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FIRMS, KINSHIP AND ECONOMIC GROWTH IN THE KYRGYZ REPUBLIC

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Abstract

In this research, we ask whether kinship networks help promote entrepreneurship or impede its development in the Kyrgyz Republic. We conducted a survey of firm managers/entrepreneurs about the nature of their business networks, what kinds of business and non-business resources they receive from and provide to their various contacts, their firms' performance, and the business environment they face. Our data indicate that a firm's profitability is positively associated with in-network kin connections and negatively associated with out-network kin connections. While firms that rely more heavily on kin in their business networks grow more slowly than firms that rely less heavily on kin, they grow faster than firms that do not access business networks for help at all. In addition, we find no relationship between kin connections and firm performance for firms that have adopted best business practices.

I. Introduction

Traditional institutions, which govern access to resources on a relational basis, persist--and can even thrive--in modern states. In Central Asia, for example, kin ties shape and support private sector development (Ozcan 2008; Yalcin and Kapu 2008). While kinship relations perform important economic and non-economic functions, their rigidness can result in resource misallocation and inefficiency, potentially constituting a poverty trap (Hoff and Sen 2006; Platteau 2009). Yet, kin networks can also complement the development of markets and states, promoting rather than impeding modernization (Ismailbekova 2017). Therefore, understanding the nature of collective responsibility and joint agency imposed by traditional institutions can be

vital to fostering economic growth (Fafchamps 2016). We aim to further this understanding by investigating whether and how kinship networks promote or hinder entrepreneurship in the Kyrgyz Republic. Specifically, we examine how entrepreneurs' business ties to kin relate to firm profitability and revenue growth.

The pioneering work of Fafchamps (2004) and Platteau (2000) shows how kinship and other social ties influence economic growth and market development. They can solve information and enforcement problems when market institutions are weak (Greif 1993), provide access to asset equity, working capital, or credit, manage disputes among customers, suppliers, laborers, or credit-givers, and coordinate collective action (Munshi 2011). However, they can also encourage kin-based favoritism, increase market segmentation, dampen incentives to innovate, or complicate enforcement of transactions due to forced redistribution or solidarity (Platteau 2000, Grimm et al 2013).

Quantitative studies of family ties and firm performance show mostly negative or null effects, in contrast to the mostly positive effects of non-kin networks (Acquaah 2012, Bertrand et al. 2008, Fafchamps and Minten 2002, Gassie-Falzone 2016, Miller et al. 2009).[1] For example, redistributive pressures exerted by kinship networks limit private initiative and growth in Sub-Saharan Africa (Baland et al 2011, Grimm et al. 2013, Platteau 2000). An exception is Khayesi et al. (2014), who show that kin networks lower the cost of access to resources for small and medium firms in Uganda. Since the "intrafamilial implicit contract" (Ben-Porath 1980, Stark and Lucas 1988, Grimard 1997) may operate differently in Central Asia than in Sub-Saharan Africa or elsewhere in the world, our research contributes quantitative evidence on the relationship between traditional structures and economic growth in an understudied region of the world.

[1] Table B1 in the appendix summarizes the previous literature by type of business network connections (kin, ethnic, social or political); the kind of study (purely descriptive, cross-sectional or panel data, experimental or a meta-analysis); the size and the composition by size of the sample of firms; and the main findings).

The Inglehart-Welzel Cultural Map (based on the 6th Wave of the World Values Survey), places the Kyrgyz Republic in the African-Islamic grouping, characterized by more traditional and more survival-based values, although it is one of the least extreme points in this group (Welzel 2013). With respect to the business environment and market development, the Kyrgyz Republic ranks 70th on the 2019 Doing Business Ease of Doing Business Index, ahead of most Sub-Saharan African countries (though behind Kenya despite having a slightly higher level of GDP p.c. PPP) (World Bank 2019). Thus, compared to Sub-Saharan Africa, the Kyrgyz Republic occupies a different, more intermediate position with respect to traditional values and market development.

The Kyrgyz Republic is an interesting laboratory for investigating the interaction between kinship and business. First, a clan structure reinforces and embeds the importance of kin. Resource allocation through clan ties reproduces inequality over generations (Aldashev and Guirkinger 2019). Clan structures persist despite the Soviet efforts to dismantle them in its push for modernization. Second, factor misallocation in the Kyrgyz Republic is significant, (see subsection IV.iv), due, in part, to the legacy of Soviet-era inefficiencies. To the extent that kinship governs the distribution of resources, a better understanding of how it does so may help improve allocative efficiency. Third, the Kyrgyz Republic shares common features with the other Central Asian republics, which we discuss below, making it plausible, even likely, that our findings from the Kyrgyz Republic can be generalized to the larger region.

In 2019, we conducted a survey of the owners of 1000 firms in Bishkek, the capital city located in the north, and Osh, the major city in the south. Our instrument features extensive measures of business help that respondents receive and also provide to others, including the form of help and the respondent's relationships to the providers and recipients of help. These detailed measures allow us to advance the literature by disentangling the relative benefits of using such

ties and the costs of being used by them as well as explore how the boundaries of kinship matters for businesses by quantifying the relative importance of the nuclear and extended family, the clan, and non-kin ties.

Our regressions of firm revenue and profits in 2018 fiscal year on network measures and a host of controls indicate that kin-based in-networks (those that firms draw on for business-related assistance) have a positive association with profitability, while their kin-based out-networks (those to whom they provide business-related assistance) have a negative association. These associations are fairly strong, explaining up to one third of a standard deviation in profit margin. High profitability could indicate a firm facing constraints on investment, leading to slower firm growth, or high productivity leading to higher growth if these profits are reinvested.

Next, we estimate fixed effects regressions of firm revenue growth using an unbalanced pseudo-panel that we construct using retrospective data: new firms with kin-dominated in-networks grow more slowly than new firms with no kin in their network. This disadvantage erodes for old firms. Both new and old firms whose owners have at least one person (kin or otherwise) who could provide business assistance to them grow faster than firms whose owners report no such persons, in line with the previous literature. When we restrict attention to one type of business assistance received, startup capital, the effects kin-based and non-kin networks on growth are statistically indistinguishable. We also cannot reject the hypothesis that fully self-financed firms at startup grow at the same rate as firms with external startup financing, speaking to the high cost of credit in the Kyrgyz Republic.

We consider two possible mechanisms for these effects on growth. If firms need resources on hand to reciprocate the help that they have received or pay for new help, they may reinvest lower amounts of profit. More generally, participation in a community-based informal insurance network may motivate owners to favor cash on hand over reinvesting profits. Our

evidence suggests that greater reliance on kin networks reduces the amount of profits that are reinvested, but by magnitudes insufficiently large to explain the differential growth rates. The second potential channel is the adoption of best practices according to (Western-style) business education, which dictate separating production decisions from household preferences, investment over consumption, and using kin networks only when they are productive for the firm. We find that the above effects are primarily for firms that are less oriented toward best business practices.

We perform several robustness checks, which are discussed in the main results section, the sensitivity analysis section and the appendix. First, due to the potential endogeneity of in-use and out-use network connections, we use instrumental variables estimation. Our instruments are based on the entrepreneur's number of cousins and rely on two identification assumptions: i) that the number of cousins and the number of cousins squared differentially affect in- and out-connections and ii) the number of cousins does not influence firm performance except through the number of kin connections after we control for our set of firm and firm owner characteristics. The magnitudes are larger and less precisely estimated but yield qualitatively similar results. Second, we address the measurement error in our dependent variable, given that firms could systematically over or under report revenue and/or profits. We perform nonlinear least squares estimation of a model that allows for both over and under reporting that give rise to a skewed error distribution (Millimet and Parmeter 2019). We also rerun all of our results on the subsample of firms that our survey enumerators deemed as reporting numbers truthfully. The results are quite similar. Third, we address the problem of missing data using a Heckman-type correction, and again we find qualitatively similar results. Finally, we rerun our models with the addition of variables indicating the respondent's clan. Since the role of kin ties could operate through clan culture or access to clan-specific resources, we do not incorporate clan dummies in

our main regression. Their inclusion, however, allows us to rule out clan-level factors as the source of the correlation between the network variables and economic performance.

The closest studies to ours are Grimm et al. (2017) and Berrou and Combarnous (2012), both of which examine the Sub-Saharan African context. They find effects of kin ties, despite taking different approaches to measuring the kin-ness of business networks. Grimm et al. (2017) use an owner's number of siblings as a proxy for the redistributive pressure of kin.[2] For firms that participate in a social insurance regime, investment declines strongly with pressure for redistribution. For firms who reject the social insurance regime in favor of growth, expected pressure from kin has no effect on investment decisions. We find, with more direct and precise measures of kin ties, similar null effects for firms oriented toward best business practices.

Berrou and Combarnous (2012), in contrast, use a name-generator to map out the personal networks of entrepreneurs in Burkina Faso. They find that the strength of ties has a positive impact on entrepreneurs' economic performance in the informal economy, but weak ties are less effective in a context of uncertainty and instability. They cannot address the endogeneity issues that Grimm et al. (2017) raise.

Our study combines the advantages of both approaches. Like Berrou and Combarnous (2012), we directly measure the size of networks that entrepreneurs use for specific business purposes. Like Grimm et al. 2017, we accept that these explicit links may not be exogenous and may reflect entrepreneur characteristics or unobservable shocks and we employ fixed effects and instrumental variables estimation.

In sum, our paper makes three contributions. First, our measures of business assistance distinguish between help received and help given, yielding a more complete picture of the effect

[2] Grimm et al. (2013) also measure kinship ties using the following proxy variables, the share of the population from the same ethnic group and the share of the population from the same birth region. Gupta et al. (2017) use the latter measure to proxy for the size of a business' network.

of kin ties on firm performance. Second, we introduce to the empirical literature an intermediate country case, both in terms of economic development and kinship dependence, with potential for generalization to other countries in the region. Third, the nuanced relationship we find between kinship, entrepreneurship, and better business practices suggests ways to harness the benefits of kinship in developing countries while limiting the costs.

The rest of the paper proceeds as follows. In the next section, we discuss the national context of our study. Section 3 formulates the hypotheses. In section 4, we describe our survey. Section 5 discusses our estimation strategy and presents the results. Section 6 concludes.

II. Context

Formerly one of the fifteen republics of the USSR, the Kyrgyz Republic became an independent country for the first time in its history when the Soviet Union collapsed at the end of 1991. As in other former Soviet republics, the demise of Soviet economic and political institutions (which heavily subsidized large enterprises) and the severing of Communist-era trade links led to market reforms and a steep macroeconomic contraction that lasted until the end of the 1990s. Positive growth resumed in the 2000s, though the economy was hit by recessions in connection with global and regional developments in 2008 and 2014. The country lost a considerable portion of its human capital stock due to the emigration to Russia of many of its ethnic Russian citizens during the 1990s. Since the 2000s, it has experienced massive labor migration, primarily to Russia, and relies heavily on migrant remittances. It experienced violent political conflicts associated with the overthrow of the first post-Soviet president, Askar Akaev, in 2005, of his successor, Kurmanbek Bakiev, in 2010, and inter-ethnic strife pitting the minority Uzbek population against the majority Kyrgyz, particularly in regions in the south of the country, in the wake of Bakiev's ouster. Its population is currently about 6.3 million.

