***
Retail	0.29	0.26	0.31	0.025 [0.072]
Teaching	0.08	0.11	0.04	-0.071 [0.047]
Earnings at last or current job	1,339.18	1,443.82	1,230.00	-180.635 [173.160]

Table E.6: Differences between Quit Jobs and Non-Quit Jobs, Conditional on Exit

Characteristic of last or current job	Overall Mean (1)	Mean by group		Regression (4)
		Did not quit (2)	Quit (3)	
High-skill services	0.27	0.23	0.20	0.015 [0.107]
Low-skill services	0.09	0.09	0.04	-0.047 [0.066]
Manual labor	0.27	0.45	0.35	-0.174 [0.123]
Retail	0.29	0.23	0.35	0.138 [0.121]
Teaching	0.08	0.00	0.07	0.068 [0.057]
Earnings at last or current job	1,339.18	1,762.73	980.64	-513.128 [253.094]**

## F Additional Analysis of Information Frictions

Having assessed in Section 4.1 whether job-seekers with more information sources about potential jobs *in general* have lower rates of employment exit, here I assess whether job-seekers with more accurate beliefs about *particular* aspects of the labor market have lower rates of employment exit.

At baseline, I asked job-seekers about non-wage amenities they were likely to experience at jobs they eventually find. I focus on two such aspects: physical comfort and the cost of commuting. At the 8-month endline, I asked employed individuals about these characteristics. In this way, I can compare job-seekers with accurate beliefs at baseline with in-accurate beliefs at baseline and assess whether quits and exits are driven by job-seekers with unrealistic expectations about future employment.

Physical comfort at jobs are measured using Blattman, Dercon and Franklin (2019)'s assessment of working conditions in Ethiopia. At baseline I asked respondents "At the job you are most likely to find, will you have enough time for short breaks?". Then, 8-months later I asked employed respondents if they felt they had time for short breaks at their current job.

To measure belief accuracy, I partitioned the my sample into baseline groupings according to expected future occupation, I constructed groups by partitioning the sample into occupation,<sup>15</sup> above or below median age, and university or more education. At endline, I calculated average earnings among each group (For example, the average earnings of all drivers below median age and without university education), then I compared this value with expected earnings for each individual (Expected earnings among all job-seekers expecting to find a job as a driver, without university education, and below the median age.) I perform the same exercise for beliefs about non-wage amenities.

Table F.1 asks how beliefs correlate with exit, conditional on finding work. Panel (a) addresses beliefs about physical comfort at work, while Panel (b) addresses beliefs about commuting costs. For each measure, I assess 2 version of the independent variable, (1) whether job-seekers are over-optimistic, the expected measure minus the group average, and (2) whether job-seekers have accurate beliefs overall. I consider both continuous and binary versions of the each measure. Table F.1 shows job-seeker predictions do not influence exits, whether through a quit or a non-quit. Analogously, Table F.2 shows job-seeker predictions do not influence quits specifically.

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<sup>15</sup>Occupational groups are Construction, Driving, Factory Work, High Skilled Services (e.g. secretary work), Low-Skilled Services (e.g. security guard), Retail (which includes the food services industry), and Teaching

Table F.1: Prediction accuracy of non-wage amenities and commute cost on exit

(a) Accuracy of beliefs about workplace dis-amenities				
	(1) Exit	(2) Exit	(3) Exit	(4) Exit
Expected dis-amenities minus group average	-0.0268 (0.0253)			
Abs. value expected dis-amenities minus group average		-0.0168 (0.0316)		
Expected dis-amenities minus group average above median			0.0743 (0.103)	
Abs. value expected dis-amenities minus group average above median				0.0836 (0.0955)
Observations	131	131	131	131
Standard errors in parentheses * $p < 0.10$ , ** $p < 0.05$ , *** $p < .01$				
(b) Accuracy of beliefs about the cost of commuting				
	(1) Exit	(2) Exit	(3) Exit	(4) Exit
Expected commute cost minus group average	-0.0213 (0.0490)			
Abs. value expected commute cost minus group average		0.0366 (0.0790)		
Expected commute cost minus group average above median			0.0312 (0.0922)	
Abs. value expected commute cost minus group average above median				0.0678 (0.0897)
Observations	131	131	131	131
Standard errors in parentheses * $p < 0.10$ , ** $p < 0.05$ , *** $p < .01$				

Table F.3: Summary of information index components

Variable	Mean (1)	Median (2)	N (3)
Social connections help me get a job at the place they work	0.27		179
Greater than median number of social connections helping them find work	0.34		179
Social connections helping me find jobs are well-connected	0.34		179
Any experience at job I think I am most likely to get	0.85		179
Social connections tell me about job openings	0.84		179
Social connections tell me the wages jobs pay	0.25		179
Social connections help me travel to look for work	0.12		179
Social connections tell me which jobs I would be best at	0.18		179
Social connections refer me to people they know	0.45		179

