I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 11332

Return Migration and Self-Employment: Evidence from Kyrgyzstan

Tilman Brück
Clotilde Mahé
Wim Naudé

FEBRUARY 2018

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 11332

Return Migration and Self-Employment: Evidence from Kyrgyzstan

Tilman Brück
ISDC, Leibniz Institute of Vegetable and Ornamental Crops, and IZA

Clotilde Mahé
UNU-MERIT, Maastricht University

Wim Naudé
UNU-MERIT, Maastricht University, and IZA

FEBRUARY 2018

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Return Migration and Self-Employment: Evidence from Kyrgyzstan

A common finding of the migration literature is that migrants are more likely to choose self-employment upon return to their origin countries than non-migrants. This has led to the belief that return migration stimulates entrepreneurship in source countries and hence supports economic development. In this paper, we test these assertions, drawing on the Life in Kyrgyzstan Study, a rich longitudinal data set from a transition economy with high levels of international temporary migration. We find that for return migrants, self-employment is often a temporary occupational choice, suggesting that self-employment serves as a 'parking lot'. In addition, we find evidence that return migrants who were self-employed before migrating are less likely to opt for self-employment on their return, implying that migration disrupts self-employment trajectories. Both findings cast doubt on the common narrative of return migration stimulating entrepreneurship and therefore economic development.

JEL Classification: F22, J24, L26, P20

Keywords: occupational choice, entrepreneurship, migration, transition economies, Central Asia, Kyrgyzstan

Corresponding author:
Tilman Brück
ISDC - International Security and Development Center
Auguststr. 89
10117 Berlin
Germany

E-mail: brueck@isdc.org

1 Introduction

Temporary migration is often undertaken in support of an initiative in the home country, such as accumulating funds for household consumption or for investment in a business (Dustmann and Görlach, 2016).[1] The latter would result in return migrants choosing self-employment as an occupation. Indeed, a number of studies have found that return migrants are more likely to be self-employed than non-migrants (Wahba and Zenou, 2012; Wahba, 2015; Batista et al., 2017). This has been interpreted as migration facilitating entrepreneurship and hence economic development in sending countries.[2]

There are at least two reasons why such an interpretation should be made with caution. The first is that it will depend on why return migrants choose self-employment. Return migrants may only opt for self-employment as a temporary occupation, akin to Harris and Todaro's (1970) 'parking lot' hypothesis, from where to eventually move on to a wage job (Piracha and Vadean, 2010). This could be because of difficult business conditions or because sustaining a career in self-employment may require strong social capital, which may have depreciated during their migration spell (Marchetta, 2012).

The second reason is that the occupation of the migrant before s/he migrated may influence her/his choice on return. It is likely, especially in a developing country context, that return migrants who were self-employed before they left, are less likely than non-migrants to choose self-employment as an occupation. This is because they might have discovered that they lack sufficient entrepreneurial ability or that the climate for doing business is too difficult, as per Jovanovic's (1979) learning mechanism.

Both reasons suggest that the potential for migration to stimulate entrepreneurship in origin countries should not be overestimated, as it would *not* be associated with sustaining a career in self-employment. To date, very few studies have simultaneously dealt with entry into and exit from self-employment in the broader context of whether (return) migration facilitates or constrains self-employment choices in developing economies.

The contribution of this study is to address this lacuna by specifically answering the following questions: (i) are return migrants more likely than non-migrants to enter into *and* to sustain a career in self-employment? And (ii) is this decision influenced by whether return migrants were self-employed before migrating?

We answer these questions by using a rich longitudinal database of a transition economy, with significant international migration, the 2010-2013 Life in Kyrgyzstan (LiK) Study. Correlated random effects models and matching techniques are used to control for dependence between the choice to enter into and/ to exit self-employment (dynamics), time-invariant and time-varying endogeneity.

We find that return migrants in Kyrgyzstan are, as in other settings, more likely to be self-employed than non-migrants. However, their motive to do so is rather based on necessity than opportunity. It thus tends to be more of a temporary choice, as return migrants are more likely to exit from self-employment in subsequent periods than non-migrants. Transition probabilities by migration status confirm that return migrants display lower occupational stability than non-migrants both before and after migrating. Benchmark estimates indicate that, on average, return migration increases the likelihood of being self-employed by 18.5 percentage points for returnees who were self-employed in the previous time period; by 22.4, if they were not.

We also find that if return migrants were self-employed *before* migrating, they would be less likely to choose self-employment on their return. To be specific, matched difference-in-differences estimates reveal that, on average, return migration increases the likelihood of being self-employed by 1.19 percentage points for returnees who were self-employed before leaving Kyrgyzstan. This likelihood increases to 19.98 percentage points if they were not. These novel findings suggest that temporary migration could be more disruptive of

[1] In this paper, migration is defined as the 'relocation of people within space that involves their permanent or temporary change of residence' (Mafukidze, 2006, p.106).

[2] See Naudé et al. (2017) for a review of the empirical evidence on migration, development and entrepreneurship.

self-employment trajectories than is often thought.

The rest of the paper is structured as follows. Section 2 reviews the relevant literature on the relationship between return migration and self-employment. Section 3 sets out the estimation strategy and data. Section 4 presents the empirical results and robustness checks. Section 5 concludes.

2 Relevant literature

With an estimated more than one billion of international and internal migrants worldwide by 2017, the scholarly literature on migration as a social and economic phenomenon has understandably grown in recent years, reflecting the humanitarian disasters, political controversies and divided views that have accompanied the global rise in migration (Clemens and Pritchett, 2016). This literature has built on a core of academic work that has dealt with why individuals and households migrate,[3] and how migration impacts migrants, left-behind family members and host and sending countries' development (Beegle et al., 2011; Christiaensen and Todo, 2014; Gibson et al., 2011; Gibson and McKenzie, 2012). A sizeable subset of this literature has studied the impact of migrants' remittances on their home regions, including whether and how remittances are used to invest in entrepreneurial ventures (Amuedo-Dorantes and Pozo, 2006; Rapoport and Docquier, 2006; Stark, 2009; Taylor and Lopez-Feldman, 2010).

One feature of migration is that it is very often temporary, because it is undertaken in support of an initiative in their home countries, such as accumulating funds for household consumption or for investment in a business (Dustmann and Görlach, 2016). Return migrants can bring back better education, experience, networks and wealth, with the resulting entrepreneurial activity benefiting the development of their origin countries. The bulk of studies have so far found migrants to be more likely to choose self-employment on return to their origin countries than non-migrants,[4] suggesting that migration facilitates self-employment and therefore entrepreneurship.

In the absence or inefficiency of markets, savings accumulated during migration (and remittances) have been found to act as substitutes for formal insurance, facilitating access to capital and promoting investments in new or existing ventures in origin communities (Wahba and Zenou, 2012; Wahba, 2015; Batista et al., 2017). By inducing changes in occupation, emigrating and returning 'home' have been shown to affect returnees' mindsets, e.g. their propensity to take risks, be it for taking a new job or setting up a firm, as well as their capabilities – their skills and know-how (Black and Castaldo, 2009; Démurger and Xu, 2011; Chen and Feng, 2012). These resources could simultaneously offset the loss of local social capital that migrants experienced while away, which may threaten the start-up, growth or survival of any entrepreneurial activity upon return (Marchetta, 2012; Wahba and Zenou, 2012).

As a consequence, as Naudé et al. (2017) point out, there is a pervasive belief that return migration can stimulate entrepreneurship and economic development in sending countries. There are at least two reasons why such a belief may be mistaken. The first is that whether return migrants as self-employed agents provide growth-enhancing entrepreneurship depends on why they choose self-employment. Return migrants might not be able to find a wage-paying job immediately. Self-employment upon return might be a transitory phase for reintegrating into the domestic labour market in the spirit of Harris and Todaro's

[3] Neoclassical models of migration, such as Lewis (1954), Ranis and Fei (1961), Harris and Todaro (1970) or Piore (1979), explain the decision to migrate by individuals comparing their present value of lifetime earnings from employment opportunities in alternative locations. Push and pull factors are typically identified as triggering migration (King, 2012). In the New Economics of Labour Migration (NELM) potential migrants are embedded in a social context so that the relevant unit of analysis is argued to be, not the individual, but rather the household. Migration decisions are assumed to be jointly taken by household members (Stark and Bloom, 1985).

[4] This finding applies to return migrants back in their (developing) home countries. In contrast, immigrants are less likely to be self-employed in their host countries . For instance, a review from the Organisation for Economic Co-operation and Development (OECD) found that, in about half of OECD countries, immigrants were less likely than natives to be self-employed (OECD, 2010).

(1970) 'parking lot' hypothesis. Facing limited formal sector employment opportunities, returnees would often work in small, informal, self-employed activities until finding formal wage-employment or migrating again (Piracha and Vadean, 2010). The latter is often an option in countries where migration is structural and a means to secure an economic basis at home, such as in the case of Kyrgyzstan (Thieme, 2014).

Furthermore, return migrants may opt for self-employment as a temporary occupation and not as a sustained career choice due to difficult business conditions or because self-employment can require strong social capital, which may have depreciated during the migration spell (Marchetta, 2012; Wahba and Zenou, 2012). For instance, Obukhova et al. (2012) show that returnee entrepreneurs to China do not outperform non-migrant, 'homegrown' entrepreneurs. Because of a lack of local social networks (school ties), high-tech enterprises returnees set in place tend to underperform non-migrant entrepreneurs or returnee entrepreneurs with such ties.[5]

The second reason that explains why assuming return migrants' entrepreneurial prowess may be mistaken is that the occupation of migrants before they migrated may influence their choices of occupation upon return to their origin countries. Individuals who were self-employed before migration might be more likely to opt out of self-employment on return. In this case, the link between return migration and self-employment might be more complex than is currently assumed. It seems plausible, especially in a developing country context, that migrants who were self-employed before they left, may be less likely than non-migrants to choose self-employment as an occupation upon return. They might have had the opportunity to discover their own entrepreneurial abilities and learnt about the climate for doing business in their origin countries, so that, on return, they would rather opt for wage-employment (Jovanovic, 1979). This is consistent with a developing economy setting, where wage- and self-employment coexist and individuals frequently transition between these two occupations, as suggested by Koelle's (2016) theoretical and empirical evidence.[6]

By entailing a change in occupations, migration could act like an 'experience good' (Nelson, 1970) that helps to determine the quality of a worker's occupation-productivity match, by updating information on their tastes and abilities.[7] This transition pattern could be viewed as part of a dynamic lifecycle sequence of sorting through gradual learning and experimentation, in which individuals self-select into their preferred options over time (Dillon and Stanton, 2017). Emigrating and returning to their source communities could thus nudge migrants to discover the best allocation of their capital and labour resources by getting in and out of self-employment. This could lead return migrants who were initially self-employed, now better informed about their lower chances of success as entrepreneurs or with stronger interests in wage-employment, to switch to wage-employment upon return. In such a case, the 'disruption' caused by migration to self-employment can be viewed in a positive light. It enables career development by offering an escape from self-employment, and it reduces the number of entrepreneurs with low abilities in the entrepreneurial pool.

If the reasons return migrants choose self-employment on return are any of the above, the implications are that they will not sustain a career in self-employment but will revert to wage-employment soon after their return. Any businesses they may create will not have a significant development impact.

To summarise, return migrants may only be more likely to choose self-employment for entrepreneurial reasons if they discovered they had good entrepreneurial abilities. That means they decided to migrate to obtain experience and resources to help them on their return to sustain their career in self-employment – deciding to migrate is part of their choice to be self-employed – as their home countries' business environment is

[5] There is nonetheless evidence suggesting that migration enhances participation in formal and informal networks (Gallego and Mendola, 2013; Morten, 2016). In particular, and of interest in this paper, households with migrants have been found to insure their social networks against shocks and to redistribute wealth to poorer (non-migrant) households in sending communities in Kyrgyzstan (Chakraborty et al., 2015).

[6] If they expect to receive better rewards as wage-employed, self-employed will shift to wage-employment and shut down their firm. This very possibility to exit self-employment decreases incentives to invest in entrepreneurial activities, and so to persist in entrepreneurship over time. Using data from Colombia, Koelle (2016) confirms that those self-employed with attractive wage-employed opportunities, i.e. who have the resources and abilities required in wage-employment, are less likely to expand their entrepreneurial ventures and hence tend to exit self-employment and switch to wage-employment.

[7] See also White and Wolaver (2003) on how the decision to migrate might result from the degree of a worker's occupation-productivity match.

not so constraining. In addition, social capital deterioration is not an insurmountable obstacle to thrive as entrepreneur. These conditions may be hard to hold, especially in developing economies. Hence, our hypotheses are that (i) if return migrants choose self-employment they may tend to do so as a temporary mechanism for eventually facilitating entry into wage-employment or for future re-migration, and that (ii) they would be less likely to choose self-employment on return if they had been in self-employment before migration.

Very few studies in the scholarly literature have yet focused on these two hypotheses in integrated and consistent fashion. As this review implies, the impact of return migration on self-employment and entrepreneurship has been relatively neglected in the literature. More generally, the occupational stability of migrants is a topic about which relatively little empirical evidence has so far been gathered. Whether return migrants sustain their entrepreneurial activities has received even less attention in the literature. To the best of our knowledge, only Marchetta (2012) has specifically studied the survival of returnees' entrepreneurial activities. *Entry* into and *exit* from self-employment have been either analysed separately or not specifically modeled as two separate decisions. There is thus a lacuna in the literature this study aims to fill, by expanding the evidence found specifically in Marchetta (2012), Wahba and Zenou (2012), Wahba (2015) and Batista et al. (2017).

We test our hypotheses using longitudinal data from Kyrgyzstan to answer the following questions: (i) are return migrants more likely than non-migrants to enter into *and* to sustain a career in self-employment in Kyrgyzstan? And (ii) is this decision influenced by whether return migrants were self-employed before migrating?

In finding empirically sound answers to these questions, we face several potential sources of endogeneity. First, the dependence between the choice (state) and the duration in self-employment, i.e. dynamics, should be taken into account. While a person is more likely to be self-employed at time t if s/he were self-employed in $t-1$, the determinants of entry into and persistence in self-employment might differ. Second, time-invariant effects, inducing omitted variable bias, have to be controlled for. Temporary migrants might self-select into both temporary migration and self-employment, which might influence their chances of sustaining a career in self-employment. Third, we need to account for time-varying effects, i.e. reverse causality. Migrating and accumulating resources during migration might be influenced by the perception of profitable investment opportunities in origin communities. The decision to emigrate, to return and to set up a firm could be simultaneous decisions, and migration an *ex-ante* business strategy to start up or expand existing ventures upon return. Those self-employed might also decide to migrate if their entrepreneurial ventures were unsuccessful.