Private businesses in Kyrgyzstan face a number of challenges that are common to post-Soviet ("transition") economies: weak rule of law and poor protection of property rights, endemic political and economic crises, lack of a traditional entrepreneurial culture and institutions due to Soviet-era restrictions, rampant predatory, rent-seeking behavior on the part of government officials, including collusion between officials and insider beneficiaries of property redistribution after the Soviet collapse, high labor turnover, and lack of access to credit through formal lending institutions (Spector 2008, 2018; Yalcin and Kapu 2008; Radnitz 2010; Aziz et al. 2013; Botoeva and Spector 2013; Spector and Botoeva 2017). Massive uncertainty due to official corruption and poorly defined property rights, Soviet-era rigidities in infrastructure, disinvestment and low effective domestic demand, and political turmoil make the business environment unfavorable (Ozcan 2008). Possibly as a response, Yalcin and Kapu (2008) observe that many businesses have a single owner and managerial positions are occupied by family members of the owner(s). Spector (2008) highlights the importance of political connections for the survival of businessmen in Kyrgyzstan in the face of the "grabbing hands" of the government and powerful business rivals. Other barriers to economic development are its lack of natural resources (particularly oil and natural gas), poorly developed infrastructure and energy production sector, its sparse population, its landlocked, mountainous geography (which impedes its ability to participate in foreign trade), and its ethnic, linguistic and regional divisions. Competition from producers in nearby China also poses a barrier to the development of domestic industry (Spector 2018).

On the brighter side, long-standing economic, cultural, military, and migration ties to Russia, some foreign investment (recently, from China in particular, but historically also from Russia, Turkey, and the United States), and a recent record of peaceful, relatively free and fair elections are all more advantageous aspects of the business environment. Although the large- and

medium-sized enterprise sector has never recovered from the Soviet collapse, small productive shops (for example, in the apparel industry) and trading firms have arisen that take advantage of opportunities to form regional business networks and export to Russia and Turkey (Botoeva and Spector 2013; Spector 2018). Thus, small businesses represent the main driver of potential economic growth in the country, which is an important rationale for our empirical focus on them in this study.

The World Bank-EBRD Business Environment and Enterprise Performance Surveys (BEEPS), which is a firm-level survey of a representative sample of the formal private sector in Eastern European and Central Asian transition economies plus some additional "benchmark" European countries, largely confirms these findings. The 2013 Kyrgyz Republic survey, the most recent round, consisted of 270 firms, 42 of which had more than 100 employees. By far, the most frequently reported biggest obstacle was political instability (36% of firms cited it, compared to 8% in Russia in 2012 and 11% for all countries over the period of 2010-2017). Corruption was also more likely to be reported as the biggest obstacle in the Kyrgyz Republic than in other countries (12% vs. 8% in Russia and 7% in all). The frequency of bribe or gift requests by public officials is also much higher than in other countries: 55% of firms said they were expected to give gifts when meeting with government officials to obtain an operating license, compared to 7.3% in Russia and 13% in all. Perhaps as a response to the level of corruption, many firms in the Kyrgyz Republic operate in the informal sector.

These figures suggest that the business environment is rather difficult in the Kyrgyz Republic. It is one of the poorest countries among those surveyed. However, firms in the Kyrgyz Republic compare favorably to firms in other transition and European countries across some important dimensions for firm growth. Fewer than 5% report access to finance as the biggest obstacle (compared to 15% for Russia in 2012, 16% for all countries averaged over the 2010-

2017 period). With respect to innovation, 47% introduce a new product/service, compared to 37% in all countries. In terms of exporting, 6% of sales were exported directly in the average firm, a proportion that is on par with other countries in the survey. Kyrgyz firms also compare favorably in internet presence and female ownership.

Accounts of social networks and kinship relations more generally in Kyrgyzstan during the post-Soviet era often emphasize the long-standing cultural significance of kin and clan affiliations in Kyrgyz society and their growing importance as a source of resources and well-being in the face of the economic crisis and formal institutional vacuum that followed the Soviet collapse in 1991. Individuals are expected to give money and other support to members of their kin networks, particularly to fund elaborate wedding banquets and funeral ceremonies (Reeves 2012), and their decisions to do so are motivated more by morality than by instrumental considerations, while the amounts given may vary by situational considerations of deservingness, obligation, and ability to pay (Sanghera et al. 2011). However, one qualitative study suggests that although kin-based networks remain important, they have been weakened by growing inequality and poverty: with the rise of a cash-based, market economy the poor are increasingly excluded or cast into subservient positions, while better-off, urbanized Kyrgyz citizens (among whom most entrepreneurs would number) have now turn to instrumentally-motivated networks at the expense of traditional ties based on kinship and clan (Kuehnast and Dudwick 2004).

The Kyrgyz Republic shares common features with its four neighboring Central Asian countries, including the challenges to entrepreneurship just described, widespread reliance on social networks and kin for many social and economic purposes, the economic, cultural, and infrastructure legacies of the Soviet era, and Islamic heritage. It also differs in some noteworthy ways: it lacks the hydrocarbon resources of Kazakhstan, Turkmenistan, and Uzbekistan, and, correspondingly, is poorer than these countries (though similar to Tadzhikistan in this respect). It

is considerably more democratic and has a stronger civil society than its neighbors. But all five Central Asian republics lack a promising industrial base, and apart from hydrocarbon exports they have a great deal in common, which implies that our results are likely to pertain not only to Kyrgyz Republic, but to the Central Asian region more generally.

III. Hypotheses

Dyer Jr. (2006) and Ben Porath (1980) argue that the nature of families, firms, and their connections varies considerably.[3] In this section, we present hypotheses on how kinship networks can affect firm performance and then we discuss alternative explanations consistent with an observed relationship between kin networks and firm performance.

Networks of reciprocal exchange can dominate market exchange (Kranton 1996). Businesses rely on personal networks to solve information and enforcement problems and to access financing and other resources. When networks form along family lines, the stronger bonds can lead both to greater trust and to greater pressure to redistribute resources to those in the family, either as nepotism or as social insurance. Poor management, a typical bane of firms in developing countries (Bloom et al. 2010), results when owners rely too much on family members instead of outsiders for decision-making. Kin connections can link firm survival to the survival of the family, and firms fail to exit when they are unprofitable. In addition, nepotism may arise in management decisions and further breed inefficiency.[4]

[3] For example, in the context of owner-operator companies, household decision-making could influence firm performance and La Ferrara (2010) and Cox and Fafchamps (2007) stress multiple, economically important ways that kin ties affect household decision-making.

[4] However, an overreliance on kin networks may be more of a symptom than a cause of low economic growth. In a review paper, Bertrand and Schoar (2006) argue that there must be good economic reasons why family ownership persists despite the better performance of non-family firms. For example, when property rights enforcement is weak, Rauch (2013) argues that family firms limit the negative impact of employee spinouts (in contrast to, but consistent with, the view that lack of trust prevents delegating authority to outsiders as above). Family members also may give firms cheaper access to resources than the market due to lower transactions costs or altruistic preferences.

When entrepreneurs rely on family members to provide loans, advice, access to suppliers or markets, discounted labor, or other resources, they may thereby incur obligations, which they must prioritize over re-investment and sound business practice in the future due to the normative power of kinship ties. The benefits and costs of obtaining or distributing resources through networks function as implicit prices that guide decision-making, similar to when firms use market prices to guide decision-making. In a market setting, if prices properly reflect marginal valuations, the firm can evaluate the merits of a transaction; firms that access their business networks, and in particular, their kin-based connections, to obtain resources face implicit prices, even when network transactions are purely instrumental, that are likely more ambiguous and uncertain, imposing additional risk on the firm. Consistent with these arguments, Nichter and Goldmark (2009) point out that the vast majority of firms in developing countries are small, and many firms adopt survival instead of growth-oriented strategies. Small family firms that are designed to share risk across a network will also exhibit more risk averse behavior (Platteau 2000). This suggests the hypothesis greater reliance on kin leads to slower growth.[5]

Broadly speaking, when the value of the outside option of transacting in the market is high, as it is in the US, for example, we would only expect entrepreneurs to access kin networks when there are clear benefits to doing so. Even when a firm owner has altruistic preferences toward kin, if markets are complete, we would expect the separation property to hold. Firms would then maximize the size of the pie and then let preferences determine the flow of profits across kin ties. Helping others should have no effect on profitability.

[5] The effect of kin ties on firm performance could exhibit nonlinearity (Anderson and Reeb 2003, Kowalewski et al. 2010). First, it may be that low levels of kin involvement have a positive effect on firm performance, but higher levels turn this effect negative. Second, having kin ties at the initial stages of a firm's life course may have a positive effect while more extended involvement in later phases could negatively affect firm growth.

When the value of the outside option of transacting in the market is low, however, we would expect a much more nuanced relationship between kin ties and firm performance. When markets are incomplete, the separation property may no longer hold and production decisions can depend upon preferences. An otherwise profit maximizing firm may make decisions that sacrifice profitability for solidarity with kin.

As we have seen, the Kyrgyz Republic is an intermediate case in terms of market development and governance institutions, on one hand, and strength of kin ties, on the other. Thus, it's difficult to anticipate the sign of the net effect. The intrafamilial implicit contract may impose certain obligations on a business owner, represented by these in- and out-business links. Reciprocity implies that a business owner who chooses to access kin networks for business help will likely also face pressure to provide help in turn. However, in principle, an entrepreneur who turns to kin networks for assistance but does not face future requests from kin to provide such assistance in return may well experience a strong benefit from the in-network use without incurring the cost of out-network assistance. This logic calls for distinguishing between the use of in-network business help-seeking and the use of out-network business assistance provision, which we specifically designed our survey to do. The reciprocity inherent in kinship networks implies the two should be positively correlated across some time horizon (particularly as firms age and requests for reciprocation begin to arrive), but the correlation is unlikely to be perfect. We exploit the independent measures of in- and out-network use to investigate whether, consistent with theory, the two have opposite associations with firm performance.

According to BEEPS, discussed in the previous section, Kyrgyz firms face worse conditions with respect to political instability and corruption, but do not appear to perform worse in key indicators of firm development. Kinship ties, for instance, could explain why firms face fewer problems with access to finance. According to this hypothesis, then, we would expect that

reliance on kin networks, particular as it relates to finance, should positively affect firms' profitability. If the network is based on reciprocal exchange, receiving business help will result in an obligation to help others. When markets are incomplete, this obligation can negatively affect a firms' profitability.

How does the reliance on kin networks affect the growth of the firm? If the realized value of obligations is more than the realized value of help received, the firm relying on kin networks should experience a drain on resources that should dampen growth. Conversely, if the realized value of obligations is less than the realized value of help received, the firm should experience a boost to growth relative to those that do not access kin networks. We expect that the timing of this help, both given and received, in the life cycle of the firm has a crucial impact on this realized value. Unfortunately, we only have rough measures of timing of help.

Having presented our main hypotheses, we now discuss what else could explain a positive or negative relationship between the number of kin connections and firm performance. The first explanation concerns unobserved shocks to the firm or the firm owner's household. Unfortunately, our data do not allow us to track unanticipated shocks to the firm. Our measure of kin connections could just proxy for these unobservable shocks, such that if we were able to control for these shocks, we would observe no relationship between kin connections and firm performance. In this case, we would observe a relationship between firm performance and kin connections even when there is no difference in firm performance depending on whether a firm accesses the market or family. However, one would expect in-network connections to be positively correlated with negative firm-level economic shocks (and hence negatively correlated with firm performance) and out-network to be positively correlated with positive economic shocks (and hence positively correlated with firm performance). Moreover, Fafchamps and Lund (2002) present evidence that the flow of resources across household networks does respond to

idiosyncratic and covariate shocks. This implies that network structure is not neutral and could still have a direct effect on performance when the separation property does not hold.