Table F.2: Prediction accuracy of non-wage amenities and commute cost on quits

## (a) Accuracy of beliefs about workplace dis-amenities

	(1) Quit	(2) Quit	(3) Quit	(4) Quit
Expected dis-amenities minus group average	-0.0118 (0.0236)			
Abs. value expected dis-amenities minus group average		-0.00674 (0.0293)		
Expected dis-amenities minus group average above median			0.119 (0.0952)	
Abs. value expected dis-amenities minus group average above median				0.0219 (0.0889)
Observations	131	131	131	131

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < .01$ 

## (b) Accuracy of beliefs about the cost of commuting

	(1) Quit	(2) Quit	(3) Quit	(4) Quit
Expected commute cost minus group average	-0.0350 (0.0454)			
Abs. value expected commute cost minus group average		-0.0293 (0.0734)		
Expected commute cost minus group average above median			-0.0728 (0.0854)	
Abs. value expected commute cost minus group average above median				0.0323 (0.0834)
Observations	131	131	131	131

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < .01$

## G Additional Analysis of Flow vs. Non-Flow Income

Table G.1: Employment Exit by Self-employment

Outcome at eight months	Overall Mean (1)	Mean by group		Regression (4)
		Flows from self-employment (2)	Savings (3)	
Any employment entry since baseline	0.81	0.79	0.86	0.138 [0.091]
Any exit conditional on entry	0.52	0.41	0.73	0.266 [0.121]**
Any quit conditional on finding work	0.34	0.24	0.53	0.308 [0.116]***
Any non-quit conditional on entry	0.18	0.17	0.20	-0.042 [0.102]
Employed at endline	0.39	0.47	0.23	-0.174 [0.110]
Relies on savings at endline if not in a wage job	0.20	0.13	0.30	0.142 [0.103]

Table G.2: Employment Exit by Social Transfers

Outcome at eight months	Overall Mean (1)	Mean by group		Regression (4)
		Flows from social transfers (2)	Savings (3)	
Any employment entry since baseline	0.78	0.75	0.86	0.022 [0.087]
Any exit conditional on entry	0.54	0.43	0.73	0.300 [0.126]**
Any quit conditional on finding work	0.40	0.32	0.53	0.243 [0.126]*
Any non-quit conditional on entry	0.14	0.11	0.20	0.057 [0.090]
Employed at endline	0.36	0.42	0.23	-0.228 [0.107]**
Relies on savings at endline if not in a wage job	0.19	0.12	0.30	0.053 [0.104]

## H Additional Counterfactual Experiments

Table H.1: Effect of reducing non-wage income shock arrival rate  $\varphi$  on quits and exits, partial equilibrium

Outcome	Value		Difference (3)	% Explained (4)
	USA (1)	Ghana (2)		
Baseline				
Quit rate	0.5	15.1	14.6	-
Exit rate	5.4	26.7	21.2	-
Reduce $\varphi$ 50 percent				
Quit rate	0.4	13.4	12.9	-
Exit rate	5.4	25.0	19.5	7.9
$\varphi$ is zero				
Quit rate	0.4	11.4	11.0	-
Exit rate	5.4	23.0	17.6	17.1
Reduce variance of $F_\psi$ 50 percent				
Quit rate	0.5	14.0	13.5	-
Exit rate	5.4	25.6	20.1	5.1
Constant $\psi$				
Quit rate	0.4	11.4	11.0	-
Exit rate	5.4	22.9	17.6	17.2



Table H.2: Effect of setting parameter values in Ghana to those of the USA on exits, partial equilibrium

Outcome	Value		Difference (3)	% Explained (4)
	USA (1)	Ghana (2)		
Baseline				
Quit rate	0.5	15.1	14.6	-
Exit rate	5.4	26.7	21.2	-
Ghana, $\varphi_{\text{USA}}$				
Quit rate	-	11.7	11.2	-
Exit rate	-	23.2	17.8	16.1
Ghana, $F_{\psi,\text{USA}}$				
Quit rate	-	17.1	16.6	-
Exit rate	-	28.7	23.3	-9.6
Ghana, $\psi_{\text{USA}}, F_{\psi,\text{USA}}$				
Quit rate	-	11.8	11.3	-
Exit rate	-	23.4	17.9	15.5
Ghana $F_{z,\text{USA}}$				
Quit rate	-	12.8	12.3	-
Exit rate	-	24.4	18.9	10.7
Ghana $\nu_{\text{USA}}$				
Quit rate	-	11.4	10.9	-
Exit rate	-	22.9	17.5	17.5