In the next section of this paper, we present the estimation strategy used to test our hypotheses and deal with these challenges as well as present the 2010-2013 LiK database.

3 Methodology

The estimation strategy is set out in subsection 3.1 and the database to be used in subsection 3.2.

3.1 Estimation strategy

We proceed as in de Ree and Nillesen (2009) and Bleaney and Dimico (2011) by running a series of non-linear probability models, in which the outcome variable Y_{it} is a binary variable defined if a working-age (18-64-year-old) individual i has reported a primary occupation at time t. This variable takes value 1 if s/he

is self-employed in year t, and zero otherwise – a (paid or unpaid) employee or member of a cooperative.[8]

Baseline model

The baseline specification follows what has usually been estimated in the literature, ignoring entry- and exit-specific dynamics:

$$Y_{it} = \alpha_0 + \sum_{k=1}^{K} \beta_{0k} X_{kit} + u_{it} \tag{1}$$

where X_{kit} is a k-vector of explanatory variables, including 1 to model a constant, $returnee_{it}$, defined as a binary variable taking value 1 if an individual has lived abroad for at least one month since 2005, and $k-2$ exogenous variables. Exogenous variables control for individual- (gender, age, ethnicity, household headship, educational attainment), household- (household size, below 15 dependency ratio), location- and year-specific characteristics. α_j and β_{jk} are parameters to be estimated; u_{it}, an unobserved random disturbance. Standard errors are clustered at the household level to account for interdependence of labour market outcomes between household members.

Entry model

To disentangle the relationship between return migration and entrepreneurship in analysing entry into self-employment, individuals observed as self-employed in $t-1$ are excluded. Discarding observations for which $Y_{i,t-1} = 1$, the entry model can be written as the probability of being self-employed in t, conditional on not being self-employed in $t-1$ as:

$$Y_{it} = \alpha_1 + \sum_{k=1}^{K} \beta_{1k} X_{kit} + u_{it} \tag{2}$$

Estimating this model should provide an answer on whether return migrants are more likely to opt for self-employment compared to non-migrants.

'Survival' model

To analyse the likelihood for a return migrant to sustain a career in self-employment, individuals not observed as self-employed in $t-1$ are excluded. Conditioning the probability of self-employment at t on being self-employed in $t-1$ yields a 'survival' model:

$$Y_{it} = \alpha_2 + \sum_{k=1}^{K} \beta_{2k} X_{kit} + u_{it} \tag{3}$$

Combined model

While it is unlikely that $\alpha_1 = \alpha_2$, since an individual is more likely to be self-employed at time t if s/he was self-employed in $t-1$, the 'true' model might be such that $\beta_{1k} = \beta_{2k}$. The literature on business survival has tended to study enterprise survival on one hand, and on the other hand, the persistence of entrepreneurs' occupational choice, based on individual features. However, such a distinction is less clear when the sample

[8] These three categories are lumped together because of their status as they all imply dependence on co-workers or supervisors, family members or not.

of interest includes rather micro and small units (Marchetta, 2012). We thus expect factors associated with continuing in self-employment to be similar to those associated with entry into self-employment, in particular in a context of small entrepreneurial units, as in our estimation sample. If this is the case, estimating equations (2) and (3) separately is inefficient, leading to relatively wide confidence intervals on estimated coefficients, specifically in smaller subsets of the data.

The model to be estimated on the whole data set should combine entry into and 'survival' in self-employment models, as in:

$$Y_{it} = \alpha_3 + \sum_{k=1}^{K} \beta_{3k} X_{kit} + \lambda_3 Y_{i,t-1} + u_{it} \tag{4}$$

Equation (4) reduces to equation (2) if $Y_{i,t-1} = 0$, and to equation (3) if $Y_{i,t-1} = 1$. However, equation (4) imposes β_{3k} to be the same in both cases and implies that the errors of the two different subsamples come from the same population. Relaxing this equality on the coefficients leads to the following model:

$$Y_{it} = \alpha_4 + \sum_{k=1}^{K} \beta_{4k} X_{kit} + \lambda_4 Y_{i,t-1} + \sum_{k=1}^{K} \theta_{4k} X_{kjt} Y_{i,t-1} + u_{it} \tag{5}$$

Equation (5) reduces to equation (4) if θ_{4k} is a vector of zeros. If it is not certain whether return migration is similarly related to entry into and persistence in self-employment, i.e. whether any element of θ_{4k} is zero, the appropriate model to estimate is (5) (combined model). We can then re-estimate this model, setting to zero any elements of θ_{4k} that are not significantly different from zero at the first stage (*parsimonious combined model*). Equation (5) allows testing parameter restrictions across entry and 'survival' model coefficient estimates.

Dealing with endogeneity

We account for potential endogeneity between return migration and self-employment by exploiting the longitudinal dimension of the data set to control for time-invariant unobserved heterogeneity. We do so by incorporating a Mundlak 'correction' (Mundlak, 1978). The Mundlak model assumes that the (individual) fixed effects are projected on the group means of time-varying variables, imposing a form on the relationship between the time-invariant random disturbance and the regressors. Regressions are estimated by adding individual-specific (group) means across time, and then estimated as random effects models. Rejecting the null hypothesis that the joint significance of the group means coefficient estimates is not different from zero is evidence of time-invariant unobserved heterogeneity at the individual level.

Since u_{it}, the unobserved random disturbance, has a time-invariant γ_i and a time-varying component ϵ_{it}, augmenting our baseline specification (equation (1)) with a Mundlak correction assumes that:

$$E[\gamma_i | X_{kit}] = g(X_{kit}) \tag{6}$$

where time-invariant effects are correlated with the other exogenous variables, X_{kit}. The expected value of γ_i, conditional on the exogenous regressors, is a linear combination of the average panel of the time-varying regressors. The Mundlak correction yields:

$$\gamma_i = \delta_0 + \sum_{k=1}^{K} \delta_{1k} \overline{X}_{ki} + \epsilon_i \tag{7}$$

$$Y_{it} = (\alpha_0 + \delta_0) + \sum_{k=1}^{K} \beta_{0k} X_{kit} + \sum_{k=1}^{K} \delta_{1k} \overline{X}_{ki} + u_{it} + \epsilon_i \tag{8}$$

where ϵ_i is assumed to be uncorrelated with X_i. Equation (5) is estimated as in Wooldridge (2005), who proposes an extension to the Mundlak estimator to estimate dynamic non-linear panel data models with unobserved heterogeneity. Wooldridge (2005) suggests modeling the distribution of the outcome variable $\{Y_{i1}, ..., Y_{iT}\}$, given Y_{i0} (its initial value) using conditional Maximum Likelihood (ML). The distribution of u_i, time-invariant, individual-specific heterogeneity is directly specified, given y_{i0} and other exogenous variables, such that:

$$g(\gamma_i | y_{i0}, X_{kit}) \sim N(\delta_0 + \delta_1 Y_{i0} + \sum_{k=1}^{K} \delta_{2k} \overline{X}_{ki}, \sigma_\epsilon^2) \tag{9}$$

This can be re-written as:

$$\gamma_i = \delta_0 + \delta_1 Y_{i0} + \sum_{k=1}^{K} \delta_{2k} \overline{X}_{ki} + \epsilon_i, \tag{10}$$

where $\epsilon_i \sim N(0, \sigma_\epsilon^2)$ is independent of Y_{i0} and X_{ki}. As in Mundlak's approach, fixed effects are projected on the group means of time-varying variables. Regressions are run by regressing the outcome variable at time t on the set of explanatory variables, the individual-specific (group) means across time, the initial outcome value (at time $t = 1$, 2010), the lagged $t - 1$ outcome and the interaction of the lagged outcome with the set of explanatory variables, as in Bleaney and Dimico (2011). Estimated by a standard random effects probit, equation (5) can then be re-written as:

$$Y_{it} = (\alpha_4 + \delta_0) + \sum_{k=1}^{K} \beta_{4k} X_{kit} + \delta_1 Y_{i0} + \lambda_4 Y_{i,t-1} + \sum_{k=1}^{K} \theta_{4k} X_{kjt} Y_{i,t-1} + \sum_{k=1}^{K} \delta_{2k} \overline{X}_{ki} + u_{it} + \epsilon_i \tag{11}$$

We account for selection into having reported a primary occupation at time t, by adding to the below specifications Inverse Mills Ratios (IMR), based on the predictions of the probability to be observed working at time t. Our selection (dependent) variable is a binary variable taking unity if an individual has a primary occupation; zero, otherwise, i.e. either inactive or unemployed. The IMRs for selection into working are calculated for each specification and then added to the corresponding models for self-employment probability. In line with the existing literature, we use being married as exclusion restriction.[9]

To conclude this subsection, we should indicate that controlling for individual fixed effects does not exclude measurement errors and time-varying endogeneity. Not only is it difficult to find an instrumental variable *per se*, but our explanatory variable of interest also only records return migration up to 2005. There might be some return migrants in the data we are not able to identify. Even if a relevant and strong instrument is found, i.e. the treatment is correctly allocated, estimates will be biased because we cannot identify migrants who migrated and returned to Kyrgyzstan before 2005. For this reason, we include time-varying variables as controls in the benchmark specifications and later perform a matched difference-in-differences analysis to check the robustness of these estimates.

[9] Estimates of sample selection regressions are available on request.

3.2 Data source

We use data from the Life in Kyrgyzstan Study (LiK), a multi-topic longitudinal survey carried out annually from 2010 to 2013 in Kyrgyzstan, tracking the same households over time in all seven regions (oblasts) and the two major cities, Bishkek and Osh. Data were collected once a year around October-November, although there were a few deviations in dates of field works in each wave, in particular in 2013. Detailed information on the LiK can be found in Brück et al. (2014).

The structure of Kyrgyzstan's economy has led to high rates of emigration (Atamanov and van den Berg, 2012).[10] Although numbers vary by sources, emigration from Kyrgyzstan is, on all accounts, significant.[11] The organisation of Soviet-era planned economies has simultaneously left Kyrgyzstan without market-supporting institutions, and difficult access to financial support.[12] Restrictions on private land ownership and state-led rent-seeking limit the growth of Kyrgyz family farms (Atamanov and van den Berg, 2012). Political instability, tax rates and corruption were recently listed as the first challenges that formal, non-agricultural enterprises faced in Kyrgyzstan (IBRD and World Bank, 2014). However, entrepreneurship has been found key to a successful transition from planned to market economy (McMillan and Woodruff, 2002).[13] The extent of international migration in Kyrgyzstan, its dependence on destination country economic prospects and the role entrepreneurship could play in its unique transition setting point to the relevance of studying the potential implications of return migration for Kyrgyzstan's economic development through entrepreneurship. By following the same thousands of individuals across four consecutive years, the LiK can help to shed light on these dynamics.

The unit of analysis is a working-age (18-64-year-old) individual born in Kyrgyzstan, interviewed in all four waves. This resulted in a total of 4,765 respondents across 2,195 original, non-splitting households. From the original sample of 3,000 households identified in 2010, 2,450 households (81.6%) participated in all four waves of the project.[14]

The exclusion of 2,099 individuals from 557 households initially interviewed in 2010 could represent a threat to our analysis, if attrition across waves is structural, i.e. if the probability of attrition is different between returnees and non-migrants. For instance, return migrants who plan to re-migrate might take self-employment as a transitory occupation while waiting for future migration, and might not have any interest in lasting entrepreneurial activities. Alternatively, returnees whose entrepreneurial activities fail might be more likely to migrate again. In these cases, non-response might be selective. This would provide a non-random picture of the population and bias estimates.

In the absence of longitudinal and cross-sectional weights, we control for potentially structural attrition by including background characteristics that might determine the probability of participation. Since this attrition problem can be viewed as a sample selection problem, we correct for sample selection in all

[10] Demographic pressure and (land) resource limitations coincided with economic opportunities in neighbouring countries to encourage migration. International migration became a natural response to economic challenges in Kyrgyzstan, to mainly Russia – hosting 92% of Kyrgyzstani migrants – and Kazakhstan – 8%. Russia's recent economic crisis therefore spurred many returns (The Diplomat, 2015).

[11] With a population of about 5.7 million in 2013, the number of permanent and seasonal labour migrants approximated 200,000 to 1 million people depending on information sources. The subsequent growth in remittances has ranked Kyrgyzstan second worldwide after Tajikistan. Remittances represented about a third of its gross domestic product (GDP) in 2014 (Karymshakov and Sulaimanova, 2017).

[12] In 2014, individual entrepreneurs and small farmers contributed to respectively 18% and 9% of gross domestic product (GDP), but accounted for 90% of entrepreneurial activities. Over 2001-2014, large enterprises were the main driver of GDP growth (Rudaz, 2017).

[13] In China, Poland or Vietnam for instance, new firms drove reforms by generating economic growth and jobs, offering goods and services otherwise inexistent, stimulating savings, and limiting the power of public firms (McMillan and Woodruff, 2002).

[14] Household members currently away are treated as absent: they are present on household rosters, but are not tracked and left out of individual surveys. They are tracked again once they return to their households, and share common living arrangements. No new sample was added, but new individuals joined the survey in the following rounds because of changes in household composition. New individuals who moved into a surveyed household were surveyed and tracked, even in case of their eventual departure from the household in the following years. Since all adult household members were to be re-interviewed individually, all children of surveyed households became part of the sample once they turned 18.

specifications by adding IMR, based on the predictions of the probability of being interviewed in all four waves regressed on benchmark specification covariates as well as an exclusion restriction, (individual) perception of safety, on the 2010 sample of working-age individuals (cross-section). This exclusion restriction takes a value from 1 to 5, the greater its value, the less safe an individual feels walking alone in the neighbourhood at night.

As Table A1 shows, its statistical significance and negative sign suggests that the less safe an individual interviewed in the first wave of the survey feels, the less likely s/he will be successfully interviewed in subsequent waves. In other words, the more likely s/he might have left her place of residence during the first wave, or the more suspicious s/he might be, leading to refusal to being interviewed in subsequent waves.