IV. Survey and Data Description

In this section, we first discuss the purpose and design of our survey instrument, then we describe our key dependent and independent variables and present descriptive statistics, and finally we motivate our research question by highlighting features of our data. The main impetus behind designing and conducting our own survey for this analysis stems from the lack of firm-level data in the Kyrgyz Republic. By far, the best source of data on Kyrgyz firms that is publicly available is the World Bank's Business Enterprise Survey (BEEPS), discussed above. While BEEPS is clearly useful for making international comparisons, the survey misses key parts of the picture for the Kyrgyz Republic. First, it lacks questions about the relationship between kinship and the business environment. Second, the sampling technique is based on the official registry of firms, which has several problems: firms in the official registry are not representative of all firms, many no longer exist, and most, especially those of smaller size, report inaccurate or outdated contact information. Third, firms with fewer than 5 employees, the vast majority of firms, are excluded from the BEEPS sample. For these reasons, we designed and administered a comprehensive survey of firms in the Kyrgyz Republic that i) focuses on how kinship networks may influence businesses and incorporates potential and actual network use, as well as including separate questions on help that is given and help that is received; ii) targets firms with fewer than 50 employees, including those in the informal sector; and iii), asks retrospective questions on the life course of the firm to enable pseudo-panel analysis.

To implement our survey, we enlisted Crossroads Central Asia, a Bishkek-based NGO and think tank specializing in economic and political analysis and social science data collection, whose staff includes Western-trained Kyrgyzstani professionals with extensive experience

implementing surveys and interviews in collaboration with foreign research teams, and expertise on national economic, political, and social institutions in the Kyrgyz Republic. We surveyed 1000 small business owners, randomly chosen from a roster of firms that we assembled by recording all firms in a precinct that had visible signage from the street. We selected 10 firms from 60 precincts (randomly selected from 204 precincts) in Bishkek and 40 precincts (randomly selected from 73 precincts) in Osh.[6] Our response rate is 57%, higher than the rates obtained by BEEPS (BEEPS 2010) and World Management Surveys (Bloom et al. 2016) as one might expect given that our firms are smaller in scale.

Our survey has several limitations. First, our sample is not nationally representative. Second, even though we targeted firms with fewer than 50 employees, larger firms were less likely to respond, in part due to our inability to provide monetary incentives. Therefore, we caution against generalizing our findings to firms with more than 15 employees. Third, our sampling method misses firms that are hiding or difficult to find, and those in isolated locations with low population density. Although (like many firm studies in developing countries and elsewhere) our sample is not perfect, it nonetheless has several important advantages and a high response rate given the context.

IV.i. Key dependent and independent variables

Our main dependent variables measuring firm performance are profitability and revenue growth. Profitability is defined as profits divided by revenue. Both business revenue and profits are directly elicited from the respondent, as de Mel et al. (2009) recommend. We focus on profitability instead of return on assets for several reasons. First, we are less concerned about measurement error with respect to a normalization by sales as opposed to a normalization by

[6] Appendix A describes are sampling method in full detail.

asset value. Much greater information is needed to construct a value of assets measure, especially in this context where standard valuations of capital may be less familiar. In addition, over/under reporting of revenue and profits is likely to be more similar in nature than over/under reporting of assets: profit margin could thus mitigate measurement error while dividing profits by assets likely exacerbates it. Second, investors care about profitability. Third, firms may differ in their risk environment, creating an additional demands on measurement when assets are used. Two firms with the same expected return and the same profitability may have very different return on assets (ROA) in any given time period. This variability, while of intrinsic interest, is not our focus.

Our second measure of firm performance is revenue growth, a key outcome of interest given the previous literature's concern about the relationship between reliance on kin networks and a firm's survival orientation. We used retrospective data to construct this variable. For each firm, we potentially observe revenue for the first full year of the firm's life, the second full year and the years of 2017 and 2018. We thus have at least two observations of year-by-year growth and up to four observations of revenue growth if we are willing to put more structure on the shape of the growth trajectory.

Even when researchers employ the best possible methods to ensure high quality data, as we have done, firms without formal accounting or required disclosure of financial accounts are not always forthcoming about financially sensitive information.[7] Measurement error in the dependent variable is typically considered a minor concern unless it is correlated with the key independent variables, our network variables. While factors that affect under/over reporting or

[7] Concerns about measurement error depend on how the data are used. If we were to, for example, estimate how much tax revenue the Kyrgyz government should be collecting from firms in Bishkek and Osh, then underreporting would be a more serious problem.

nonresponse could be entirely idiosyncratic, we will account for systematic under/over reporting or selective nonresponse in our estimation strategy, which we discuss in the next section.

Key independent variables

The main explanatory variables of interest are based on a battery of questions concerning a firm owner's use of business and personal networks. Network variables are ego-centric and derived from the pre-specified links between the firm owner and their business and social contacts. For business in-networks, we asked questions on the number of persons within each of the following categories from whom the firm owner could turn to (potential network) and actually has turned to (actual network) to for each of four kinds of help: family, friends, clan members and others. The types of help are receiving a loan, help with a dispute, help with bureaucracy, and finding suppliers or clients. For business out-networks, we asked about the following types of help: providing jobs to others, giving business advice or help, offering favorable terms to supplier or customer, providing housing or other material support.

In all the baseline measures, we weight each dimension of help equally and sum across all categories. Using ego-centric degree (a count of the number of people in the network) is a reasonable approach: full network data, although preferable, are costly to collect. A potential shortcoming of this measure is a firm owner receiving four types of help from one person is treated equivalently as a firm owner who receives one type of help from four people. For certain types of questions, such as assessing the risk sharing properties of the network, this would be a poor measure, but for our research question it serves as a rough and ready measure of reliance on kin for specific business purposes. Although our categories of help are not exhaustive, they cover a wide range.

To check whether our measure reflects the importance of network connections, we constructed an alternative measure using a battery of questions on the individuals that help our

entrepreneurs. We asked respondents to think of five specific individuals who had given them help and to indicate how important the help was for their business on a scale from 1 to 4. We constructed the average importance of help across these individuals and then correlated this measure with the total network in-use connections that a firm had reported. The correlation between these two measures is 0.42 and statistically significant at the 1% level. This gives us confidence that our measure is capturing meaningful variation in the importance of network help.

Additional variables:

We asked respondents to tell us the clan (*uruu*) to which they belonged. We elicited open responses to this question due to the changing meaning of clan identity in Kyrgyz society. Of the 771 ethnic Kyrgyz, we received 253 distinct responses including "I don't know" (99 firms) and "Refuse to answer" (22 firms). Clearly, some respondents reported subclan and/or other meanings of clan than the set of 40 tribes. For the subclans that we could identify, we then created a new variable with 45 distinct responses, including the "I don't know" and "Refuse to answer". Exploring the relationship between these different meanings of clan and firm characteristics is interesting on its own, but for now we will work with the aggregated definition of clan in our analysis.

Our survey included a range of measures of the degree to which firms have implemented formal practices associated with successful businesses in Western contexts: the percentage of employees who are paid, the percentage of paid employees who have formal contracts, whether sales receipts are provided always, sometimes, or never, whether the business has the following: a webpage, a dedicated email account, a dedicated bank account, a tax identification number, and formal registration papers, whether the owner is familiar with competitors' prices, reports having paid a bribe for business purposes, has done research on why former customers left, and offers sales or discounts to attract new customers. After standardizing the scales of these individual

measures (so they all run from 0 to 1), we performed a k-means cluster analysis, specifying a 3-cluster solution, using the Euclidean distance between an observation's values on the variables and the means for the cluster to optimize cluster assignment. The optimal 3-cluster solution yielded clusters corresponding to, respectively, high (257, or 27% of valid observations), intermediate (386, or 41%), and low (304 or 32%) levels of best business practices and formalization, based on the cluster-specific means on all the constitutive variables. In turn, we performed a series of validations, all of which confirmed that the clusters performed as we would expect them to, in terms of associations with performance measures and other associated variables (full details of these results are available upon request). Accordingly, we use the resulting three-category degree of "best practices and formalization" variable based on the cluster assignments in our models, both additively and, in some cases, in interaction with network usage.

IV.ii. Descriptive statistics

Table 1 presents the number of firms of each industry type in our sample. We have a wide variety of types of firms, from IT services to wholesale food. Manufacturing firms constitute only 3.3% of our sample, which is not surprising given our focus on small companies.[8] The modal firm is a grocery store. In the end, our sample appears to represent the distribution of enterprises as observed on the ground.

Panel A of Table 2 presents descriptive statistics for our sample of firms. The average turnover is 390,558 Kyrgyz Soms (2010), or roughly 10,000 USD (2019). The range in revenue is quite larger, from a minimum of only 11,044 Kyrgyz Soms (2010) to a maximum of nearly 8 million. The average profit margin is 52 percent, a value that is high but not unusual for smaller

[8] In 2015, 3.5% of US firms with less than twenty employees were manufacturing firms according to the 2018 Small Business Profile of the US Small Business Administration.

firms in developing countries. A typical firm employs close to 3 workers. The average value of assets is roughly twice that of average revenue and also varies quite substantially. The smallest firm consists of one worker, the owner-operator, and the largest firm has 121 workers (not necessarily full-time). Panel B of Table 2 presents descriptive statistics of the firm owners. The average age of our firm owners is 41. The youngest is 18 and the oldest is 78. Most of our firm owners are female (62%). In terms of schooling, 46% have some higher education, an indication of how limited opportunities for professional employment have pushed many highly education Kyrgyzstanis into self-employment, a typical phenomenon in transition countries.

Panel C of Table 2 presents descriptive statistics on the firm owners' potential and actual networks that we discussed above. A typical firm owner has 8 connections in their potential in-network, four of which they have taken advantage of 4 at some point. (Note that, as we explain above, our network unit is actually a person-by-type-of-help measure, not simply a count of persons who can provide any type of help. We refer to these as "connections" for brevity.) The number of out-network use connections is overall larger, at 11 connections in the last two years. On average, 16% of startup financing is done by kin, but most of our firms self-financed their own startup investments.

Our data illustrate the extent to which entrepreneurs' networks in the Kyrgyz republic are kin-based: on average 67% of business connections are kin-based links (Figure 1). For comparison, Anderson et al. (2005) find that among small firms in the US entrepreneur's business networks consist of about 25% kin. Berrou and Combarnous (2012) also find entrepreneurial networks consist of about 25% kin in Burkina Faso. The predominance of kin in our respondents' business networks makes it difficult to separately estimate the effect of total network size from that of kin ties. Figures 2 and 3 show the different types of help for kin-based

and choice-based (non-kin) links. Firms mostly rely on both kin and, to a lesser extent, non-kin business networks for financing.

All types of help have a large proportion that are kin-based (Table 2, Panel D). Interestingly, kin are not as predominant in out-networks, compared to in-networks, underscoring that business owners are important sources of social support for community members.

IV.iii. Motivation for our research question

a. Evidence of misallocation

If firms are accessing family networks to obtain and distribute resources, then we would expect to see misallocation due to differences in implicit and market prices. We assess misallocation using an accounting exercise outlined in Klenow and Hseih (2009). We fit a production function using labor and capital shares fixed at the corresponding US industry level and then calculate the residuals to get TFPR (revenue-based total factor productivity).[9] Table A2 of the appendix shows results from a basic production function (i.e. estimating factor shares as opposed to using US ones). Our rough and ready measures of capital and labor perform fairly well.

Figure 4 exhibits the empirical distribution of TFPR (on the basis of industry-specific US capital and labor shares) for the firms in our survey. The variance in TFPR is a measure of misallocation. A wide distribution means that firms are behaving as if they are facing very different factor prices. For comparison, the left tail of the distribution for the US thins dramatically between ½ and ¼, whereas there is still sizeable mass of firms to the left of 1/8 for

[9] To match our data to US counterparts, we relied on the following sources: Components of Value Added by Industry [Millions of dollars], Bureau of Economic Analysis, Release Date: November 01, 2018, https://apps.bea.gov/iTable/iTable.cfm?ReqID=51 and 2017 NAICS Structure (Excel file), https://www.census.gov/eos/www/naics/ . Following Klenow and Hsieh we first calculated the distributions of TFPR and TFPQ, then trimmed off the top and bottom percentiles, and then recalculated the distributions.

the Kyrgyz Republic. Klenow and Hseih (2009) focus on the standard deviation of this distribution: in 2005, it was 0.49 for the United States and 0.67 for India, compared to 0.93 for the Kyrgyz Republic in 2018.[10]

Figure 5 plots separately the distribution of TFPR for firms that are above and below the median in reliance on kin ties for business. Indeed, those firms that rely on kin ties more pull the distribution to the left. Both types of firms, however, contribute to the fat tails of the distribution. These figures suggest that kinship matters for businesses in the Kyrgyz Republic, bearing both advantages and disadvantages for individual firms. However, without a clear counterfactual, it is not possible to ascertain whether there would have been more or less misallocation in a regime of lower reliance on kin in entrepreneurial decisions.

b. Persistence of kin connections

If the role of kin networks persists across the life course of the firm, we would expect to see a positive association between kin participation in startup financing and subsequent use of kin connections for business purposes. We regressed our three network variables—the number of kin-based business connections in the in-use-network (Table 3, columns 1 and 2), the number of kin-based business connections in the out-use-network (columns 3 and 4) and the share of the business in-network that is kin-based (columns 5 and 6)—on the share of startup investment financed by kin, controlling for the share of startup investment that is self-financed, the size of the startup investment and the initial level of employment and asset value. One s.d. in kin financing results in an additional one-third of an in-use kin connection and the estimate is statistically significant at the 5% level. The coefficient changes little when we add firm owner controls. Larger firms at inception in terms of number of workers and size of initial investment

[10] These differences are merely suggestive. While these values account for differences across industry types, the overall composition of industry types represented in the three different countries could explain some of the differences.

also have more kin-based connections. One s.d. in kin financing results in nearly half an additional out-use connection, and the estimate is statistically significant at the 10% level. Again, we see a similar pattern with respect to the initial size of firms. One s.d. in kin financing increases the proportion of in-business network connections that are kin-based by .05, about one-fifth of a s.d., and the estimate is statistically significant at the 1% level. Interestingly, initial firm size does not predict kin-ness of business networks. Thus, there is evidence of persistence and some evidence of reciprocity, since the initial kin influence relates to both in and out-network use connections.

c. Vignettes

We posed a series of vignettes to firm owners to see how they view the tradeoff between family and business. The first vignette was a situation in which the owner of a similar business to the owner's must decide between offering work to a 1) highly qualified candidate whom he/she does not know or 2) a less qualified candidate who is the son of a cousin. Who should the business owner hire? Our respondents answered the son of the cousin 27.4% of the time.

The second vignette involved a choice by the business owner between 1) buying goods from a firm belonging to his uncle or 2) buying the same goods from another firm, the owner of which he does not know but at a savings of 10% of the cost of the good. Which firm should the owner buy the materials from? 30.5% of the respondents answer the from the firm belonging to the business owner's uncle.

The third vignettes posited that after a profitable year the owner of a business like the respondent's wants to reinvest the profits by making a large purchase of goods for the firm, but also knows that one of his close relatives needs the means to have a wedding. Should the business owner prefer to loan that member of the family the money instead of reinvesting the profits as planned? 60.4% of respondents answered that the prefer to loan the money to the

family member. Although hypothetical, these vignettes demonstrate, that firm owners are aware of these tradeoffs and that there is variation in how dependent business decisions are on kin ties, with majorities endorsing business considerations over family obligations in some circumstances.

V. Estimation and Results

V.i. Econometric specifications

We estimate the relationship between firm performance and kin networks using Ordinary Least Squares. Specifications take the following form:

1. OLS: $$firm\ performance_i = \alpha + \beta(kin\ connections)_i + \gamma X_i + \varepsilon_i$$

where firm performance and kinship network strength of firm i are measured as described above and X_i is a vector of firm-level controls, which always include firm-type fixed effects, cohort fixed effects, and firm location (Osh or Bishkek). In some specifications, we also include the value of a firm's assets and the number of employees. Firm owner controls are sex, age, whether the firm owner has some higher education, ethnicity, religion, language of the interview and region of birth.

Even when measurement error in the dependent variable is purely idiosyncratic, if it is systematically under or over-reported, then our estimates could be biased. We address under/over reporting using two different approaches. First, following Millimet and Parmeter (2019) we use Nonlinear Least Squares estimation that explicitly allows for a skewed error distribution. In The error term has an additional component $\exp(Z_i \delta)u_i$, where Z contains scaling factors (we use whether a firm owner characteristics as well as assets) and u_i is taken from an unknown distribution with mean μ, which can be positive or negative. Second, we rely on perceptions of the local enumerators, whom asked whether the respondent seemed to report figures truthfully.

The appendix shows the results when our models are estimated using only the subsample of firms they deemed completely truthful (about 60% of the sample). Considering that these two approaches are entirely different, if both provide similar estimates as the main ones, it is reasonable to conclude that measurement error is likely not driving our results.

Our measure of kin connections could be endogenous due to reverse causality, omitted variables and/or measurement error. Both classical and non-classical error are plausible, i.e. there may be random under or over assessments of help in the mental accounting of in and out links or those with greater entrepreneurial attitudes may systematically undervalue the help that they receive. Therefore, we use an alternative estimation strategy, Two-stage Least Squares, where the entrepreneur's number of cousins and number of cousins squared serve as instrumental variables. The number of cousins should be correlated with kin connections (or total network connections in an environment where social connections tend to be primarily kin-based) but uncorrelated with individual firm owner characteristics and firm performance except insofar as it predicts kin network usage. The squared term improves the fit of the first stage and serves as a second instrument when we have two network variables on the RHS. This alternative estimation strategy, while not without its own set of econometric concerns, allows us to view the OLS estimates in a different light to make better logical inferences on the true relationship between kin ties and firm performance.

To estimate 2SLS, we use the following specification:

2. 2SLS: i. $kin\ connections_i = \alpha_1 + \lambda(cousins)_i + \kappa(cousins^2)_i + \gamma_1 X_i + u_i$

ii. $firm\ performance_i = \alpha_2 + \beta(kin\ connections)_i + \gamma_2 X_i + \varepsilon_i$

In this specification, we can accommodate first order dependence between the error term, ε_i , and kin connections provided that the variables *cousins* and *cousins*^{2} are relevant (correlated with kinship network strength) and they are valid in that they only affect firm performance through

their effect on kinship network connections. Since number of cousins could be correlated with variables that influence human capital investments of an entrepreneur's parents and/or beliefs about risk or other traditional beliefs that affect firm performance other than the reliance on kin, we control for the entrepreneur's age, education, ethnicity, religion and region of birth.[11] Since our first stage predictions could be poor (the entrepreneur's number of cousins, especially once we control for the age, ethnicity, religion, region of birth, etc., should only marginally affect the entrepreneur's business networking) we include the AR statistic. The first stage, however, is of interest on its own because there are two different theories of change as a firm owner gains more cousins. In the first theory, one, quite mechanically, expects that the number of cousins to increase the likelihood of kin links. In the second theory, a firm with a greater number of cousins might anticipate the arrival of future demand for links if an additional kin link is added. To the extent that these future links have less value, the firm owner with more cousins may choose to have fewer kin links. We present the first stage relationship in Table B2 for both in-use kin connections and out-use kin connections. We see the same U-shaped relationship, supporting the second theory. Increasing the number of cousins at first reduces the number of kin connections and then increases the number of kin connections. The estimated minimum is lower for out-use connections than in-use ones.

Our final specification takes advantage of the retrospective data on firm revenue, income, assets and employment in the previous year and the first and second years of business to investigate firm growth. Due to the variety of time periods that we have data on, we switch to a more structural measure of networks. We take the proportion of business contacts that a firm could potentially ask for help that are kin (Proportion kin). For those that report no potential

[11] We also have data on parental education and poverty status of the entrepreneur at age 12 as well as an entrepreneur's attitude toward risk. Controlling for these variables does not qualitatively change our results, but we do not include them in the set of controls because of missing data for these variables.

contacts, we assign a zero and we include a separate dummy variable that indicates those that have a business network (Has network). This measure is less dependent on the time period and still captures the kin-ness of business networks.

In addition to the aggravated recall error in retrospective data, we face the problem that we only observe those firms that survive. Since firm survival could be a function of kin networks, our estimates could be biased. Without any baseline sample of firms, we cannot estimate a survival function. Our approach is instead to assume that survival bias is worse among older firms than newer ones. We then allow for separate effects of kin networks on firm growth by old and new firms, controlling for the differential growth rates for new and old firms (Figure B1 shows that differential growth rates of new and old firms is primarily driven by changes in the size of the firm as one would expect). The panel structure of the data also permits controlling for unobserved time-invariant characteristics that affect firm revenue by including individual fixed effects.

3. OLS: $$\ln Firm\ Revenue_{it} = \alpha_i + \beta^{Prop/New}(Proportion\ kin)_i * New\ firm_i * t + \beta^{Prop}(Proportion\ kin\ )_i * t + \beta^{New}(New\ firm)_i * t + \beta^{Has/New}(Has\ Network)_i * New\ firm_i * t\ +\ \beta^{Has}(Has\ Network)_i * t +\ \gamma X_{it} + \varepsilon_{it}$$

Firm survival is not the only missing data problem we face. We also encounter missing data on business revenue, business income and some control variables. Only four out of five firms provided data on revenue and profits in 2018. While selection into those who responded depends, in part, on various idiosyncratic factors that, on balance, have no bearing on the level of revenue or profits, it is reasonable to think that selection is not ignorable. In the sensitivity analysis section, we present some robustness exercises that account for missing data.

V.ii Main Results

Table 4 presents the regression results for profit margin, our preferred measure of firm performance. In the first column model, we include only the in-use network variable in line with much of the previous literature. The models reported in columns 2-6 also include the out-use network variable, directly capturing these two different effects on firm performance, with firm owner (columns 3 and 4) and additional firm (5 and 6) controls. Columns 4 and 6 present our 2SLS estimates using the number of cousins and the number of cousins squared as instrumental variables. We have also included confidence intervals that are robust to weak instruments presented beneath the standard errors.

In all the specifications, the coefficient on the in-use network variable is positive and statistically significant at the 1% level, while the coefficient on the out-use network variable is negative and statistically significant at either the 1% or 5% level. These estimates confirm that kin networks affect firm performance both in positive and negative ways and, hence, suggest a failure of the separation property. The positive effect on profitability appears to outweigh the negative effect, indicating that profit maximizing firms are wise to take advantage of their kin relations in business. Using the estimates in column 2, a one s.d. increase in the number of in-use kin network ties (4.5) is associated with a 6.6 increase in the profit margin, an economically significant effect. The magnitude might appear to be extremely large in the context of the US, but one should keep in mind that the average profitability is about 50% in our sample. For out-use network ties, we find that one s.d. increase (9.5) is associated with a 3.6 decrease in profit margin, which is also an economically significant effect but weaker than the in-use network. Assuming ex-ante a one-to-one reciprocal relationship, the benefits of receiving help from network connections appear to outweigh the costs of providing help to them. The 2SLS estimates paint an even more beneficial picture on kin network use since the magnitude of the coefficient on in-use increases relatively more than the one for out-use. The increase in magnitude of the

2SLS estimates relative to the OLS ones could be explained by measurement error, or alternatively, that the effects are stronger for the subpopulation of compliers, those firm owners that would experience a change in the number of kin connections in response to a change in the number of members in the extended family.