The outcome of interest is a binary variable defined for individuals who reported a primary occupation in any industry, taking the value of 1 if an individual i is self-employed as primary occupation in year t, and zero otherwise. Independent variables include: return migration, defined as a binary variable taking value 1 if an individual has lived abroad for at least one month since 2005; gender; age and age squared; ethnicity (three major groups: Kyrgyz, Uzbek, Russian); household headship, marital status, household size and below 15 dependency ratio; secondary, vocational, university education; rural/urban location; and year-specific binary variables to capture wave-specific characteristics and control for year-specific date of fieldwork (month of interview was not recorded).

4 Empirical results

In this section, we provide a descriptive statistical analysis of the variables of interest in subsection 4.1. In subsection 4.2, we present and discuss our regression estimates. In subsection 4.3, we assess the robustness of these results.

4.1 Descriptive results

Occupational status and profile of all respondents

Our dependent variable of interest is the occupational status of respondents, i.e. whether they are self-employed at time t. Table 1 (and, in more details, Table A2) reports that 21.8% and 29.5% of the sample are respectively self- and wage-employed. This suggests that both sectors coexist in Kyrgyzstan, consistent with Koelle's (2016) findings for developing economies. Figure 1 plots the Kernel density estimates of self- and wage-employment earning distributions. While Table A3 reports that self-employed earn on average relatively more than employees, this figure indicates that no sector provides earnings, making it strictly (always) superior.

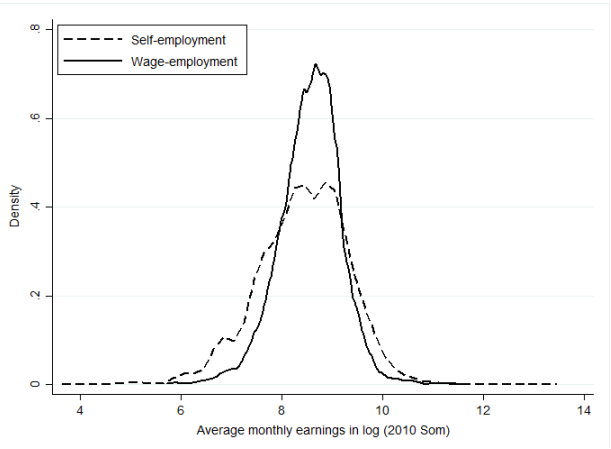
In addition, earnings from self-employment show greater variability than earnings from wage-employment. This could reflect some degree of unpredictability in self-employed activities in Kyrgyzstan and the coexistence of poverty- and opportunity-driven self-employment. This is supported by the fact that working-age individuals who reported being self-employed in some waves earn on average relatively less in a month (KGS8,311) than those who reported being self-employed in all waves of the survey (KGS6,082).

Table 1: Descriptive statistics of estimation sample

	Mean	S.D.
Has worked over last week?	0.600	0.490
Self-employed	0.218	0.413
Wage-employed	0.295	0.456
Family worker	0.085	0.278
Has ever lived abroad	0.063	0.243
Total	19,060	

Notes: Means and standard deviations (S.D.) of variables of interest of balanced panel estimation sample of 4,765 individuals observed each four years of the survey.

Figure 1: Kernel density estimates



More generally, those in the sample that report being 'Always' self-employed are older, more likely to be men, head of their household and married than individuals 'Sometimes' or 'Never' self-employed. 'Sometimes' self-employed tend to come from bigger households that have experienced relatively more shocks over the preceding 12 months. This may indicate that transitions between occupations occur out of necessity.

As for the labour market activity of self-employed respondents, Table A4 indicates that individuals who reported being 'Always' self-employed are slightly more likely to employ non-household members (3.2%) than 'Sometimes' self-employed (1.9%). They are also more likely to run registered businesses than those who report being 'Sometimes' self-employed (54.7% against 44.8%). They tend to work more in wholesale, retail and manufacturing sectors, while 'Sometimes' self-employed are more present in agriculture and construction. These statistics suggest that individuals who reported being self-employed in some waves of the survey, but not all, might be less successful in self-employment and establish less stable entrepreneurial activities than those who reported being self-employed in every wave.

Profile and occupational status of return migrants

Table A5 indicates that return migrants are on average more likely to be self-employed compared to non-migrants, and Table A3, that on average, return migrants are most present among those who report being 'Sometimes' (9.1%) and 'Always' (8.6%) self-employed. It is therefore no surprise that households with return migrants receive a greater share of their income from household entrepreneurial activities compared to individuals living in a non-migrant household, as shown in the upper panel of Table A6. Furthermore, apart from the heterogeneity present among self-employed described above, the almost equal representation of return migrants in these two self-employed types indicates some level of diversity among return migrants.

Considering household expenditure patterns in the lower panel of Table A6, migration seems to be undertaken to meet consumption rather than 'productive' needs. For instance, households with return migrants are more likely to spend their income on 'celebrations' and 'clothing' than non-migrant households. This is consistent with existing qualitative research in Kyrgyzstan suggesting that a frequent reason for migration is to obtain funds to cover daily expenditures or events such as festivities (Thieme, 2014).

Occupational transitions over time

Given our interest in return migrants' occupational choice over time, we consider respondents' labour market transitions across the four years of the survey, summarised in Tables 2 (full estimation sample), 3 (return migrants) and 4 (non-migrants). In these tables, a cell should be read as the probability in percentage to transition from a row employment status in year t to a column employment status in year $t+1$. The main diagonal measures inertia, i.e. the proportion of individuals who stayed in the same occupation in two

subsequent years.

While table 2 shows general flexibility between occupations, the persistence of the working-age population in self-employment (64%) is lower than in wage-employment (77%). Bilateral movements between unemployment, self- and wage-employment are more prevalent than movements to other sectors. Specifically, 1.7% and 7.9% of the wage-employed are likely to be respectively unemployed and self-employed in the next year compared to 0.9% and 11% of the self-employed likely to be respectively unemployed and wage-employed. Transitions thus appear more frequent from self- to wage-employment (11%), and from unemployment to self- (11%) and wage-employment (35.6%), than from wage- to self-employment (7.9%).

Table 2: Transition probabilities between occupations of all respondents

Employment status t	Employment status $t+1$					
	Inactive	Unemployed	Self-employed	Wage-employed	Other	Total
Inactive	71.29	2.68	8.74	10.59	6.69	100.00
Unemployed	36.67	13.85	11.03	35.64	2.82	100.00
Self-employed	19.67	0.94	63.97	10.95	4.47	100.00
Wage-employed	11.73	1.69	7.93	77.02	1.64	100.00
Other	33.74	0.85	12.29	15.55	37.57	100.00
Total $t+1$	36.92	2.11	21.71	31.66	7.60	100.00

Notes: Transition frequencies and probabilities between occupations of estimation sample. Rows reflect the initial t values; columns reflect the final $t+1$ values. *Inactive* includes individuals who have neither worked in the last seven days, nor have looked for a job. *Unemployed* includes individuals who have not worked in the last week, but have been looking for a job. *Self-employed* includes own-account workers and employers. *Wage-employed* includes wage-employed and members of a producer's cooperative. *Other* includes unpaid labour and unspecified.

Labour market transitions of return migrants and non-migrants further indicate that return migrants (Table 3) have less stable occupations than non-migrants (Table 4), either over the four years ('ever' returnees, upper panel) or upon return (lower panel). While the persistence of both groups in self-employment is similar (around 63%), the persistence of returnees in wage-employment is lower (about 59%) than that of non-migrants (about 78%). Moreover, if self-employed return migrants have a similar probability to transition to wage-employment than non-migrants (about 10-11%), 18.7% of wage-employed return migrants are likely to be self-employed in the next year, compared to only 7.2% of wage-employed non-migrants. 18 and 28.2% of unemployed 'ever' returnees (upper panel) are likely to be respectively self- and wage-employed in the next year, compared to 10.3 and 36.5% of unemployed never migrants. In contrast, of those unemployed return migrants upon return (lower panel), 9.1 and 40.9% are likely to be respectively self- and wage-employed in the next year, which is somewhat similar to never migrants.

We can conclude from this subsection that self-employment in Kyrgyzstan is a rather transitory choice of occupation, consistent with Harris and Todaro's (1970) 'parking lot' hypothesis. It is also one seemingly more often selected by return migrants, who display lower occupational stability, both before and after migrating, than non-migrants. In the following subsections, we investigate the determinants of these occupational choices.

Table 3: Transition probabilities between occupations of returnees

Employment status t	Employment status $t+1$					
	Inactive	Unemployed	Self-employed	Wage-employed	Other	Total
			Ever returnees			
Inactive	61.49	2.80	14.91	13.98	6.83	100.00
Unemployed	35.90	15.38	17.95	28.21	2.56	100.00
Self-employed	19.72	0.83	63.89	11.39	4.17	100.00
Wage-employed	15.81	1.72	18.56	59.11	4.81	100.00
Other	41.84	0.00	15.31	16.33	26.53	100.00
Total $t+1$	33.33	2.07	31.89	25.68	7.03	100.00
			Returnees upon return			
Inactive	65.04	2.65	13.72	10.62	7.96	100.00
Unemployed	36.36	9.09	9.09	40.91	4.55	100.00
Self-employed	22.18	0.70	63.03	10.21	3.87	100.00
Wage-employed	18.43	1.38	16.59	58.99	4.61	100.00
Other	42.68	0.00	12.20	17.07	28.05	100.00
Total $t+1$	35.26	1.56	31.05	24.55	7.58	100.00

Notes: See notes Table 3. The upper panel present transitions of ever returnees, i.e. individuals observed as return migrants at some point in time in the data; the lower panel, of individuals migrants specifically upon return.

Table 4: Transition probabilities between occupations of non-returnees

Employment status t	Employment status $t+1$					
	Inactive	Unemployed	Self-employed	Wage-employed	Other	Total
			Never returnees			
Inactive	71.98	2.68	8.31	10.35	6.68	100.00
Unemployed	36.75	13.68	10.26	36.47	2.85	100.00
Self-employed	19.67	0.95	63.98	10.90	4.50	100.00
Wage-employed	11.43	1.69	7.15	78.33	1.41	100.00
Other	33.13	0.92	12.06	15.50	38.40	100.00
Total $t+1$	37.22	2.11	20.86	32.17	7.65	100.00
			Never returnees and returnees before migration			
Inactive	71.85	2.67	8.39	10.46	6.62	100.00
Unemployed	36.94	13.89	10.56	35.83	2.78	100.00
Self-employed	19.57	0.97	63.93	11.04	4.48	100.00
Wage-employed	11.43	1.70	7.16	78.31	1.40	100.00
Other	33.08	0.91	12.09	15.51	38.40	100.00
Total $t+1$	37.16	2.13	20.93	32.17	7.61	100.00

Notes: See notes Table 3. The upper panel present transitions of never returnees, i.e. individuals observed as non return migrants in all years; the lower panel, of individuals observed as non-migrants at some point in time, e.g. never returnees and returnees who might have left after the first, second or third wave of the survey, and observed as returnees in subsequent waves.

4.2 Benchmark regression results

In section 3, we presented our estimating strategy, deriving regression equations for a baseline model, a model for entry into self-employment, for 'survival' in self-employment and a combined model accounting for dynamics in and out of self-employment. Regression results for each of these models are presented in Table 5 and in Table A7. Columns (1) and (2) presents baseline estimates, columns (3) and (4) estimates of

the entry model, and columns (5) and (6) that of the 'survival' model. Column (7) contains the estimates of the combined model, and column (8), of a parsimoniously combined model. Table A8 displays associated average marginal effects.

What can these estimates say about our research questions?

First, baseline model results (columns (1)-(2) of Table 5) show that the probability of being self-employed is significantly and positively correlated with return migration. Column (2) of Table A8 suggests that return migration increases the probability of being self-employed by 14.2 percentage points. This result is consistent with results elsewhere in the literature, as reported in section 2. These estimates are confirmed by the entry model (columns (3)-(4) of Table 5), indicating that opting for self-employment is positively correlated with return migration in both random and correlated random effects models. On the contrary, return migration is not significantly related to persistence in self-employment (columns (5)-(6)), which might be explained by the reduction in sample size – 2,620 observations out of 11,361 – inducing wide confidence intervals on individual coefficients.

Second, column (7) of Table 5 presents coefficient estimates of a combined model that takes into account dependence between the choice of and the duration in self-employment, as in Wooldridge (2005). Interactions between the lagged outcome variable, Self-employed$_{(t-1)}$, and all covariates are included.[15] Although coefficient estimates on interaction terms are jointly significantly different from their corresponding non-interacted variables, column (7) of Table 5 suggests that out of 16 interaction terms, 11 are statistically significant. Column (8) thus presents coefficient estimates of a parsimonious combined model including these 11 interaction terms, setting to zero any other interaction terms. Combined and parsimonious combined models indicate that return migration is significantly and positively associated with entry into self-employment. Its interacted term, negatively associated with self-employment, is significant across both specifications and of a smaller magnitude than the non-interacted return migration term. This suggests that return migrants who were self-employed in $t-1$ are less likely to be self-employed in year t, i.e. to persist in self-employment over time. In other words, return migrants are less likely to persist in self-employment over time.

Column (7) of Table A8 suggests that, on average, return migration increases the likelihood of entering into self-employment by 18.6 percentage points. While migrants who were not self-employed in $t-1$ are 23 percentage points more likely to be self-employed upon return at time t (column (8)), migrants who were self-employed in $t-1$ are 18.3 percentage points more likely to be self-employed at time t (column (9)). Marginal effects of coefficient estimates of a parsimonious combined model (columns (10)-(12)) present similar estimates.[16]

Benchmark estimates provide an answer to the first research question we asked, namely whether return migrants were more likely than non-migrants to enter into *and* to sustain a career in self-employment in Kyrgyzstan. Return migrants were found to be more likely to enter into self-employment than non-migrants in the setting we studied. However, had they been self-employed in previous waves of the survey, they were found to be less likely to sustain a career in self-employment. The positive relationship between return migration and self-employment often found in the literature might thus be driven by entry into rather than persistence in self-employment. One likely reason for this we inferred from descriptive statistics is that self-employment can act as a 'parking lot'. Specifically, labour market transitions appear more frequent from self- to wage-employment than from wage- to self-employment, indicating that self-employment in Kyrgyzstan is a rather transitory choice of occupation and one seemingly more often selected by return migrants than non-migrants.

[15] This model assesses whether covariates are similarly related to entry into and persistence in self-employment. If these interaction terms are not significantly different from zero, we cannot reject the null hypothesis that they are equally associated with entry and persistence.