The coefficient on male is positive but not statistically significant, indicating no gender gap in profitability. We also find a robust, counterintuitive negative effect of education on profit margin, but this is easily explained in a world of imperfect markets. More educated firm owners with better access to credit or possibly more trust in markets reinvest and expand more driving down the profit margin. It also might be the case that many higher-educated entrepreneurs were "pushed" into self-employment by low wages in state-sector professional jobs (like teaching, medicine, scientific research and engineering in state firms). In Russia and other transition countries, this was especially typical in the 1990s and could be a more persistent phenomenon in Kyrgyzstan. People who are pushed into self-employment rather than choosing it are going to be less effective at it.

Table 5 shows that there is a similar relationship if we just focus on profits, controlling for capital and labor. The advantage of this specification is that we can estimate the return on investing in capital and labor using the coefficients on assets and workers. The real return on assets is about 1% and hiring an additional worker would increase profits by 10% on average.

To model revenue growth we construct an unbalanced pseudo-panel using retrospective data for the first and second fiscal years of the firm as well as revenue from 2017 and 2018, giving us potentially four observations per firm. We have 650 firms that were started in 2014 or earlier and hence would have had at least four full fiscal years to observe. Of these, we have complete revenue data on 439 firms. If we restrict attention to just the two most recent years, 2017 and 2018, we have 733 firms that started in 2016 or earlier and, of these, we have complete

revenue data on 559 firms, a similar but slightly smaller proportion of firms than those that report any revenue data at all (801 out of 1000 firms). Due to our fixed effects estimation strategy, the 277 firms started 2017 drop out of the analysis: because we only have one full fiscal year of operation. Because the data are more complete for 2017 and 2018, we also model growth using just these years. We discuss how retrospective attrition and missing data might affect our results in the robustness section.

Table 6 presents the results on business growth from fixed effects regressions that account for selection by allowing separate growth effects for new and old firms. We assume that the parameter estimates for old firms are more subject to selection bias. The dependent variable is logged revenue and each time-invariant variable has been interacted with time. We focus on three extreme types of firms: those with no in-network, those with an in-network that consists of no kin and those with an in-network that consists of only kin. We control for firm-type specific growth rates (columns 2 and 3) and restrict the sample to 2017 and 2018 observations (column 3). All growth rates are interpreted with respect to the omitted category, an old firm with no business network, kin or otherwise, whose growth rates are contrasted to those of five other categories: old firms with a business network consisting of no kin, old firms with a business network consisting of only kin, new firms with no business network, new firms with a business network consisting of no kin, and new firms with a business network consisting of only kin. New firms with business networks grow faster than new firms without a network. This latter group of firms grow at a similar rate as old firms without business networks. The magnitudes of the effect are arresting: a new firm with a no-kin business network grows 84% more than an old firm with no network, whereas a new firm with an only-kin business network grows at a smaller but still hefty rate of 17.4%. Old firms with no-kin networks grow 10.5% more than old firms with no networks and we cannot reject the null that old firms with all-kin networks grow at similar rates

as old firms with no network. Restricting attention to only 2017 and 2018 observations yields similar results. However new firms with all-kin networks are no longer statistically distinguishable from old firms without business networks. This finding fits the arguments in Alger and Weibull (2008), that having any type of network is better than autarchy, but a network of coerced altruism through the family leads to slower firm growth than one without such coercion.

We repeat the exercise reported in columns 1-3 but with new firms defined as ones established in 2014-2016 (columns 4-6). The year 2014 is chosen because this would be the newest firm that could have all four years of observation. Extending the definition to include two more years will increase the selection bias at play, which is clearly a factor. Indeed, we see that networks still matter for new firms, but we no longer can statistically distinguish between a new firm with no-kin business network and one with an all-kin business network. The coefficient on the interaction term between new firm and the proportion of in-network that is kin-based even turns from negative to positive. The results are consistent with positive selection on kin networks as the business matures.

Ideally, we would capture a measure of firm networks at a firm's origin and then measure how it changes (grows) at subsequent time periods. Instead, we only measure kin connections at the time of the survey, which represents different points in our firms' life cycles due to their different starting dates. We do have one consistent measure of network use at the same firm age: kin-based startup financing, which we have already showed to be positively associated with the number of kin connections (see Table 3). We do not rely solely on this measure because it only captures one type of help, albeit an important one, and most firms in our data are self-financed. Firms with external financing grow faster than firms that are self-financed, similar to the previous result (Table 9). However, we cannot reject that firms with no kin-based external

financing and firms that have 100% kin-based external financing grow at different rates. In fact, the estimated growth rate is lower for non-kin financed firms, which we suspect reflects the cost differential of borrowing. This relationship dissipates over time and only holds true for new firms, consistent with beneficial effects of family finance in the infancy of a firm's life being tied to obligations that have a negative impact on firm performance later in a firm's life.

V.iii. Mechanisms

How does a greater reliance on kin networks affect overall firm performance and growth? We return to the cross-sectional data to explore two possible mechanisms. The first is reinvestment. If firms have a high profit margin because they do not/can not expand, then we would expect a negative relationship between the network variable and reinvestment. Our survey provides data on the amount of 2018 profits that were reinvested in the firm in 2019 (we also asked about plans to reinvest 2019 profits in 2020 and find similar results using this variable). Table 8 shows that the relationship between reinvestment and in-use and out-use kin networks is mostly negative, suggesting that firms that rely more on kin ties in their business networks reinvest a smaller share of their profits. In the column 2 specification, the coefficient on the in-use network is not statistically significant, while the coefficient on the out-use network is statistically significant at the 1% level. An additional out-use network connection reduces reinvestment by 0.74 percentage points. One standard deviation in out-use network ties leads to a decrease of about one-quarter of a s.d. in reinvestment rate. Thus, while the magnitude is not large, it is still economically significant.

The second mechanism we consider is the firm's orientation toward formalization and best business practices. Echoing the literature's emphasis on survival-based firms versus growth-oriented firms, we investigate whether a firm's orientation can influence the effects that we uncover. Since we find the distinction between survival and growth potentially problematic, not

least because it runs the risk of selecting on the dependent variable, we instead opt for asking questions about the orientation of the firm with respect to formalization and business practices. Do firms that have adopted best business practices and are more formalized experience different effects of kin networks? We performed cluster analysis to group firms into three types expressing the degree of best practice orientation: low, intermediate and high degree of orientation. Firms that are more oriented to best practices should be more selective in their use of networks for business purposes and less likely to violate the separation property. At the same time, they might operate in more competitive environments and have greater access to markets, which would drive down the profit margin. We see no kin network effect for firms in the high-degree cluster (Table 9). For those in the intermediate cluster, we find only a positive effect of in-use business network, but no negative effect for out-use networks. For those in the low-degree cluster, we find both the positive effect of in-use networks and the negative effect of out-use networks as before. We also see that, as the firm becomes more oriented toward best practices, their profit margins fall, suggesting a more competitive environment and/or possibly reflecting expansion of investment.

V.iv. Sensitivity Analysis

We first address measurement error in our dependent variable due to over or under-reporting of revenue and profits. To remedy this, we re-estimate the models reported in Tables 4 and 6 using the subsample of those firm owners that are deemed truthful when reporting numbers by the enumerators. The results are quite similar despite losing over a third of the observations (Tables B4 and B5). The drop in observations, however, exacerbates the finite sample issues facing 2SLS estimation and we do not get meaningful estimates as both the coefficients and the standard errors increase dramatically.

An alternative approach is to tackle the problem of systematic under/over reporting directly by allowing for a skewed error distribution, following Millimet and Parmeter (2019). In Table B6, we reestimate columns 1 and 2 of Tables 4 and 5 using nonlinear least squares estimation with an additional error component that depends on a firm's assets and employment as well as firm owner's sex, age, ethnicity, region of birth, and preferred language as scaling variables that affect extent of measurement error. The results suggest that firms, on average, underreport. This underreporting is minimal for profit margin and on the order of about 15% for profits, suggesting that firms under/over report profits and revenue in a similar manner. More importantly, the estimated coefficients on our network variables and the corresponding standard errors are quite similar as OLS estimation, indicating that LHS measurement error is likely not a serious concern for our analysis.

Next, we address the problem of missing data. In columns 1, 2, 4, 5 of Table B7, we present estimates of the probability of having missing observations for our dependent variables. In the first and second columns, the indicator of a missing observation takes a value of one if any of the values on revenue and profits for any of the years that we ask about are missing. In the fourth and fifth columns, the indicator of a missing observation takes a value of one if the values on revenue and profits for the year 2018 are missing. Columns 1 and 4 use the two main network variables and columns 2 and 5 use cousins and cousins squared. In columns 1 and 4, we report the F-test for whether they can be excluded. We fail to reject the null in the first definition of missing but can reject the null under the second definition. Given that there may also be selection on other variables, including unobservable ones, we take the problem of missing data seriously and employ a Heckman-type correction procedure, outlined in Wooldridge (2010).

For this exercise, we need two sets of instrumental variables, one set that can be excluded from the profitability regression and the other set that can be excluded from both the profitability

and the first-stage regression. The former set of variables are simply the ones that we use in the IV estimation. For the latter set of variables, we propose two variables that should capture the information environment that the firm operates in. The first is a response to one of the vignette questions in which a firm hypothetically receives a windfall gain and the respondent should indicate whether a family member would have information about the firm's windfall amount and the second is whether the firm is an owner operator.[12] Columns 2 and 5 show that both of these variables are negatively related to the probability of having missing data and we strongly reject the null that we can exclude them from the selection equation, no matter which definition of missing that we use. We then proceed to reestimate the effects of the network variables on profitability using 2SLS and including the inverse Mills ratio from the selection equation. In columns 3 and 6, we see that the coefficient on the inverse Mills ratio is not statistically different from zero and the coefficients on both the in-use and out-use network variables are similar to the estimates in column 4 of Table 4. Thus, there do not appear to be systematic differences in how the network variables affect firm performance across those firms that reported all data and those that only partly reported.

In Table B8 and B9, we test for the robustness of our results by disaggregating the network measure by types of help. For this exercise, we disaggregate by type of help for the in (out)-use network variable while keeping the out (in)-network variable in its aggregated form. Most types of help have coefficients that are statistically significant and all have the correct sign.

[12] We also did inverse probability weighting, following the approach of Horowitz and Manski. We use the probability of being missing conditional on our control variables divided by the probability of being missing conditional on our control variables and the set of variables that capture the information environment as weights in our main regressions. For the cross-sectional data, we get qualitatively similar results, but we prefer the Heckman approach for reasons already discussed. We've also done IPW for the panel data using weights that do not vary over time and get qualitatively similar results.

Furthermore, the magnitudes correspond to our intuition about which type matters more, e.g. loans for in-use help and labor for out-use.

We re-estimated the models reported in Table 4 after adding a set of dummy variables indicating the clan to which the respondent belongs (Table B10). The results are very similar, suggesting that there is both variation in the relationship between kin ties and entrepreneurial decisions within clan and the importance of these relationships transcend clan boundaries. Finally, for the growth regression, we reconstructed our network variable to reflect the fact that as firms age the proportion of potential connections that are kin-based experiences decay. Figure B2 demonstrates the linear and local polynomial fit on proportion kin and firm age. We regress the proportion kin on the number of years a firm has and then use this estimate to "recenter" a firm's proportion to a level that it would have been if had started in 2014. We then rerun the specifications corresponding to Table 6 and get very similar results (Table B11).