[16] Figure A1, in the appendix, graphically depicts marginal effects of return migration on the self-employment probability for this last specification.

Table 5: Coefficient estimates of benchmark specifications

	Baseline		Entry		'Survival'		Combined model	Parsimonious combined model
Variables	RE (1)	CRE (2)	RE (3)	CRE (4)	RE (5)	CRE (6)	CRE (7)	CRE (8)
Returnee	0.5659***	0.6244***	0.5571***	0.8097*	0.1200	0.5563	0.9162***	0.8977***
	(0.1436)	(0.2424)	(0.1461)	(0.4141)	(0.1351)	(0.3905)	(0.2873)	(0.2858)
Self-employed$_{(t=0)}$							1.0602***	1.0610***
							(0.1246)	(0.1237)
Self-employed$_{(t-1)}$							-0.4154	1.0144***
							(0.9229)	(0.2378)
... X Returnee							-0.2866*	-0.2678*
							(0.1597)	(0.1599)
Control variables	No	Yes	No	Yes	No	Yes	Yes	Yes
Time fixed effects	No	Yes	No	Yes	No	Yes	Yes	Yes
$IMR_{retention}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$IMR_{working}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Group means	No	Yes	No	Yes	No	Yes	Yes	Yes
Interaction terms	No	No	No	No	No	No	All	Returnee, Male, Ethnicity, Vocational, University, Household size, Urban, Year
lnsig2u	1.2246***	1.2462***	0.3376*	0.3683*	-0.8696*	-0.7797*	-0.2255	-0.2156
	(0.0718)	(0.0728)	(0.2036)	(0.2045)	(0.4559)	(0.4463)	(0.2137)	(0.2119)
$\overline{X}_{kit} = 0$		54.99		21.96		144.91	20.19	21.18
		0.0000		0.0560		0.0000	0.0907	0.0694
$\beta_k = \theta_k$							46.92	34.47
							0.0000	0.0003
Observations	11,361	11,361	6,031	6,031	2,620	2,620	8,651	8,651
Number of groups	3,849	3,849	3,044	3,044	1,371	1,371	3,736	3,736

Notes: The dependent variable is a binary variable taking unity if a working-age individual is self-employed; 0, if employed, wage-employed or unpaid, or member of a cooperative. Observations are for working-age individuals, members of non-splitting households, who were born in Kyrgyzstan. Columns (1)-(2) present coefficient estimates of probit model of equation (1); columns (3)-(4) of equation (2); columns (5)-(6) of equation (3); and columns (7)-(8) coefficient estimates of a dynamic non-linear probability model with unobserved heterogeneity, as in equation (5). Tests of joint significance of group means and interaction terms when applicable report χ^2 with associated statistical significance. Standard errors clustered at the household level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

4.3 Robustness checks

Matched difference-in-differences analyses

To assess the robustness of these estimates, we run benchmark specifications on a matched sample of control (non-returnees) and treated (returnees), following Egger et al. (2008) and Falvey and Foster-McGregor (2015). The data set consists of four years (2010 to 2013). There is no 'new' return migrant in 2013. For each year t, we define controls as individuals who are not return migrants, and treated, as individuals who are reported as return migrants in year t, but who were not in the previous year, $t-1$. Only those 'newly' treated in year t are used in the matching procedure; those existing treated are dropped.

Using either propensity score or covariate matching, we match new returnees to non-returnees at time t (2011 and 2012) on the basis of $t-1$ (respectively, 2010 and 2011) explanatory variables. We obtain two-year pooled cross-sections of matched individuals, on which we run benchmark specifications applying matching weights as frequency weights. These 'matched' regressions should control for observed heterogeneity between returnees and non-migrants as well as self-selection into temporary migration. Although we cannot rule out the existence of reverse causality, estimates should bring potentially causal evidence on the effects of migration on self-employment propensity upon return in the short term.

We match working-age individuals, members of non-splitting households, who were born in Kyrgyzstan, and who reported a primary activity at time t. We used either covariate (Mahalanobis) (CVM) or propensity score matching (PSM) techniques. PSM is successively applied with one nearest neighbour, five nearest neighbours, radius and kernel density matching, using a logit equation for the probability of being a return migrant;[17] CVM with one nearest neighbour and five nearest neighbours, with Abadie and Imbens's (2006) bias correction. The best matches are given using five nearest neighbours with PSM and CVM.[18] Matching quality is reported in Figures A2 and A3.

Table A9 presents coefficient estimates of specifications run with these two matched samples. Signs are similar to, but magnitudes and statistical significance slightly differ from, benchmark estimates. In a model that does not distinguish between entry into and persistence in self-employment (column (1)), having migrated is positively but not significantly associated with self-employment. As in the baseline model estimates, entry into self-employment is positively and significantly correlated with return migration (column (2)). In contrast, return migration is negatively but not significantly related to persistence in self-employment, which might also be explained by the reduction in sample size (434 observations for PSM; 428 for CVM).

Column (4) presents coefficient estimates of a 'combined' model, including as additional regressors the initial value of the outcome variable, Self-employed$_{(t=0)}$, and its lagged Self-employed$_{(t-1)}$, as well as its interaction with all covariates. In column (5), only interaction terms with coefficient estimates significantly different from zero are kept. Coefficient estimates on return migration and its interaction with lagged self-employment are statistically significant and differ in sign. This confirms our benchmark estimates in showing that, controlling for observed heterogeneity and self-selection into temporary migration, migration increases the propensity to enter into self-employment, but decreases (increases) the probability to persist in (exit from) self-employment in the short term, in line with the 'parking lot' hypothesis. Return migrants who were self-employed in period t, i.e. before leaving Kyrgyzstan, were found to have a negative probability of being self-employed in period $t+1$, i.e. to persist in self-employment upon return to Kyrgyzstan.

Column (1) of Table A9 suggests that return migration significantly increases self-employment propensity by 10.94 to 12.40 percentage points on average. This is driven by the greater probability of entering into than of persisting in self-employment. When migrants had not been self-employed before leaving Kyrgyzstan, they were 19.98 to 20.09 percentage points more likely to be self-employed (column (2)). When they had been, they were however 4.32 less to 1.19 more likely to be self-employed (non-significant). Although marginal effects only give information at distribution average, these estimates confirm that temporary migration increases the likelihood of opting for self-employment upon return, but increases the likelihood of exiting from self-employment upon return, if returnees had been self-employed before leaving Kyrgyzstan. In other words, return migration is associated with a smaller increase in the probability of being self-employed for those who were self-employed in the past. This is as if temporary migration disrupts self-employment at least in the short term.[19]

Matched difference-in-differences estimates thus provide an answer to the second research question we asked, namely if being self-employed upon return is influenced by whether return migrants had been self-employed

[17] Since the matching procedure is performed to use weights that are generated to then run specifications, but not to compute average treatment effects of return migration on self-employment propensity, standard errors are not bootstrapped.
[18] Matching estimates for alternative techniques are available on request.
[19] Figure A4 graphically shows marginal effects of return migration on the self-employment probability of the last specification, for both matched samples.

before migrating. Return migrants were found to be more likely to enter into self-employment than non-migrants if they had not been self-employed before leaving Kyrgyzstan. If they had been, they were found to be less likely to be self-employed upon return. This result suggests that temporary migration could be more disruptive of self-employment trajectories than is often thought.

Household-level analyses

Lastly, we exploit the fact that the decision to migrate tends to be taken at the household level. Remittances sent to non-migrating household members or resources repatriated upon return such as savings could induce newly reunited families to switch to entrepreneurial activities or invest in existing ventures. Not only have migrants returning to their origin country been found to be more likely to start their own enterprises, they have also been found to stimulate the entrepreneurship of non-migrant family members, through spill-over effects (Mansuri, 2007; Giulietti et al., 2013).

In Kyrgyzstan, where international migration is partly seasonal and typically involves repeated episodes, we could expect a household with returnees to be more likely to set up a family enterprise that might survive future migration episodes of its members. Descriptive statistics indeed suggest that non-migrants living in a household with returnees are more likely to contribute to family work than those who do not (Table A5), and that they gain relatively more income from household enterprises (Table A6).

We run the above specifications on a panel of households. Potential endogeneity between migration and family enterprise is addressed by assuming that endogeneity mainly comes from unobserved time-invariant household characteristics, following Antman (2015). Using correlated random effects estimators with longitudinal data should ensure (household) migration status to be as good as randomly assigned conditional on observed and unobserved covariates.[20] We control for household panel attrition as previously by including IMR computed after running a regression of the probability of being interviewed in all waves of the survey on a sample of households in 2010. We use household heads' perception of safety as exclusion restriction.[21]

Tables A11 and A12 present coefficient estimates respectively on a full and matched estimation sample.[22] The dependent variable is a binary variable taking unity if at least one working-age individual is self-employed in a household; zero, otherwise. Observations are for non-splitting households, whose heads were born in Kyrgyzstan. Standard errors are robust to heteroscedasticity.

Estimates of household specifications are similar to results of individual specifications, except for combined models. If a household has members who returned from abroad, having at least one self-employed member in $t-1$ does not affect the probability of at least one member being self-employed at time t any differently from if they had not had any self-employed member in $t-1$. However, estimates with matched samples show a statistically different effect, in line with individual specifications. This, in addition to descriptive statistics, suggests that, although households with returnees are more likely to have members contributing to family work, i.e. to capture some of its members' labour force, they are less likely to persist in self-employment in the short term.

Average marginal effects of household specifications are presented in Table A13. They indicate that, on average, despite the negative effect of members' return migration on the persistence of household family enterprise, the effect is positive on the likelihood of households having at least one self-employed member.[23]

[20] Although we should remain cautious about any causal interpretations (see e.g. Steinmayr's (2015) case for invisible sample selection), any potential endogeneity bias should be lowered because emigration from Kyrgyzstan tends to be temporary in nature and only non-splitting households observed in all four waves are kept in the estimation sample. Households of the estimation sample are thus either households that could not afford migration of the entire family, or never-migrant households – families with no migrants that would not send out one or several members anyway.

[21] Estimates are available on request.

[22] Matching quality is shown in Figures A5 and A6.

[23] Marginal effects by lagged self-employment status are depicted in Figures A7 and A8.

5 Concluding remarks

This paper questions and qualifies the assumption that return migration stimulates entrepreneurship in origin countries by simultaneously dealing with entry into and exit from self-employment in the broader context of whether (return) migration facilitates self-employment choices in developing economies. Correlated random effects models and a matched difference-in-differences analysis were used to account for self-employment dynamics, time-invariant and time-varying endogeneity, with a rich longitudinal database from Kyrgyzstan, a transition economy with prevalent international migration.

As in other contexts, return migrants in Kyrgyzstan are found more likely to be self-employed than non-migrants. Disregarding occupations in previous waves of the survey, return migration increases the likelihood of being self-employed by 18.2 percentage points compared to non-migrants. While migrants who were not self-employed in $t-1$ are 22.4 percentage points more likely to be self-employed upon return at time t, migrants who were self-employed in $t-1$ were 18.5 percentage points more likely to be self-employed at time t. One likely reason for this that can be inferred from descriptive statistics is that self-employment acts as a 'parking lot'. Labour market transitions appear more frequent from self- to wage-employment than from wage- to self-employment, and return migrants less likely to persist in self-employment over time compared to non-migrants. This indicates that self-employment in Kyrgyzstan is a rather transitory choice of occupation, and one seemingly more often selected by temporary migrants than non-migrants, either before migrating or upon return to their origin countries.

In addition, results indicate that the decision of a return migrant to be self-employed is negatively affected if s/he had been self-employed before migrating. Robustness checks reveal that, on average, return migration increases the likelihood of being self-employed by 1.19 percentage points for returnees who had been self-employed before leaving Kyrgyzstan, though it is not statistically significant. This likelihood increases to 19.98 percentage points if they had not been self-employed before leaving, which is statistically significant.

These novel findings suggest that migration can disrupt self-employment trajectories. The finding that, if migrants were self-employed before leaving, they are less likely to be self-employed upon return is a 'disruption' that can be viewed in a positive light as it enables career development by offering an escape from poverty-driven self-employment. Exiting self-employment in origin countries because of emigration might reveal preferences for wage-employment or a better allocation of workers' capabilities as wage-employed. This 'disruption' thus reduces the number of self-employed with low abilities in the entrepreneurial pool. In this case, the appropriate policy response is to support smooth occupational transitions in labour markets and fast reintegration of return migrants to help them make the best use of their resources and reduce their need for self-employment out of necessity.

However, the finding that self-employment might be a temporary occupational choice suggests that the 'disruption' caused by migration may hinder an economy from benefiting entrepreneurially from the experience and resources migrants might have accumulated abroad. In this case, the appropriate policy response is to improve the conditions for doing business in source countries. In a context of transition from planned to market economy, entrepreneurial success requires a mix of both microeconomic reform and macroeconomic and institutional stability and efficiency. The evidence from Kyrgyzstan presented in this paper suggests that temporary migration might substitute for an imperfect legal framework and weak financial markets. As such, support for formal market-supporting institutions is advised if firms are to grow, and countries are to harness the entrepreneurial acumen migrants might have accumulated abroad.

Appendices

A Appendix

Table A1: Investigating panel attrition

Variables	(1)
Returnee	-0.2597***
	(0.0794)
Male	-0.1123***
	(0.0315)
Head	0.0444
	(0.0413)
Married	0.2129***
	(0.0471)
Age	0.0282**
	(0.0116)
Age squared	-0.0001
	(0.0002)
Kyrgyz	-0.0890
	(0.0821)
Uzbek	0.1311
	(0.0985)
Russian	-0.2231**
	(0.1076)
Secondary	0.0063
	(0.0650)
Vocational	-0.0323
	(0.0770)
University	0.0384
	(0.0809)
Household size	-0.0141
	(0.0123)
<16 dependency ratio	0.5303***
	(0.1315)
Rural	0.0293
	(0.0515)
Safety	-0.0703***
	(0.0144)
Constant	-0.2713
	(0.2275)
Observations	6,910

Notes: Coefficient estimates of the probability of being interviewed in all four waves of the survey. Observations are for working-age individuals interviewed in 2010, members of non-splitting households, who were born in Kyrgyzstan. Robust standard errors clustered at the household level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A2: Descriptive statistics of estimation sample

	Mean	S.D.
Individual		
Male	0.4717	0.4992
Age	39.5579	12.3972
Head	0.3612	0.4804
Married	0.7542	0.4305
Kyrgyz	0.6944	0.4607
Uzbek	0.1393	0.3463
Russian	0.0675	0.2508
Vocational	0.1572	0.3640
Secondary	0.5734	0.4946
University	0.1739	0.3790
Has worked over last week?	0.6002	0.4899
Self-employed	0.2182	0.4130
Wage-employed	0.2947	0.4559
Family worker	0.0846	0.2783
Has ever lived abroad	0.0630	0.2430
Household		
Household size	5.6549	2.4114
0-15 dependency ratio	0.2689	0.2023
Living with returnee(s)	0.1637	0.3701
Member(s) currently working abroad	0.1287	0.3349
Owns land	0.7715	0.4199
Total land area (ha.)	0.8080	1.6696
Land area distributed (ha.)	0.7006	1.5892
Number of shocks	1.9453	2.2251
Location		
Urban	0.3644	0.4813
Total	19,060	

Notes: Means and standard deviations (S.D.) of variables of interest of balanced panel estimation sample of 4,765 individuals observed each four years of the survey.

Table A3: Descriptive statistics of estimation sample by employment status

	Always self-employed	Sometimes self-employed	Never self-employed
Individual			
Male	0.8486	0.6666	0.3246
Age	42.1363	40.3391	38.8457
Head	0.7041	0.4753	0.2610
Married	0.8697	0.8196	0.7062
Kyrgyz	0.7764	0.6942	0.6852
Uzbek	0.0904	0.1655	0.1311
Russian	0.0309	0.0300	0.0916
Vocational	0.1747	0.1394	0.1648
Secondary	0.6107	0.6679	0.5188
University	0.1544	0.1017	0.2146
Has worked last week	1.0000	0.7025	0.4998
Self-employed	1	0.4591	0.0000
Wage-employed	0	0.1624	0.3990
Family worker	0	0.0767	0.0985
Average monthly profits (real, oblasts)	8,310.878*	6,082.414*	6,243.931*
Has ever lived abroad	0.0858	0.0909	0.0456
Household			
Household size	5.3102	5.9408	5.5421
0-15 dependency ratio	0.3016	0.2943	0.2516
Living with returnee(s)	0.1363	0.1937	0.1509
Member(s) currently working abroads	0.0828	0.1497	0.1228
Owns land	0.8170	0.8504	0.7242
Total land area (ha.)	1.2243	0.9623	0.6779
Land area distributed (ha.)	1.0761	0.8360	0.5853
Number of shocks	2.0813	2.1188	1.8373
Location			
Urban	0.3253	0.2262	0.4425
Total	1,328	6,164	11,568

Notes: Means of variables of interest of balanced panel estimation sample of 4,765 individuals observed each four years of the survey, by employment status of primary occupation. *Statistics reported for individuals always, sometimes or never self-employed who worked and received a salary (respectively 1,274, 3,676 and 4,646 individuals).

Table A4: Descriptive statistics of self-employed

	All self-employed	Always self-employed	Sometimes self-employed
Employer	0.0228	0.0316	0.0187
Own-account	0.9772	0.9684	0.9813
Months in activity	112.5171	124.7651	106.7696
Business is registered	0.4798	0.5467	0.4484
Employes non household members	0.1000	0.1408	0.0809
Number of employees (cond.)	3.5361	3.5989	3.4847
Average monthly profits (real, oblasts)	6,752.205*	8,310.878*	6,001.733*
Agriculture	0.5464	0.5256	0.5562
Wholesale and retail	0.2071	0.2470	0.1883
Transportation	0.1142	0.1175	0.1127
Manufacturing	0.0214	0.0377	0.0138
Construction	0.0418	0.0203	0.0519
Hotels and restaurants	0.0072	0.0060	0.0078
Other services	0.0618	0.0459	0.0693
Owns land	0.8523	0.8170	0.8689
Number of shock	2.1174	2.0813	2.1343
Total	4,158	1,328	2,830

Notes: Means of variables of interest of balanced panel estimation sample of self-employed individuals. The first column reports descriptive statistics of individuals observed as self-employed in the survey. The second column reports descriptive statistics of individuals always observed as self-employed throughout the survey. The last column reports descriptive statistics of individuals sometimes self-employed, when observed as self-employed. Real profits are computed at 2010 contact price for the whole country. Agriculture includes agriculture, hunting, forestry, fishing and extractive industry. Other services include financial intermediation, education, health, social work and private households. *Statistics reported for all, always and sometimes self-employed who reported a salary different from 0 (respectively 3,920, 1,274 and 2,646 individuals).

Table A5: Descriptive statistics of estimation sample by migration status

	Returnees	Non-migrants		
		All	With returnee(s)	Without returnee
Individual				
Male	0.6819	0.4576	0.3906	0.4657
Age	38.8493	39.6056	39.8021	39.5819
Head	0.4280	0.3567	0.2396	0.3708
Married	0.7802	0.7525	0.7802	0.7492
Kyrgyz	0.6495	0.6975	0.5875	0.7107
Uzbek	0.2256	0.1335	0.2526	0.1192
Russian	0.0300	0.0700	0.0422	0.0733
Vocational	0.1174	0.1599	0.1313	0.1634
Secondary	0.5970	0.5718	0.6469	0.5628
University	0.1807	0.1734	0.1104	0.1810
Has worked last week	0.6386	0.5976	0.5552	0.6027
Self-employed	0.3189	0.2114	0.1901	0.2139
Wage-employed	0.2406	0.2983	0.2417	0.3052
Family worker	0.0741	0.0853	0.1198	0.0812
Has ever lived abroad	1	0	0	0
Household				
Household size	6.1424	5.6221	6.9771	5.4589
0-15 dependency ratio	0.2802	0.2682	0.2469	0.2707
Living with returnee(s)	1	0.1075	1	0
Member(s) currently working abroad	0.1757	0.1255	0.1870	0.1181
Owns land	0.7968	0.7698	0.8391	0.7615
Total land area (ha.)	0.7034	0.8150	0.6919	0.8298
Land area distributed (ha.)	0.5827	0.7085	0.5952	0.7221
Number of shocks	2.0275	1.9398	1.9625	1.9371
Location				
Urban	0.3172	0.3675	0.2630	0.3801
Total	1,201	17,859	1,920	15,939

Notes: Means of variables of interest of balanced panel estimation sample of 4,765 individuals observed each four years of the survey, by individual and household migration status.

Table A6: Income sources and expenditures by household migration status

	All households		With returnee(s)	Without returnee	t-test
	Mean	S.D.	Mean	Mean	
			Incomes		
Share from:					
Household enterprise	.3384	.3715	.37433	.33213	3.84***
Property	.0097	.0651	.00931	.00978	-0.24
Social transfers	.1853	.2746	.15697	.19043	-4.11***
Material aid	.0878	.2069	.12274	.08184	6.68***
Wage-employment	.3544	.3937	.30877	.36205	-4.57***
Other incomes	.0244	.1152	.02789	.02377	1.21
Total	9,031		1,336	7,695	
			Expenditures		
Share from:					
Health	.1381	.1065	.11773	.14164	-7.64***
Housing and utilities	.3063	.1622	.30543	.30649	-0.22
Education	.0205	.0687	.0225	.02019	1.14
Transportation	.1030	.1006	.10661	.1024	1.42
Leisure	.1124	.0898	.11049	.11269	-0.83
Celebrations	.0987	.1323	.10757	.09714	2.67***
Clothing	.2210	.1485	.22968	.21945	2.34**
Total	9,106		1,349	7,757	

Notes: In upper panel, share of monthly average household income by sources of balanced panel households for non-missing values are reported. Household enterprises include income from agricultural and non-agricultural enterprises. Property includes income from building, land, interests and dividends. Social transfers include pensions, monthly benefits, compensatory and social payments. Material aid includes humanitarian aid, global and regional remittances. Share of monthly average household expenditures on non-food items of balanced panel households for non-missing values are reported in lower panel. Health expenditures include soap, detergents, personal care, medicine and medical care. Housing and utilities expenditures include energy, taxes, construction, maintenance, household goods and vehicles. Education expenditures exclude school expenditures. Transportation expenditures include transportation services and fuel used for transportation. Leisure expenditures include communication, entertainment, TV, radio, Internet and jewellery. Celebration expenditures include celebrations, funerals and rituals. Clothing expenditures include clothing, shoes and fabrics.

Table A7: Coefficient estimates of benchmark specifications

	Baseline		Entry		'Survival'		Combined model	Parsimonious combined model
Variables	RE (1)	CRE (2)	RE (3)	CRE (4)	RE (5)	CRE (6)	CRE (7)	CRE (8)
Returnee	0.5659***	0.6244***	0.5571***	0.8097*	0.1200	0.5563	0.9162***	0.8977***
	(0.1436)	(0.2424)	(0.1461)	(0.4141)	(0.1351)	(0.3905)	(0.2873)	(0.2858)
Male	1.7852***	0.5934	0.8801***	-1.9887	0.3700*	2.1122	-0.4583	-0.5841
	(0.2373)	(0.4510)	(0.2603)	(3.2860)	(0.2022)	(3.0860)	(2.2325)	(2.2436)
Age	0.2533***	0.2862***	0.0872	0.3043**	0.0800	0.1440	0.1804**	0.2119***
	(0.0636)	(0.0717)	(0.0760)	(0.1200)	(0.0498)	(0.0954)	(0.0757)	(0.0702)
Age squared	-0.0032***	-0.0032***	-0.0010	-0.0012	-0.0009	-0.0010	-0.0009	-0.0012**
	(0.0008)	(0.0008)	(0.0009)	(0.0010)	(0.0006)	(0.0006)	(0.0007)	(0.0005)
Kyrgyz	-0.2734*	0.1292	-0.0549	1.0359	-0.3123**	-4.6563	0.7556	0.7258
	(0.1495)	(0.7721)	(0.1338)	(1.5082)	(0.1341)	(4.5458)	(0.9856)	(1.0010)
Uzbek	-0.2179	-1.6129***	0.0896	-2.1362	-0.3531**	-4.6676	-1.2087	-1.2035
	(0.1881)	(0.6042)	(0.1725)	(1.6543)	(0.1758)	(3.9201)	(1.1490)	(1.1519)
Russian	-0.9143***	-0.4359	-0.4718**	0.9941	-0.6587**	-5.6670	0.1022	0.1407
	(0.2550)	(0.7060)	(0.2345)	(0.9988)	(0.2617)	(4.5837)	(0.8684)	(0.8859)
Head	0.7333***	0.7299***	0.3067***	0.6892*	0.2035**	0.6510	0.5866**	0.6072**
	(0.1124)	(0.2737)	(0.1138)	(0.3879)	(0.1020)	(0.4158)	(0.2974)	(0.2934)
Secondary	0.3672**	-0.0250	0.0544	0.6101	0.3459**	-0.1866	0.0071	0.2124
	(0.1824)	(0.3619)	(0.2036)	(0.7346)	(0.1636)	(0.5528)	(0.4497)	(0.4244)
Vocational	0.1374	0.2900	-0.5758*	0.2855	0.3349*	0.0933	-0.1778	0.0498
	(0.2510)	(0.3862)	(0.3194)	(0.7466)	(0.1964)	(0.5385)	(0.4621)	(0.4306)
University	-0.4364	0.0900	-0.8918**	0.4356	0.1695	-0.1875	-0.1964	0.0647
	(0.3200)	(0.5038)	(0.4044)	(0.8787)	(0.2155)	(0.7010)	(0.5646)	(0.5323)
Household size	0.0074	0.0093	0.0200	0.0207	-0.0218	0.0788	0.0454	0.0442
	(0.0221)	(0.0404)	(0.0223)	(0.0494)	(0.0229)	(0.0627)	(0.0378)	(0.0379)
<16 dependency ratio	-0.4111*	-0.6841**	0.0546	-0.0615	-0.0607	-0.6775	-0.2864	-0.3528
	(0.2380)	(0.3373)	(0.2765)	(0.4943)	(0.2633)	(0.6084)	(0.3756)	(0.3567)
Urban	-0.6899***	-2.1461***	-0.5442***	-1.4259**	0.3679***	13.3892***	-0.6429*	-0.6449*
	(0.1303)	(0.7270)	(0.1444)	(0.6276)	(0.1098)	(1.2764)	(0.3820)	(0.3757)
2011	-0.0558	-0.0972	-0.3530***	0.0797	0.3782	0.5599*	0.0391	0.0598
	(0.0704)	(0.0789)	(0.1264)	(0.2346)	(0.2564)	(0.3203)	(0.1515)	(0.1493)
2012	-0.0367	-0.0824	-0.1599	0.0616	0.1171	0.1995	0.0016	0.0358
	(0.0995)	(0.1258)	(0.1457)	(0.1705)	(0.2638)	(0.2805)	(0.1199)	(0.1144)
2013	-0.2465***	-0.3161**						
	(0.0794)	(0.1359)						
Group means	No	Yes	No	Yes	No	Yes	Yes	Yes
lnsig2u	1.2246***	1.2462***	0.3376*	0.3683*	-0.8696*	-0.7797*	-0.2255	-0.2156
	(0.0718)	(0.0728)	(0.2036)	(0.2045)	(0.4559)	(0.4463)	(0.2137)	(0.2119)
$\overline{X}_{kit} = 0$		54.99		21.96		144.91	20.19	21.18
		0.0000		0.0560		0.0000	0.0907	0.0694
$\beta_k = \theta_k$							46.92	34.47
							0.0000	0.0003
Observations	11,361	11,361	6,031	6,031	2,620	2,620	8,651	8,651
Number of groups	3,849	3,849	3,044	3,044	1,371	1,371	3,736	3,736

Notes: Please, refer to Table 5.