VI. Conclusion

Given the difficult business environment in the Kyrgyz Republic, in part due to the Soviet institutional legacy, reliance on business networks is especially important for firm survival and growth. We find that the business networks of small firms in the Kyrgyz Republic are overwhelmingly kin-based. Understanding why business networks in the Kyrgyz Republic are primarily kin-based is a crucial policy issue.

The richness of our data allows us to investigate the benefits and costs of kin ties in entrepreneur's business networks. We find that in-use and out-use networks, while certainly correlated, have opposing relationships with firm performance. Thus, previous studies that have only used one direction of network connections to study the importance of networks may have had difficulty in establishing an effect. We also find that relative to firms that exclusively rely on self-help or impersonal market transactions, firms that are able to access their kin ties in business

grow faster, but their growth is not as fast as those firms that have non-kin ties that they can access for business help. When we restrict attention to an important type of business assistance that occurs at the beginning of a firm's life, the share of startup capital financed by kin, we find that firms with kin-based finance grow faster than firms with non-kin-based finance, but we cannot reject the hypothesis that their growth rates are equal and there is no advantage of being connected to external finance over self-finance.

We investigate two channels through which kin ties can affect firm performance. First, we find that both in-use and out-use kin connections are negatively associated with both realized and planned reinvestment rates, suggesting that the firm may purposefully try to maintain high profit margins to have a source of cash flow. This cash could serve as a buffer for a risk-averse firm or as a source of financing for informal insurance. Second, a firm's orientation may be towards survival and not toward growth. We find that firms with a high degree of orientation towards best business practices exhibit no relationship between their kin connections and firm performance. This finding suggests that business education may have both a direct effect on efficiency, by improving business practices, and an indirect effect on efficiency via delinking kin-related benefits and obligations from decisions that affect firm performance. Instead of discouraging kinship influence on business, policy advice might leverage kin ties to support business incubation provided that entrepreneurs eventually adopt best business practices as the firm matures and they gain experience.

Given the growing evidence that other kinds of networks, political, social, and ethnic, have positive effects on firm performance (Fafchamps and Quinn 2013), the persistence and dominance of kinship networks in the Kyrgyz Republic and elsewhere remains a puzzle. To fully appreciate the value of kin-based networks, more research should carefully analyze the dynamics of the benefits and costs. In particular, kin networks may be more effective in garnering

resources for young firms, but impose an increasingly severe cost as firms mature. The intrafamilial implicit contract could suffer from a ratchet effect (that market transactions or choice-based interpersonal implicit contracts clearly avoid). Adhering to best business practices could serve as a commitment device to mitigate this ratchet effect.

References

Acquaah, Moses. 2012. "Social Networking Relationships, Firm-Specific Managerial Experience and Firm Performance in a Transition Economy: A Comparative Analysis of Family Owned and Nonfamily Firms." *Strategic Management Journal*, Vol. 33, pp. 1215-1228.

Aldashev, G. and C. Guirkinger. 2019. "Persistent Prosperity and Lasting Social Norms: Evidence from Kyrgyz Clans Through Soviet Times." Working paper.

Alger, I. and J.W. Weibull. 2008. "Family Ties, Incentives and Development. A Model of Coerced Altruism." In Arguments for a Better World: Essays in Honor of Amartya Sen, edited by K. Basu and R. Kanbur, Vol. 2, 178-201. Oxford: Oxford University Press.

Alsosa, Gry Agnete, Sara Carterb, and Elisabet Ljunggrenc. 2014. "Kinship and business: how entrepreneurial households facilitate business growth," *Entrepreneurship and Regional Development*, Vol. 26, No. 1, pp. 97-122.

Anderson, Ronald and David Reeb. 2003. "Founding Family Ownership and Firm Performance: Evidence from the S&P 500," *Journal of Finance*, Vol. 58, No. 3, pp. 1301-1328.

Anderson, Alistair R, Sarah L Jack, Sarah Drakopoulou Dodd. 2005. "The role of family members in entrepreneurial networks: Beyond the boundaries of the family firm." *Family Business Review.*

Ayako, Ishiwata, Petr Matous, and Todo Yasuyuki. 2014. "Effects of Business Networks on Firm Growth in a Cluster of Microenterprises: Evidence from Rural Ethiopia," *RIETI Discussion Paper Series* No. 14-E-014.

Aziz, N., Friedman, B. A., Bopieva, A., & Keles, I. 2013. "Entrepreneurial motives and perceived problems: An empirical study of entrepreneurs in Kyrgyzstan." *International Journal of Business*, *18*(2), 163-96.

Baland, J., Guirkinger, C., & Mali, C. 2011. "Pretending to Be Poor: Borrowing to Escape Forced Solidarity in Cameroon." *Economic Development and Cultural Change, 60*(1), 1-16.

BEEPS. 2010. *The Business Environment and Enterprise Performance Survey (BEEPS) 2008-2009: A Report on methodology and observations.* April 2010. https://www.ebrd.com/downloads/research/economics/beeps_report_ebrd_april10.pdf. Accessed 1/20/20.

Ben-Porath, Yoram. 1980 "The F-Connection: Families, Friends, and Firms and the Organization of Exchange." *Population and Development Review*, vol. 6, no. 1, pp. 1–30.

Berrou, Jean-Philippe and Francois Combarnous. 2012. "The Personal Networks of Entrepreneurs in an Informal African Urban Economy: Does the 'Strength of Ties' Matter?" *Review of Social Economy*, Vol. 70, No. 1, pp. 1-30.

Bertrand, Marianne and Antoinette Schoar. 2006. "The Role of Family in Family Firms," *Journal of Economic Perspectives*, Vol. 20, No. 2, pp. 73-96.

Bertrand, Marianne, Simon Johnson, Krislert Samphantharak & Antoinette Schoar. 2008. "Mixing Family with Business: A Study of Thai Business Groups and the Families Behind Them," *Journal of Financial Economics*, Vol. 88, pp. 466-498.

Biggs, Tyler and Manju Keddia Shah. 2006. "African SMEs, Networks, and Manufacturing Performance," *Journal of Banking and Finance*, Vol. 30, pp. 3043-3066.

Biggs, Tyler and Mayank Raturi. 2001. "Ethnic Networks and Access to Credit: Evidence from the Manufacturing Sector in Kenya," *Discussion Paper No. 119, Regional Program on Enterprise Development*.

Bloom, Nicholas, Renata Lemos, Raffaella Sadun, Daniela Scur and John Van Reenen. 2016. "International Data on Measuring Management Practices" *American Economic Review: Papers & Proceedings*, 106(5): 152–156

Botoeva, Aisalkyn and Regine A. Spector. 2013. "Sewing to satisfaction: craft-based entrepreneurs in contemporary Kyrgyzstan." *Central Asian Survey.* 32(4): 487-500.

Burt, Ronald and Sonja Opper. 2017. "Early Network Events in the Later Success of Chinese Entrepreneurs," *Management and Organization Review*, Vol. 13, No. 3, pp. 497-537.

Chipika, Stephen and Gordon Wilson. 2006. "Enabling technological learning among light engineering SMEs in Zimbabwe through networking," *Technovation*, Vol. 26, pp. 969-979.

Donald Cox and Marcel Fafchamps. 2007. "Extended Family and Kinship Networks: Economic Insights and Evolutionary Directions, Chapter 58, Editor(s): T. Paul Schultz, John A. Strauss, *Handbook of Development Economics*, Elsevier, Volume 4, 2007, Pages 3711-3784.

Dai, Mookherjee, Munshi & Zhang. 2018. "Community Networks and the Growth of Private Enterprise in China," *Working Paper*.

de Mel, Suresh David J. McKenzie and Christopher Woodruff. 2009. "Measuring microenterprise profits: Must we ask how the sausage is made?" *Journal of Development Economics* 88, 19–31.

Eisingerich, Andreas, Simon Bell, and Paul Tracey. 2010. "How can clusters sustain performance? The role of network strength, network openness, and environmental uncertainty," *Research Policy*, Vol. 39, pp. 239-253.

Fafchamps, Marcel, 2004, *Market Institutions in Sub-Saharan Africa: Theory and Evidence,* MIT Press.

Fafchamps, Marcel, 2016, "Formal and Informal Market Institutions: Embeddedness Revisited"*EDI Working Paper Series WP16/02.*

Fafchamps, Marcel and Bart Minten. 2002. "Returns to Social Network Capital among Traders," *Oxford Economic Papers*, Vol. 54, No. 2, pp. 173-206.

Fafchamps, Marcel and Simon Quinn. 2013. "Social Networks and Business Practices: Evidence from a Randomized Experiment with Microentrepreneurs," *Working Paper, Social Networks and Business Practices*.

Fafchamps, Marcel. 2000. "Ethnicity and Credit in African Manufacturing," *Journal of Development Economics*, Vol. 61, pp. 205-235.

Fisman, R. 2001. "Estimating the Value of Political Connections," *American Economic Review*, Vol. 91, No. 4, pp. 1095-1102.

Fisman, Raymond. 2003. "Ethnic Ties and the Provision of Credit: Relationship level evidence from African firms," *Advances in Economic Analysis and Policy*, Vol. 3, No. 1.

Gassie-Falzone, Esmeralda. 2016. "Are the kinship networks a resource or a curse for small firms in post-communist countries? The case of Albania," *Post-Communist Economies*, Vol. 28, No. 2, pp. 268-279.

Gerber, Theodore P. and Karine Torosyan. 2013. "Remittances in Georgia: Correlates, Economic Impact, and Social Capital Formation." *Demography*. Vol. 50, no. 4, pp.1279-1301.

Gil, Ricard and Wesley Hartmann. 2011. "Airing Your Dirty Laundry: Vertical Integration, Reputational Capital, and Social Networks," *Journal of Law, Economics and Organization*, Vol. 27, No. 2, pp. 219-244.

Granovetter, Mark. 1985. "Economic Action and Social Structure: The Problem of Embeddedness", *American Journal of Sociology*, 91(3): 481-510.

Granovetter, Mark. 1995. "The Economic Sociology of Firms and Entrepreneurs," In *The Economic Sociology of Immigration*.

Greif, A. 1993. "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition," *American Economic Review* 83, 525–548.

Grimard, Franque. 1997. "Household Consumption Smoothing through Ethnic Ties: Evidence from Cote d'Ivoire," *Journal of Development Economics* 53(3): 319-422.

Grimm, M., Gubert, F., Koriko, O., Lay, J. and Nordman, C.J. 2013. "Kinship ties and entrepreneurship in Western Africa." *Journal of Small Business & Entrepreneurship*, *26*(2), pp.125-150.

Grimm, Michael, Renate Hartwig, and Jann Lay. 2017. "Does Forced Solidarity Hamper Investment in Small and Micro Enterprises," *Journal of Comparative Economics*, vol. 45, issue 4, 827-846

Gupta, Bishnupriya, Dilip Mookherjee, Kaivan Munshi, and Mario Sanclemente. 2017. "Community Origins of Industrial Entrepreneurship: Theory and Historical Evidence from India," *Working Paper Reference Number F-35315-INC-1, International Growth Center*.

Hoff, K., and Sen, A. 2006. The Kin as a Poverty Trap. In Bowles, S., Durlauf, S.N. and Hoff, K. (eds.), *Poverty Traps*. Princeton University Press, New York.

Horton, Joanne, Yuval Millo, and George Sarafeim. 2012. "Resources or Power? Implications of Social Networks on Compensation and Firm Performance," *Journal of Business Finance and Accounting*, Vol. 39, No. 3 & 4, pg. 399-426.