Table A7: Coefficient estimates of benchmark specifications (continued)

	Baseline		Entry		'Survival'		Combined model	Parsimonious combined model
	RE	CRE	RE	CRE	RE	CRE	CRE	CRE
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-employed$_{(t=0)}$							1.0602***	1.0610***
							(0.1246)	(0.1237)
Self-employed$_{(t-1)}$							-0.4154	1.0144***
							(0.9229)	(0.2378)
... X Returnee							-0.2866*	-0.2678*
							(0.1597)	(0.1599)
... X Male							-0.2242*	-0.2843**
							(0.1340)	(0.1144)
... X Age							0.0553	
							(0.0423)	
... X Age squared							-0.0006	
							(0.0005)	
... X Kyrgyz							-0.3271**	-0.2532
							(0.1656)	(0.1590)
... X Uzbek							-0.4441**	-0.4404**
							(0.2128)	(0.2131)
... X Russian							-0.5558*	-0.5037
							(0.3352)	(0.3367)
... X Head							0.0028	
							(0.1350)	
... X Secondary							0.3209	
							(0.2144)	
... X Vocational							0.8134***	0.5215***
							(0.2727)	(0.1556)
... X University							0.8143***	0.4896***
							(0.3069)	(0.1877)
... X Household size							-0.0430*	-0.0475**
							(0.0248)	(0.0221)
... X <16 dependency ratio							-0.0293	
							(0.2979)	
... X Urban							0.7692***	0.7812***
							(0.1563)	(0.1551)
... X 2011							0.6980***	0.7282***
							(0.1847)	(0.1823)
... X 2012							0.3441**	0.3758***
							(0.1402)	(0.1364)
IMR$_{\text{retention}}$	-1.8509***	-1.4439**	-0.6906	-0.5274	-1.0095*	-0.7027	-0.6307	-0.5622
	(0.5365)	(0.6269)	(0.5263)	(0.6009)	(0.5849)	(0.6672)	(0.4341)	(0.4296)
IMR$_{\text{working}}$	1.2281**	1.1892**	0.1753	0.2269	-0.2035	-0.1905	0.1710	0.3467
	(0.5381)	(0.5399)	(0.6373)	(0.6468)	(0.6356)	(0.6453)	(0.4325)	(0.3946)
Constant	-6.0365***	-6.4416***	-2.9000	-3.6806	-0.6423	-1.1039	-2.7632*	-3.6925***
	(1.8174)	(1.8742)	(2.2104)	(2.2738)	(1.5853)	(1.6569)	(1.5408)	(1.3214)
Group means	No	Yes	No	Yes	No	Yes	Yes	Yes
lnsig2u	1.2246***	1.2462***	0.3376*	0.3683*	-0.8696*	-0.7797*	-0.2255	-0.2156
	(0.0718)	(0.0728)	(0.2036)	(0.2045)	(0.4559)	(0.4463)	(0.2137)	(0.2119)
$\overline{X}_{kit} = 0$		54.99		21.96		144.91	20.19	21.18
		0.0000		0.0560		0.0000	0.0907	0.0694
$\beta_k = \theta_k$							46.92	34.47
							0.0000	0.0003
Observations	11,361	11,361	6,031	6,031	2,620	2,620	8,651	8,651
Number of groups	3,849	3,849	3,044	3,044	1,371	1,371	3,736	3,736

Notes: Please, refer to Table 5.

Table A8: Marginal effects of benchmark coefficient estimates

	Baseline		Entry		'Survival'		Combined model			Parsimonious combined model		
	RE	CRE	RE	CRE	RE	CRE	Average	$SE_{(t-1)}=0$	$SE_{(t-1)}=1$	Average	$SE_{(t-1)}=0$	$SE_{(t-1)}=1$
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Returnee	0.132***	0.142**	0.109***	0.168	0.0273	0.106*	0.186***	0.230***	0.183**	0.182***	0.224***	0.185**
	(0.0346)	(0.0572)	(0.0331)	(0.104)	(0.0293)	(0.0574)	(0.0687)	(0.0780)	(0.0790)	(0.0678)	(0.0774)	(0.0785)
Male	0.409***	0.134	0.140***	-0.307	0.0962*	0.585	-0.0968	-0.0971	-0.181	-0.121	-0.122	-0.223
	(0.0450)	(0.106)	(0.0416)	(0.386)	(0.0561)	(0.598)	(0.384)	(0.455)	(0.487)	(0.372)	(0.443)	(0.428)
Age	-0.00165	0.00613	0.000848	0.0334**	0.000964	0.0152	0.0217**	0.0242*	0.0356**	0.0215*	0.0240*	0.0352**
	(0.00145)	(0.00790)	(0.00106)	(0.0152)	(0.00189)	(0.0191)	(0.0110)	(0.0125)	(0.0173)	(0.0110)	(0.0124)	(0.0177)
Kyrgyz	-0.0608*	0.0273	-0.00888	0.136	-0.0694**	-0.354***	0.113	0.150	0.129	0.114	0.144	0.145
	(0.0336)	(0.162)	(0.0219)	(0.164)	(0.0274)	(0.0101)	(0.169)	(0.174)	(0.293)	(0.174)	(0.178)	(0.301)
Uzbek	-0.0467	-0.260***	0.0148	-0.169***	-0.0926*	-0.734***	-0.237	-0.201	-0.406**	-0.237	-0.199	-0.416**
	(0.0393)	(0.0589)	(0.0292)	(0.0472)	(0.0497)	(0.0116)	(0.144)	(0.128)	(0.175)	(0.146)	(0.128)	(0.180)
Russian	-0.176***	-0.0884	-0.0620**	0.215	-0.194**	-0.811***	-0.0228	0.0227	-0.139	-0.0103	0.0313	-0.114
	(0.0407)	(0.135)	(0.0243)	(0.263)	(0.0883)	(0.0118)	(0.192)	(0.197)	(0.278)	(0.197)	(0.202)	(0.294)
Head	0.180***	0.174**	0.0514***	0.121	0.0495**	0.163	0.122*	0.136*	0.188*	0.127*	0.140**	0.196**
	(0.0291)	(0.0696)	(0.0195)	(0.0742)	(0.0252)	(0.109)	(0.0653)	(0.0717)	(0.0979)	(0.0656)	(0.0706)	(0.0941)
Secondary	0.0811**	-0.00533	0.00866	0.0927	0.0862**	-0.0424	0.0245	0.00156	0.100	0.0411	0.0463	0.0663
	(0.0403)	(0.0771)	(0.0323)	(0.109)	(0.0419)	(0.122)	(0.0837)	(0.0982)	(0.127)	(0.0824)	(0.0926)	(0.133)
Vocational	0.0304	0.0629	-0.0778**	0.0490	0.0715*	0.0212	0.0174	-0.0379	0.185*	0.0414	0.0109	0.170
	(0.0561)	(0.0847)	(0.0359)	(0.138)	(0.0368)	(0.119)	(0.0693)	(0.0962)	(0.109)	(0.0750)	(0.0946)	(0.115)
University	-0.0935	0.0193	-0.111***	0.0779	0.0379	-0.0466	0.0135	-0.0419	0.174	0.0416	0.0141	0.160
	(0.0664)	(0.108)	(0.0396)	(0.175)	(0.0451)	(0.184)	(0.0844)	(0.117)	(0.128)	(0.0922)	(0.117)	(0.133)
Household size	0.00163	0.00200	0.00320	0.00328	-0.00517	0.0184	0.00574	0.00990	0.000730	0.00518	0.00960	-0.00101
	(0.00485)	(0.00863)	(0.00356)	(0.00781)	(0.00540)	(0.0147)	(0.00720)	(0.00825)	(0.0127)	(0.00720)	(0.00824)	(0.0125)
<16 dependency ratio	-0.0903*	-0.146**	0.00874	-0.00975	-0.0144	-0.159	-0.0572	-0.0625	-0.0960	-0.0681	-0.0766	-0.109
	(0.0523)	(0.0722)	(0.0442)	(0.0783)	(0.0624)	(0.142)	(0.0695)	(0.0821)	(0.125)	(0.0689)	(0.0776)	(0.111)
Urban	-0.150***	-0.388***	-0.0801***	-0.192**	0.0804***	0.358***	-0.0645	-0.136*	0.0383	-0.0638	-0.136*	0.0422
	(0.0271)	(0.0868)	(0.0195)	(0.0786)	(0.0215)	(0.00994)	(0.0658)	(0.0767)	(0.120)	(0.0647)	(0.0750)	(0.120)
2011	-0.0122	-0.0206										
	(0.0154)	(0.0166)										
2012	-0.00804	-0.0175										
	(0.0217)	(0.0266)										
2013	-0.0530***	-0.0657**										
	(0.0168)	(0.0275)										
Self-employed$_{(t-1)}$							0.3061***	0.290***	0.290***	0.2897***	0.306***	0.306***
							(0.0448)	(0.0472)	(0.0472)	(0.0472)	(0.0448)	(0.0448)
Self-employed$_{(t=0)}$							0.2047***	0.231***	0.322***	0.2042***	0.230***	0.329***
							(0.0177)	(0.0207)	(0.0296)	(0.0178)	(0.0206)	(0.0305)
Observations	11,361	11,361	6,031	6,031	2,620	2,620	8,651	8,651	8,651	8,651	8,651	8,651

Notes: Columns (1)-(7) and (10) present average marginal effects corresponding of coefficient estimates presented in Table 10. Columns (8) and (11) present corresponding marginal effects when lagged self-employment is equal to 0; columns (9) and (12), when lagged self-employment is equal to 1. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure A1: Average marginal effects of return migration with 95% confidence intervals of parsimonious combined model

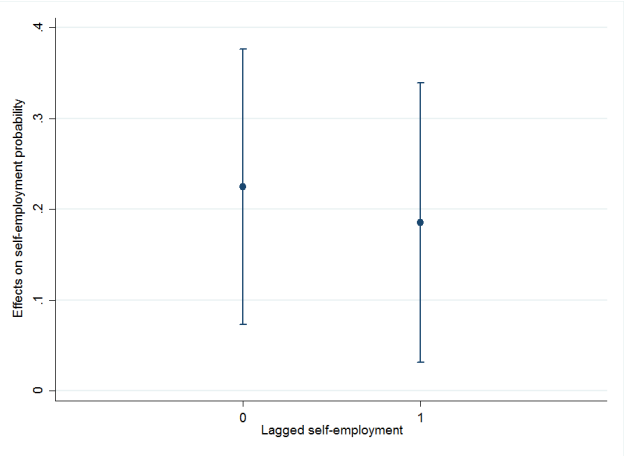


Figure A2: Matching quality of 2011 (l) and 2012 (r) propensity score matching with 5 nearest neighbours

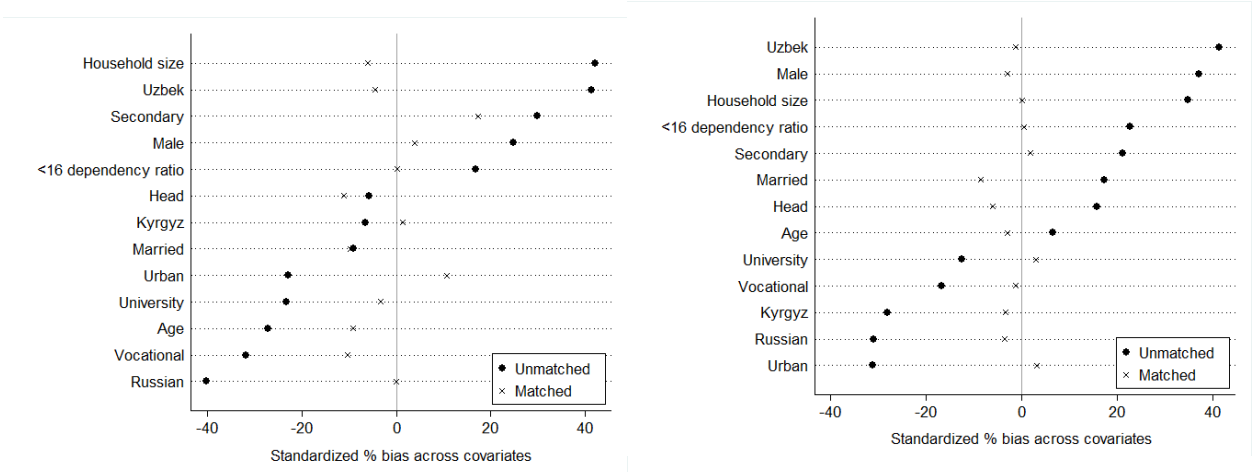


Figure A3: Matching quality of 2011 (l) and 2012 (r) covariate matching with 5 nearest neighbours

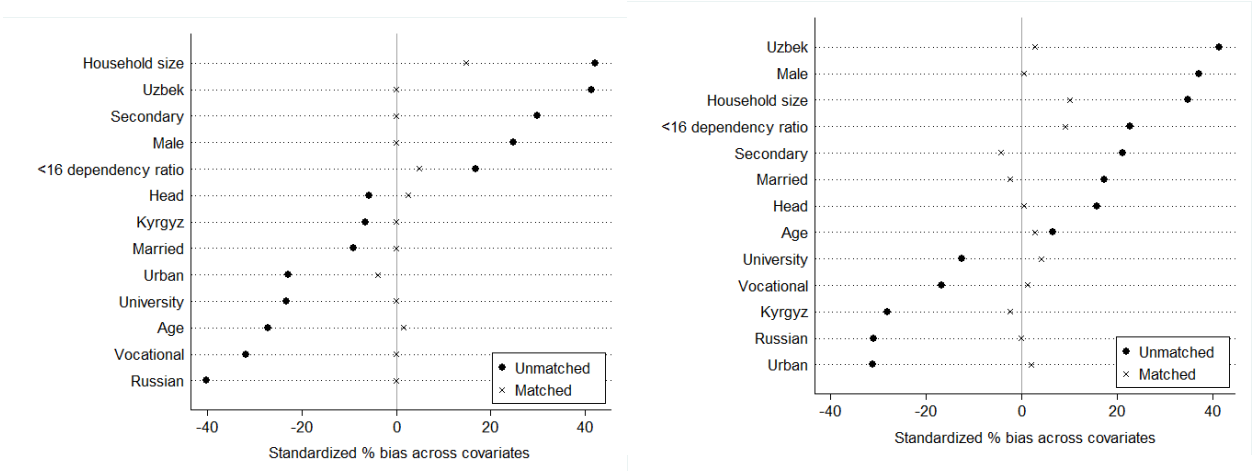


Table A9: Coefficient estimates of benchmark specifications on matched sample

Variables	Baseline (1)	Entry (2)	'Survival' (3)	Combined model (4)	Parsimonious combined model (5)
			Propensity score matching, 5 NN		
Returnee	0.2343	0.6435***	-0.0302	0.6462***	0.6325***
	(0.1456)	(0.1888)	(0.2737)	(0.1882)	(0.1841)
Self-employed$_{(t=0)}$				0.7408***	0.7357***
				(0.2135)	(0.2103)
Self-employed$_{(t-1)}$				-3.9184	1.2250***
				(2.4404)	(0.2094)
... X Returnee				-0.6415*	-0.5931*
				(0.3366)	(0.3344)
Control variables	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	No	All	Returnee Vocational Year
$\beta_k = \theta_k$				23.65	16.55
				0.0345	0.0009
Observations	1,190	743	434	1,177	1,190
			Covariate matching, 5 NN		
Returnee	0.1601	0.6274***	-0.3648	0.6195***	0.5895***
	(0.1414)	(0.1785)	(0.2905)	(0.1772)	(0.1792)
Self-employed$_{(t=0)}$				0.5734***	0.5927***
				(0.2220)	(0.2259)
Self-employed$_{(t-1)}$				-3.6235	1.4785***
				(2.3462)	(0.2361)
... X Returnee				-0.8953**	-0.7480**
				(0.3498)	(0.3316)
Control variables	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	No	All	Returnee Vocational Urban Year
$\beta_k = \theta_k$				30.10	20.88
				0.0074	0.0003
Observations	1,190	762	428	1,190	1,190

Notes: The dependent variable is a binary variable taking unity if a working-age individual is self-employed; 0, if employed, wage-employed or unpaid, or member of a cooperative. Observations are for working-age individuals, members of non-splitting households, who were born in Kyrgyzstan. In the upper panel of the Table, observations form a matched sample of control (non-returnees) and treated (returnees) applying propensity score matching techniques (5 nearest neighbours). In the lower panel, observations form a matched sample of control (non-returnees) and treated (returnees) applying covariate matching techniques (Mahalanobis metric, 5 nearest neighbours). Column (1) presents coefficient estimates of probit model of our baseline specification; column (2) of entry into self-employment; column (3) of persistence in self-employment; and columns (4)-(5) coefficient estimates of a dynamic, non-linear probability model. Tests of joint significance of interaction terms when applicable report χ^2 with associated statistical significance. Standard errors clustered at the household level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Marginal effects of parsimonious combined model coefficient estimates on matched sample

Variables	Average (1)	$SE_{(t-1)}=0$ (2)	$SE_{(t-1)}=1$ (3)
	Propensity score matching, 5 NN		
Returnee	0.1240***	0.1998***	0.0119
	(0.0443)	(0.0593)	(0.0832)
Self-employed$_{(t=0)}$	0.2048***	0.2304***	0.2219***
	(0.0550)	(0.0598)	(0.0611)
Self-employed$_{(t-1)}$	0.2509***	0.2509***	0.2509***
	(0.0677)	(0.0677)	(0.0677)
Observations	1,190	1,190	1,190
	Covariate matching, 5 NN		
Returnee	0.1094**	0.2009***	-0.0432
	(0.0436)	(0.0587)	(0.0766)
Self-employed$_{(t=0)}$	0.1588***	0.1864***	0.1554**
	(0.0597)	(0.0699)	(0.0633)
Self-employed$_{(t-1)}$	0.3613***	0.3613***	0.3613***
	(0.0677)	(0.0677)	(0.0677)
Observations	1,190	1,190	1,190

Notes: Column (1) presents average marginal effects corresponding of coefficient estimates presented in Table 10, column (5). Column (2) presents corresponding marginal effects when lagged self-employment is equal to 0; column (3) when lagged self-employment is equal to 1. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure A4: Average marginal effects of return migration with 95% confidence intervals of parsimonious combined model on PSM (l) and CVM (r) matched sample

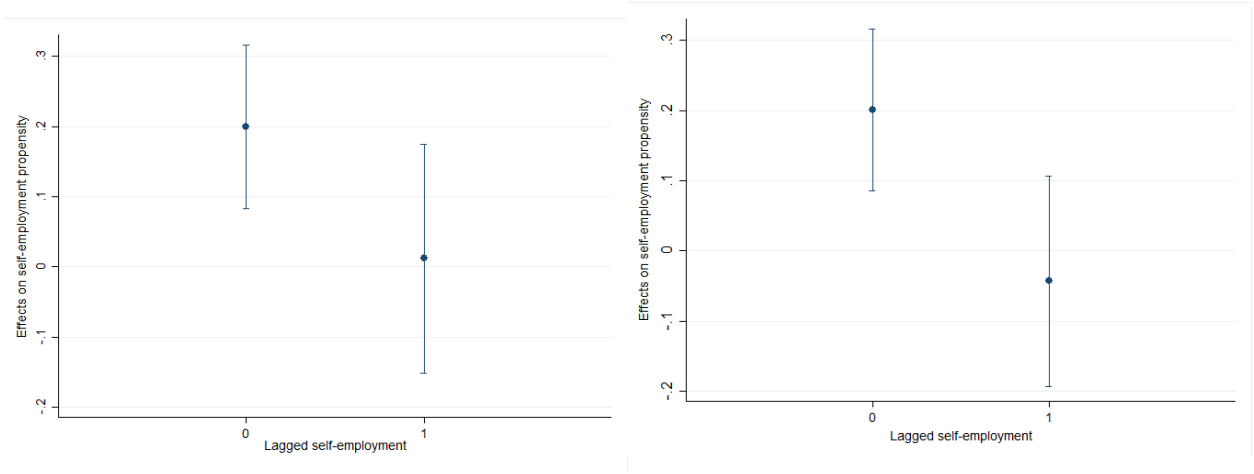


Table A11: Coefficient estimates of household benchmark specifications

	Baseline		Entry		'Survival'		Combined model	Parsimonious combined model
Variables	RE (1)	CRE (2)	RE (3)	CRE (4)	RE (5)	CRE (6)	CRE (7)	CRE (8)
Returnee	0.2666***	0.2598***	0.2447***	0.2361***	0.1155	0.1148	0.2347***	0.2379***
	(0.0688)	(0.0700)	(0.0846)	(0.0860)	(0.0829)	(0.0851)	(0.0836)	(0.0833)
Family enterprise$_{(t=0)}$							0.5367***	0.5408***
							(0.0897)	(0.0888)
Family enterprise$_{(t-1)}$							0.7622***	0.7496***
							(0.2837)	(0.1763)
... X Returnee							-0.0728	-0.0781
							(0.1074)	(0.1070)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	No	No	No	No	All	Returnee Household size Urban Years
lnsig2u	0.1909***	0.2022***	-1.2086***	-1.1838***	-0.7704**	-0.7684**	-1.1958***	-1.2016***
	(0.0673)	(0.0672)	(0.3582)	(0.3548)	(0.3019)	(0.3039)	(0.3269)	(0.3226)
$\overline{X}_{kit} = 0$		26.13		10.70		5.93	6.11	6.48
		0.0062		0.4688		0.8782	0.8657	0.8392
$\beta_k = \theta_k$							105.64	113.59
							0.0000	0.0000
Observations	9,112	9,112	3,587	3,587	3,244	3,244	6,831	6,831
Number of households	2,282	2,282	1,613	1,613	1,489	1,489	2,280	2,280

Notes: The dependent variable is a binary variable taking unity if at least one working-age individual is self-employed in a household; 0, if not. Observations are for non-splitting households, whose heads were born in Kyrgyzstan. Columns (1)-(2) present coefficient estimates of probit model of equation (1); columns (3)-(4) of equation (2); columns (5)-(6) of equation (3); and columns (7)-(8) coefficient estimates of a dynamic, non-linear probability model with unobserved heterogeneity, as in equation (5). Tests of joint significance of group means and interaction terms when applicable report χ^2 with associated statistical significance. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure A5: Matching quality of 2011 (l) and 2012 (r) propensity score matching with 5 nearest neighbours of household sample

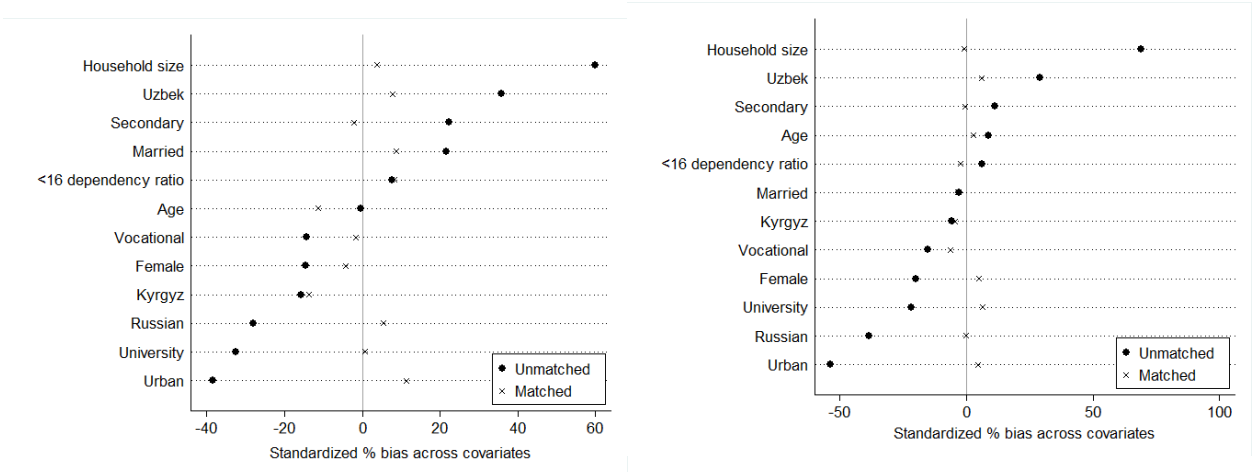


Figure A6: Matching quality of 2011 (l) and 2012 (r) covariate matching with 5 nearest neighbours of household sample

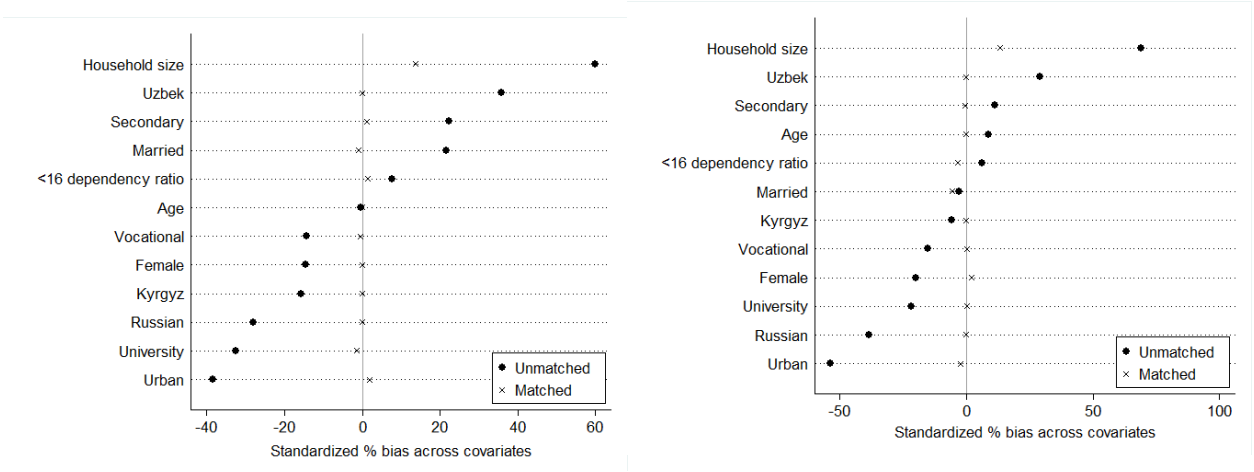


Table A12: Coefficient estimates of household specifications on matched sample

Variables	Baseline (1)	Entry (2)	'Survival' (3)	Combined model (4)	Parsimonious combined model (5)
			Propensity score matching, 5 NN		
Returnee	0.1042*	0.4431***	0.1289	0.4362***	0.4390***
	(0.0546)	(0.0823)	(0.0865)	(0.0823)	(0.0821)
Self-employed$_{(t=0)}$				0.4008***	0.3994***
				(0.0845)	(0.0831)
Self-employed$_{(t-1)}$				2.5299***	2.2685***
				(0.3407)	(0.2650)
... X Returnee				-0.3002**	-0.2904**
				(0.1201)	(0.1198)
Control variables	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	No	All	Returnee Age Household size Location Year
$\beta_k = \theta_k$				75.70	71.86
				0.0000	0.0000
Observations	2,274	1,081	1,193	2,274	2,274
			Covariate matching, 5 NN		
Returnee	0.0038	0.3333***	-0.0241	0.3431***	0.3399***
	(0.0550)	(0.0817)	(0.0887)	(0.0816)	(0.0815)
Self-employed$_{(t=0)}$				0.3725***	0.3764***
				(0.0838)	(0.0836)
Self-employed$_{(t-1)}$				2.5849***	2.3635***
				(0.3363)	(0.2849)
... X Returnee				-0.3658***	-0.3486***
				(0.1211)	(0.1210)
Control variables	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	No	All	Returnee Vocational Urban Year
$\beta_k = \theta_k$				84.44	72.56
				0.0000	0.0000
Observations	2,270	1,093	1,177	2,270	2,270

Notes: The dependent variable is a binary variable taking unity if a working-age individual is self-employed in a household; 0, otherwise. Observations are for non-splitting households, whose heads were born in Kyrgyzstan. In the upper panel of the Table, observations form a matched sample of control (households with non-returnees) and treated (with returnees) applying propensity score matching techniques (5 nearest neighbours). In the lower panel, observations form a matched sample of control and treated applying covariate matching techniques (Mahalanobis metric, 5 nearest neighbours). Column (1) presents coefficient estimates of probit model of our baseline specification; column (2) of entry into self-employment; Column (3) of persistence in self-employment; and columns (4)-(5) coefficient estimates of a dynamic, non-linear probability model. Tests of joint significance of interaction terms when applicable report χ^2 with associated statistical significance. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A13: Marginal effects of parsimonious combined model household specification coefficient estimates