Ismailbekova, Aksana. 2017. *Blood Ties and the Native Son: Poetics of Patronage in Kyrgyzstan.* Indiana University Press.

Kemeny, Tom, Maryann Feldman, Frank Ethridge, and Ted Zoller. 2016. "The Economic Value of Local Social Networks," *Journal of Economic Geography*, Vol. 16, pp. 1101-1122.

Khayesi, Jane, Gerard George, and John Antonakis, Kinship in Entrepreneur Networks: Performance Effects of Resource Assembly in Africa, *Entrepreneurship Theory and Practice*, pp. 1323-1342 (2014).

Kowalewski, Oskar, Oleksandr Talavera, and Ivan Stetsyuk. 2010. "Influence of Family Involvement in Management and Ownership on Firm Performance: Evidence From Poland," *Family Business Review,* Vol. 23, No. 1, pp. 45-59.

Kranton, R.E. 1996. "Reciprocal exchange: a self-sustaining system." *American Economic Review* 86 (4): 830-851.

Kuehnast, Kathleen, and Nora Dudwick. 2004. "Better a hundred friends than a hundred rubles? Social networks in transition - the Kyrgyz Republic." *World Bank Working Paper Series*, no. 39. Washington, DC: World Bank.

Kuépié, Mathias, Michel Tenikuea, and Olivier Waltherb. 2016. "Social networks and small business performance in West African border regions," *Oxford Development Studies*, Vol. 44, No. 2, pp. 202-219 (2016).

La Ferrara, Eliana. 2010. "Family and kinship ties in development." In *Culture, Institutions, and Development: New Insights into an Old Debate* 84: 107.

Li, Hongbin, Lingsheng Meng, Qian Wang, and Li-An Zhou. 2008. "Political Connections, Financing, and Firm Performance: Evidence from Chinese Private Firms," *Journal of Development Economics*, Vol. 87, pp. 283-299.

Li, Huanmei, Graciela Corral de Zubielqui, and Allan O'Connon. 2015. "Entrepreneurial networking capacity of cluster firms: a social network perspective on how shared resources shape firm performance," *Small Business Economics*, Vol. 45, pp. 523-541.

McMillan, J. and Woodruff, C., 2002. “The central role of entrepreneurs in transition economies.” *Journal of Economic Perspectives*, *16*(3), pp.153-170.

Millimet, D., & Parmeter, C. 2019. “Accounting for Skewed or One-Sided Measurement Error in the Dependent Variable.” *IZA Working Paper*.

Miller, Danny, Jangwoo Lee, Sooduck Chan & Isabelle Le Breton-Miller. 2009. “Filling the institutional void: The social behavior and performance of family vs non-family technology firms in emerging markets,” *Journal of International Business Studies*, Vol. 40, pp. 802-817.

Minten, B. and F. Fafchamps. 1999. "Relationships and traders in Madagascar." *Journal of Development Studies* 35 (6): 1-35.

Munshi, Kaivan, and Mark Rosenzweig. 2006. "Traditional Institutions Meet the Modern World: Caste, Gender, and Schooling Choice in a Globalizing Economy." *American Economic Review*, 96(4): 1225-1252.

Munshi, Kaivan. 2011. “Strength in Numbers: Networks as a Solution to Occupational Traps,” *Review of Economic Studies* 78:1069-1101.

Nguyen, Huong and Viet Le. 2018. “Network Ties and Export Propensity of Vietnamese Small and Medium Enterprises,” *Asia Pacific Business Review*, Vol. 25, No. 1, pp. 100-122.

Nguyen, Huu Chi and Christophe Nordman. 2017. “Household Entrepreneurship and Social Networks: Panel Data Evidence from Vietnam,” *IZA Discussion Paper* No. 10482.

Ozcan, Gul Berna. 2008. “Surviving Uncertainty through Exchange and Patronage Networks: A Business Case from Kyrgyzstan.” In *Innovation and Entrepreneurship: Successful Start-ups and Businesses in Emerging Economies,* edited by F. Welter and R. Aidis, 69–88. Cheltenham: Edward Elgar.

Platteau, J. 2000. *Institutions, social norms, and economic development*. The Netherlands: Harwood Academic Publishers.

Platteau, Jean-Philippe, 2009. "**Institutional obstacles to African economic development: State, ethnicity, and custom**," *Journal of Economic Behavior & Organization*, Elsevier, vol. 71(3), pages 669-689.

Qian, Shanshan and Bruce Kemelgor. 2013. “Boundaries of Network Ties in Entrepreneurship: How Large is Too Large?” *Journal of Developmental Entrepreneurship*, Vol. 18, No. 4, pp. 1-19.

Radnitz, Scott. 2010. *Weapons of the wealthy: Predatory regimes and elite-led protests in Central Asia.* Ithaca, NY: Cornell University Press.

Reeves, M. 2012. “Black work, green money: remittances, ritual and domestic economies in southern Kyrgyzstan.” *Slavic Review*, 71 (1): 108-134.

Sanghera, Balihar, Mehrigiul Albezova, and Aisalkyn Botoeva. 2011. “Everyday morality in families and a critique of social capital: an investigation into moral judgements, responsibilities, and sentiments in Kyrgyzstani households.” *Theory and Society.* 40: 167-190.

Spector, Regine A. 2008. “Securing Property in Contemporary Kyrgyzstan,” *Post-Soviet Affairs*, 24:2, 149-176.

Spector, Regine A. 2018. “A regional production network in a predatory state: export-oriented manufacturing at the margins of the law.” *Review of International Political Economy.* 25(2): 169-189.

Spector, Regine A. and Aisalkyn Botoeva. 2017. “New shop owners in old buildings: spatial politics of the apparel industry in Kyrgyzstan.” *Post-Soviet Affairs*, 33(3): 235-253.

Stam, Wouter, Souren Arzlanian, and Tom Elfring. 2014. “Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators,” *Journal of Business Venturing,* Vol. 29, pp. 152-173.

Torosyan, Karine, Theodore P. Gerber, and Pilar Gonalons-Pons. 2016. “Migration, Household Tasks, and Gender: Evidence from the Republic of Georgia.” *International Migration Review.* Vol. 50, no. 2, pp. 445-474.

Uzzi, Brian. 1999. “Embeddedness in the Making of Financial Capital: How Social Relations and Networks Benefit Firms Seeking Financing,” *American Sociological Review*, Vol. 64, No. 4, pp. 481-505.

Welzel, C. 2013. *Freedom Rising: Human Empowerment and the Quest for Emancipation*. Cambridge: Cambridge University Press.

World Bank. 2019. Doing Business 2019 : Training for Reform. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/30438 License: CC BY 3.0 IGO.

Yalcin, Serkan, and Husnu Kapu. 2008. “Entrepreneurial dimensions in transitional economies: a review of relevant literature and the case of Kyrgyzstan.” *Journal of Developmental Entrepreneurship* 13.2: 185-204.

Zaheer, Akbar and Geoffrey Bell. 2005. “Benefiting from Network Position: Firm Capabilities, Structural Holes, and Performance,” *Strategic Management Journal*, Vol. 26, pp. 809-825.