Variables	Average (1)	$FE_{(t-1)}=0$ (2)	$FE_{(t-1)}=1$ (3)
	Full estimation sample		
Returnee	.0525***	.0675***	.0477**
	(.0159)	(.0240)	(.0226)
Family enterprise$_{(t=0)}$	.1540***	.1564***	.1654***
	(.0234)	(.0236)	(.0243)
Family enterprise$_{(t-1)}$	.2608***	.2608***	.2608***
	(.0362)	(.0362)	(.0362)
Observations	6,831	6,831	6,831
	Matched sample, PSM		
Returnee	.0944***	.1588***	.0433*
	(.0179)	(.0292)	(.0252)
Family enterprise$_{(t=0)}$	.1294***	.1455***	.1172***
	(.0278)	(.0303)	(.0261)
Family enterprise$_{(t-1)}$	.3083***	.3083***	.3083***
	(.0278)	(.0278)	(.0278)
Observations	2,274	2,274	2,274
	Matched sample, CVM		
Returnee	.0577***	.1236***	-.0024
	(.0180)	(.0294)	(.0252)
Family enterprise$_{(t=0)}$	.1190***	.1374***	.1071***
	(.0272)	(.0304)	(.0255)
Family enterprise$_{(t-1)}$	.3162***	.3162***	.3162***
	(.0275)	(.0275)	(.0275)
Observations	2,270	2,270	2,270

Notes: Column (1) presents average marginal effects corresponding of coefficient estimates presented in Tables 14 (upper panel) and 15 (middle and lower panels), column (5). Column (2) presents corresponding marginal effects when lagged self-employment is equal to 0; column (3) when lagged self-employment is equal to 1. Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure A7: Average marginal effects of return migration with 95% confidence intervals of parsimonious combined model on household sample

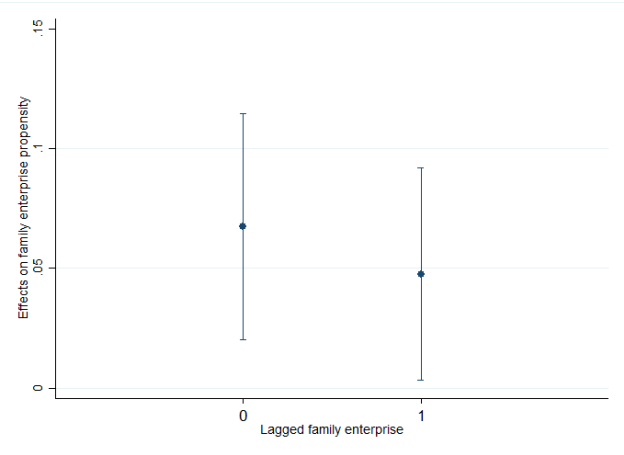
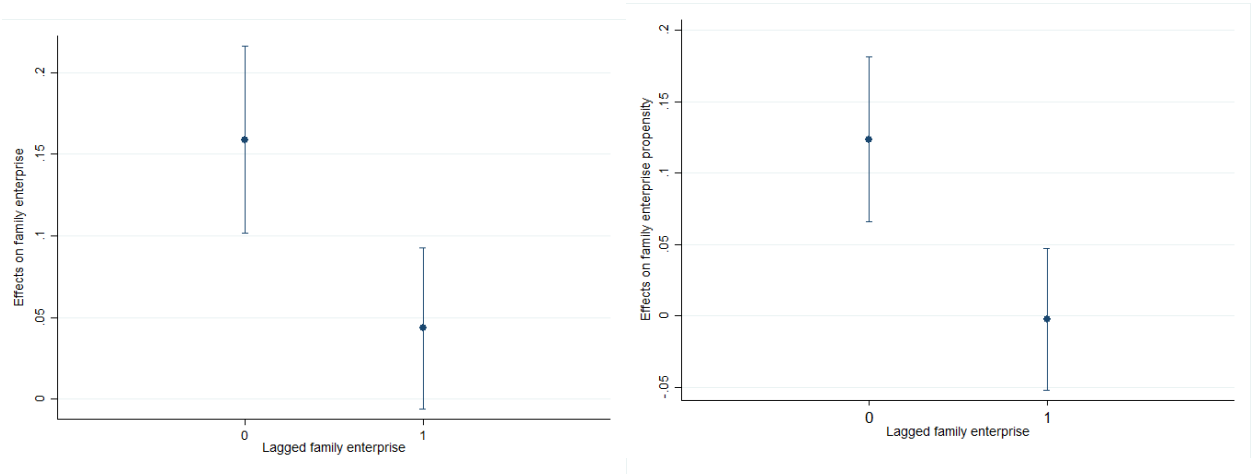


Figure A8: Average marginal effects of return migration with 95% confidence intervals of parsimonious combined models on PSM (l) and CVM (r) household matched sample



Acknowledgements

Tilman Brück would like to acknowledge the support of the DFID/IZA GLM-LIC research grant 'Gender and Employment in Central Asia: Evidence from Panel Data (Grant Agreement No. GA-C1-RA5-064). Clotilde Mahé would like to acknowledge the support of the European Union under the Marie Curie Initial Training Network (ITN), Transnational Migration, Citizenship and the Circulation of Rights and Responsibilities (TRANSMIC) (Grant Agreement No. 608417). The authors are furthermore grateful to various colleagues who provided comments, suggestions and encouragements, in particular Neil Foster-McGregor, Eleonora Nillesen, Sergio Parra-Cely, and Pui-Hang Wong, as well as participants of the final TRANSMIC conference held on May 18-19, 2017, in Florence, Italy; of the third Life in Kyrgyzstan conference held on October 12-13, 2017, in Bishkek, Kyrgyzstan; of the third GLM/LIC Research Network Conference, held on October 19-21, 2017, in Washington (DC), USA; and of the inaugural AASLE Conference, held on December 7-9, 2017, in Canberra, Australia. The usual disclaimer applies.

References

Abadie, A. and Imbens, G. (2006). Large sample properties of matching estimators for average treatment effects. *Econometrica*, 74(1):235–267.

Amuedo-Dorantes, C. and Pozo, S. (2006). Remittance receipt and business ownership in the Dominican Republic. *The World Economy*, 29(7):939–956.

Antman, F. (2015). Gender discrimination in the allocation of migrant household resources. *Journal of Population Economics*, 28(3):565–592.

Atamanov, A. and van den Berg, M. (2012). Heterogeneous effects of international migration and remittances on crop income: Evidence from the Kyrgyz Republic. *World Development*, 40(3):620–630.

Batista, C., McIndoe-Calder, T., and Vicente, P. (2017). Return migration, self-selection and entrepreneurship. *Oxford Bulletin of Economics and Statistics*, 79(5):797–821.

Beegle, K., de Weerdt, J., and Dercon, S. (2011). Migration and economic mobility in Tanzania: Evidence from a tracking survey. *Review of Economics and Statistics*, 93:1010–1033.

Black, R. and Castaldo, A. (2009). Return migration and entrepreneurship in Ghana and Cote d'Ivoire: The Role of capital transfers. *Tijdschrift voor Economische en Sociale Geografie*, 100(1):44–58.

Bleaney, M. and Dimico, A. (2011). How different are the correlates of onset and continuation of civil wars? *Journal of Peace Research*, 48(2):145–155.

Brück, T., Esenaliev, D., Kroeger, A., Kudebayeva, A., Mirkasimov, B., and Steiner, S. (2014). Household survey data for research on well-being and behavior in Central Asia. *Journal of Comparative Economics*, 42:819–835.

Chakraborty, T., Mirkasimov, B., and Steiner, S. (2015). Transfer behaviour in migrant sending communities. *Journal of Comparative Economics*, 43(3):690–705.

Chen, Y. and Feng, H. (2012). Are Entrepreneurs Jacks-of-all-trades? Evidence from a return migration survey in rural China. Working paper, mimeo.

Christiaensen, L. and Todo, Y. (2014). Poverty reduction during the rural-urban transformation – The Role of the missing middle. *World Development*, 63(C):43–58.

Clemens, M. and Pritchett, L. (2016). The New economic case for migration restrictions: An Assessment. *CGD Working Paper No. 423*. Washington, D.C.: Center for Global Development.

de Ree, J. and Nillesen, E. (2009). Aiding violence or peace? The Impact of foreign aid on the risk of civil conflict in sub-Saharan Africa. *Journal of Development Economics*, 88:301–313.

Démurger, S. and Xu, H. (2011). Return migrants: The Rise of new entrepreneurs in rural China. *World Development*, 39(10):1847–1861.

Dillon, E. and Stanton, C. (2017). Self-employment dynamics and the returns to entrepreneurship. *NBER Working Paper No. 23168*. Cambridge, M.A.: National Bureau of Economic Research.

Dustmann, C. and Görlach, J.-S. (2016). The Economics of temporary migrations. *Journal of Economic Literature*, 54(1):98–136.

Egger, H., Egger, P., and Greenaway, D. (2008). The Trade structure effects of endogenous regional trade agreements. *Journal of International Economics*, 74:278–298.

Falvey, R. and Foster-McGregor, N. (2015). North-South FDI and bilateral investment treaties. *UNU-MERIT Working Paper No. 2015-010*. Maastricht: United Nations University Maastricht Economic and Social Research Institute on Innovation and Technology.

Gallego, J. and Mendola, M. (2013). Labour migration and social networks participation in southern Mozambique. *Economica*, 80(320):721–759.

Gibson, J. and McKenzie, D. (2012). The Economic consequences of brain drain of the best and brightest: Microeconomic evidence from five countries. *Economic Journal*, 122:339–375.

Gibson, J., McKenzie, D., and Stillman, S. (2011). The Impacts of international migration on remaining household members: Omnibus results from a migration lottery program. *Review of Economics and Statistics*, 93(4):1297–1318.

Giulietti, C., Wahba, J., and Zimmermann, K. (2013). Entrepreneurship of the left behind. *Research in Labor Economics*, 37:65–92.

Harris, J. and Todaro, M. (1970). Migration, unemployment and development: A Two-sector analysis. *American Economic Review*, 60(1):126–142.

IBRD and World Bank (2014). Kyrgyzstan country profile 2013: Enterprise survey. Washington, D.C.: The World Bank.

Jovanovic, B. (1979). Job matching and the theory of turnover. *Journal of Political Economy*, 87(5):972–990.

Karymshakov, K. and Sulaimanova, B. (2017). Migration impact on left-behind women's labour participation and time-use: Evidence from Kyrgyzstan. *UNU-WIDER Working Paper Series No. 119*. Helsinki: United Nations University World Institute for Development Economic Research.

King, R. (2012). Theories and typologies of migration: An Overview and a primer. *Willy Brandt Series of Working Papers in International Migration and Ethnic Relations 3/12*. Malmo: Malmo Institute for Studies of Migration Diversity and Welfare.

Koelle, M. (2016). Firm dynamics and occupational choice. Number E20-V2 in Beiträge zur Jahrestagung des Vereins für Socialpolitik 2016: Demographischer Wandel - Session: Labor Economics: Theory, Kiel und Hamburg. ZBW - Deutsche Zentralbibliothek für Wirtschaftswissenschaften, Leibniz-Informationszentrum Wirtschaft.

Lewis, W. (1954). Economic development with unlimited supplies of labour. *Manchester School of Economic and Social Studies*, 22:139–191.

Mafukidze, J. (2006). A Discussion of migration and migration patterns and flows in Africa. *In C. Cross, D. Gelderblom, N. Roux, and J. Mafukidze (eds). Views on Migration in Sub-Saharan Africa: Proceedings of An African Migration Alliance Workshop*, pages 103–29.

Mansuri, G. (2007). Does work migration spur investment in origin communities? Entrepreneurship, schooling and child health in rural Pakistan. In Özden, C. and Schiff, M., editors, *International migration, economic development and policy*, pages 99–140. World Bank and Palgrave MacMillan.

Marchetta, F. (2012). Return migration and the survival of entrepreneurial activities in Egypt. *World Development*, 40(10):1999–2013.

McMillan, J. and Woodruff, C. (2002). The Central role of entrepreneurs in transition economies. *Journal of Economic Perspectives*, 16(3):153–170.

Morten, M. (2016). Temporary migration and endogenous risk sharing in village India. *NBER Working Paper No. 22159*. Cambridge, M.A.: National Bureau of Economic Research.

Naudé, W., Siegel, S., and Marchand, K. (2017). Migration, entrepreneurship and development: Critical questions. *IZA Journal of Migration*, 6(5).

Nelson, P. (1970). Information and consumer behavior. *Journal of Political Economy*, 78(2):311–329.

Obukhova, E., Wang, Y., and Li, J. (2012). The Power of local networks: Returnee entrepreneurs, school ties, and firm performance. Mimeo.

OECD (2010). Entrepreneurship and migrants. *Report by the OECD Working Party on SMEs and Entrepreneurship*. Paris: Organisation for Economic Co-operation and Development.

Piore, M. (1979). *Birds of passage: Migrant labour and industrial societies*. Cambridge University Press, New York.

Piracha, M. and Vadean, F. (2010). Return migration and occupational choice: Evidence from Albania. *World Development*, 38(8):1141–1155.

Ranis, G. and Fei, J. (1961). A Theory of economic development. *American Economic Review*, 51(4):533–565.

Rapoport, H. and Docquier, F. (2006). The Economics of migrants' remittances. In Kolm, S. and J.M.Ythier, editors, *Handbook on the Economics of Giving, Reciprocity and Altruism*, volume 2, chapter 17, pages 1135–1198. North Holland, Amsterdam.

Rudaz, P. (2017). The State of MSME development in Kyrgyzstan. *UNCTAD Working Paper Series on Informal Markets and Trade No. 3*. Geneva: United Nations Conference on Trade and Development.

Stark, O. (2009). Reasons for remitting. *World Economics*, 10(3).

Stark, O. and Bloom, D. (1985). The New Economics of Labour Migration. *American Economic Review*, 75:173–178.

Steinmayr, A. (2015). When a random sample is not random. Bounds on the effect of migration on household members left behind. *Mimeo*.

Taylor, J. and Lopez-Feldman, A. (2010). Does migration make rural households more productive? Evidence from Mexico. *Journal of Development Studies*, 46(1):68–90.

The Diplomat (2015). Central Asia feels effects of Russian economic slowdown. [Accessed on 19/10/2017].

Thieme, S. (2014). Coming home? Patterns and characteristics of return migration in Kyrgyzstan. *International Migration*, 52(5):127–143.

Wahba, J. (2015). Selection, selection, selection: The Impact of return migration. *Journal of Population Economics*, 28:535–563.

Wahba, J. and Zenou, Y. (2012). Out of sight, out of mind: Migration, entrepreneurship and social capital. *Regional Science and Urban Economics*, 42:890–903.

White, N. and Wolaver, A. (2003). Occupation choice, information, and migration. *Review of Regional Studies*, 33(2):142–163.

Wooldridge, J. (2005). Simple solutions to the initial conditions problem in dynamic, nonlinear panel data models with unobserved heterogeneity. *Journal of Applied Econometrics*, 20(1):39–54.