Figure 1: Pie chart of social structure of in-use business links

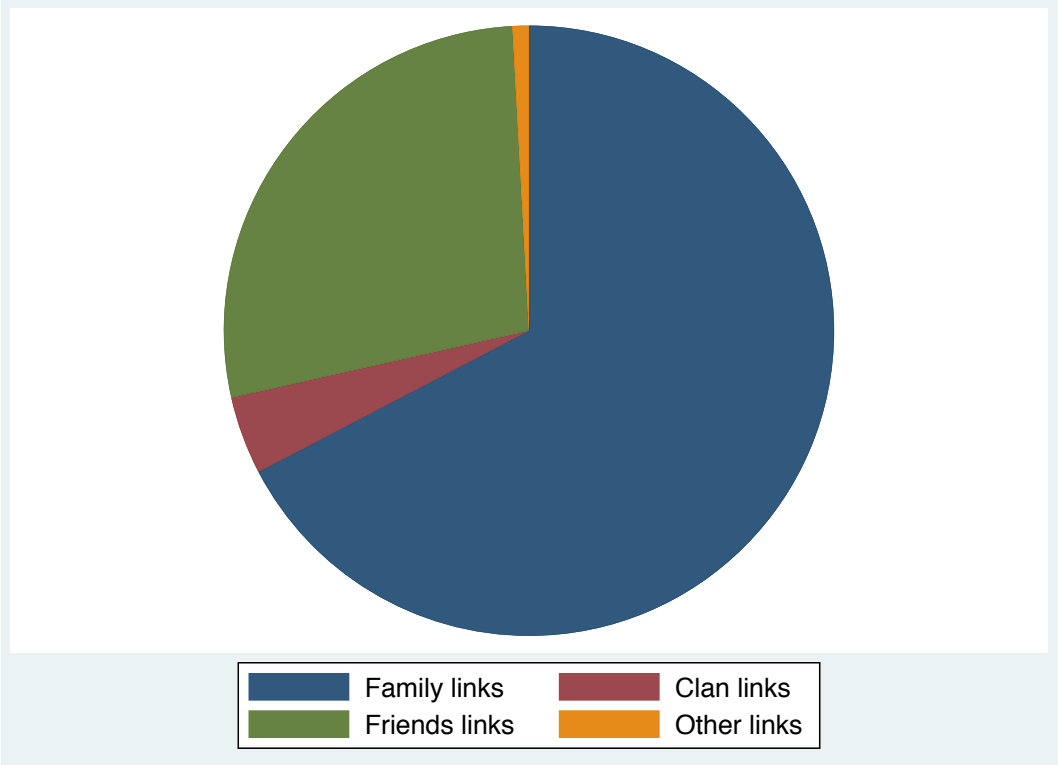


Figure 2: Pie chart of kinds of help in kin-based in-use business links

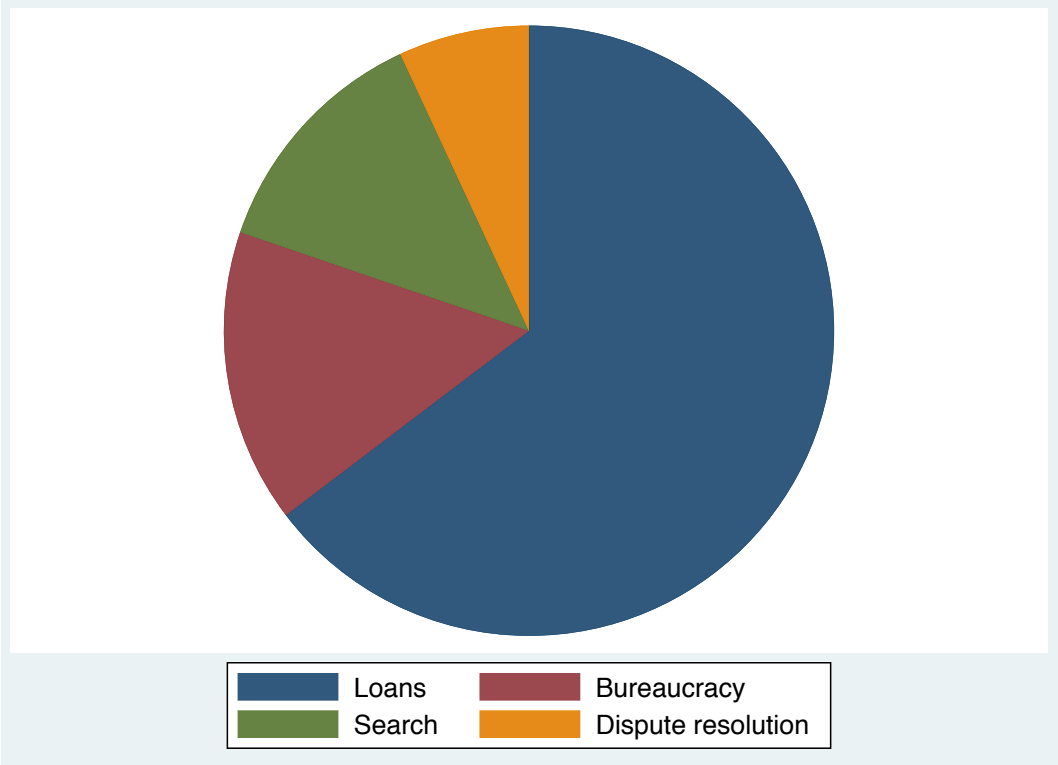


Figure 3: Pie chart of kinds of help in choice-based in-use business links

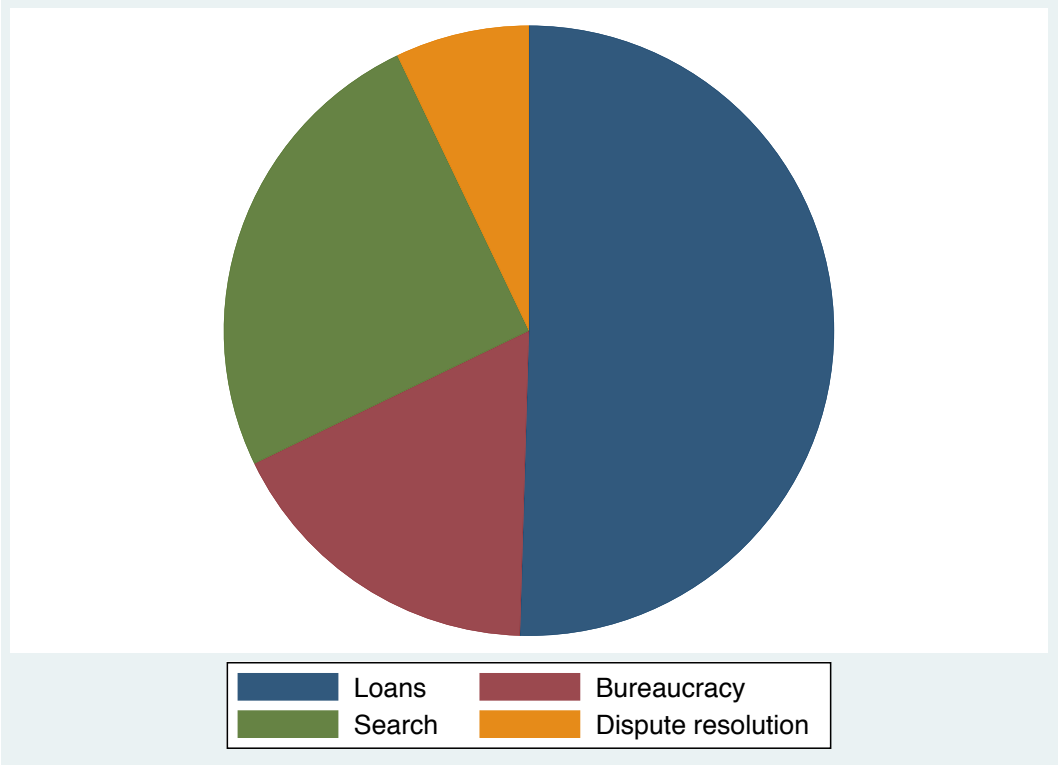
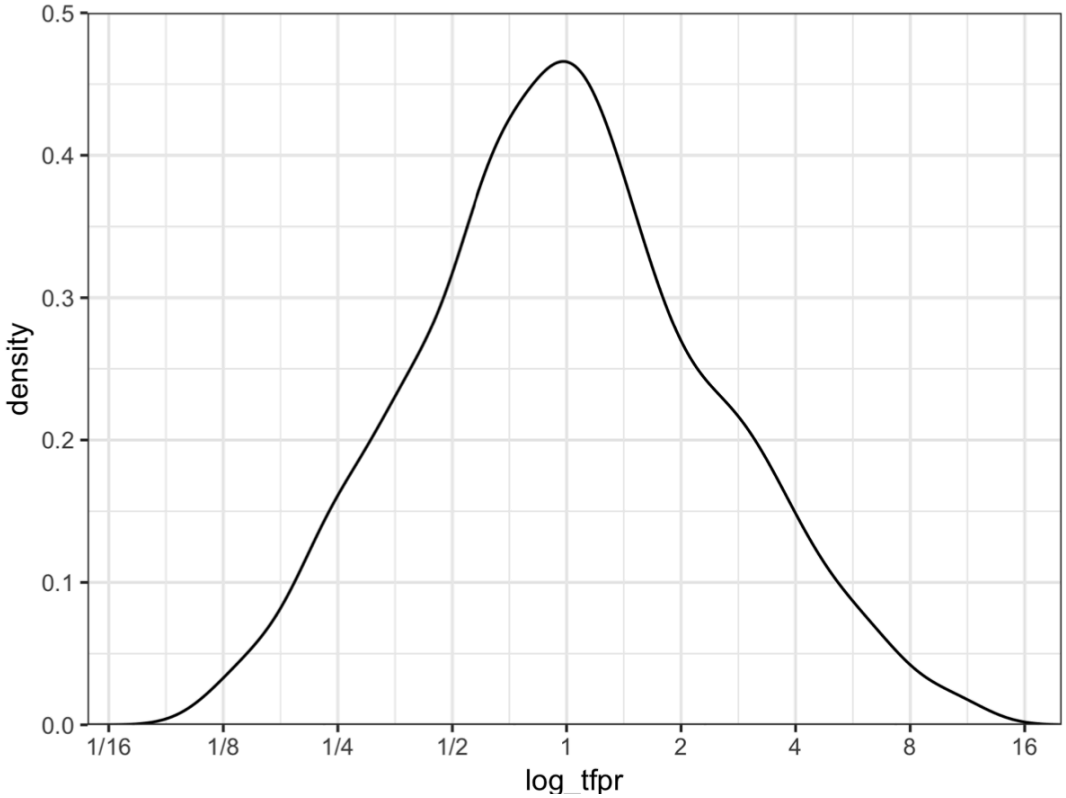
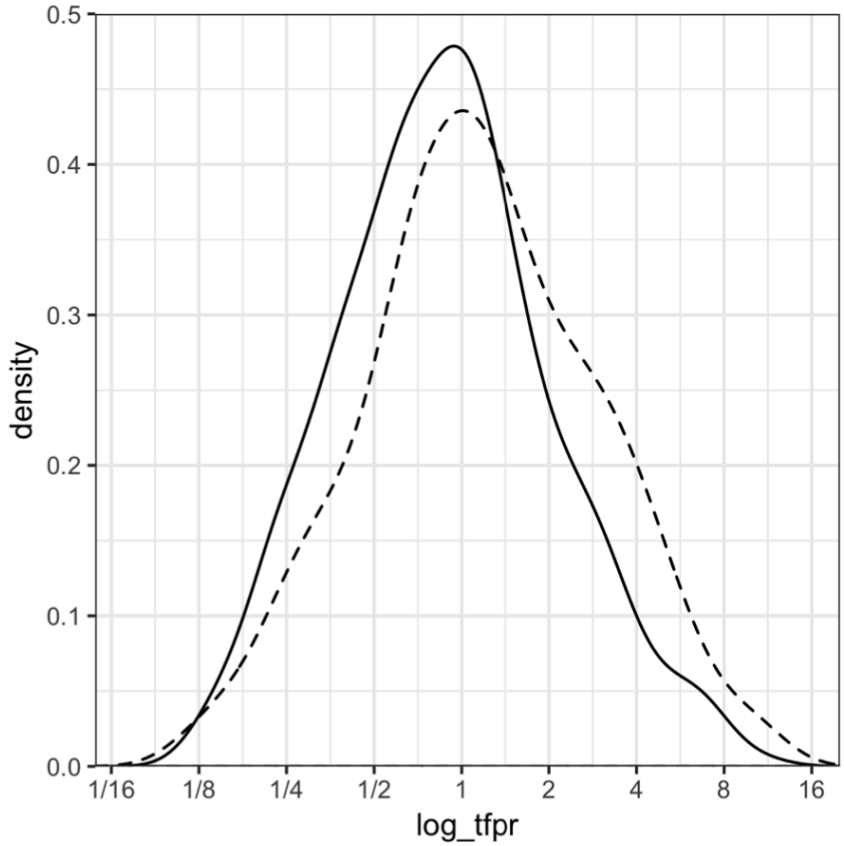


Figure 4: Misallocation among Kyrgyz firms



Notes: This figure plots the probability density of TFPR in logs. TFPR is constructed using our survey data on revenue, assets and labor as well as US capital and labor shares by industry. See Klenow and Hseih (2009) for details.

Figure 5: Misallocation and Business in-Networks



Notes: The probability densities of TFPR in logs are shown separately for firms that more heavily rely on kin in their business networks and those that less heavily rely on the them. The solid line represents above the median level of kin connections and the dashed line represents below the median level of kin connections.

Table 1: Number of firms by industry type

Sector	Type	Number of firms
Manufacturing	Food	27
Manufacturing	Garments/Textiles	3
Manufacturing	Other	3
Retail	Grocery	295
Retail	General	185
Retail	Home products	32
Retail	Clothing	10
Retail	Medical	25
Retail	Other	11
Wholesale	Food	35
Wholesale	Clothing	10
Wholesale	Other	48
Services	Auto	47
Services	Personal care	109
Services	Child care	1
Services	Education	8
Services	Clothing	17
Services	Hotel/Restaurants	71
Services	IT/Business	16
Services	Medical	15
Services	Entertainment	8
Services	Real estate	2
Services	Construction	7
Services	Financial	1
Services	Other Repair	14

Table 2: Summary statistics

Panel A: Descriptive Statistics of Firms

Variable	Mean	SD	Min	Max	N
Business Revenue in 2018	390558	492034	11044	7795752	801
Business Profit in 2018	165505	179795	-89443	3118301	804
Profit Margin in 2018 (%)	52.03	23.80	-33.33	98.90	772
Business Assets in 2018	799651	1829455	190.68	38800000	920
No. of workers in 2018	2.85	4.53	1	121	1000
Owner-operator firm	0.33	0.47	0	1	1000
Birth year of firm	2013.13	4.92	1993	2017	1000
Located in Bishkek	0.6	0.49	0	1	1000

Panel B: Descriptive Statistics of Firm Owners

Variable	Mean	SD	Min	Max	N
Age	40.97	12.18	18	78	1000
Sex, Male=1	0.38	0.49	0	1	1000
Some higher education	0.46	0.49	0	1	1000
Mother has higher ed.	0.23	0.42	0	1	989
Father has higher ed.	0.25	0.43	0	1	987
Currently Married	0.79	0.41	0	1	1000
Ethnic Minority	0.23	0.42	0	1	1000
Muslim	0.95	0.23	0	1	1000
Russian language	0.53	0.49	0	1	1000
Dependency ratio	0.85	0.76	0.67	6	998
Poor at age 12	0.29	0.45	0	1	932
HH income p.c.	77442	77986	60000	800000	555

Panel C: Descriptive Statistics of Firm Owners' Networks

Variable	Mean	SD	Min	Max	N
Business In-Network Connections	8.17	13.14	0	138	1000
Business In-Network Proportion Kin	0.69	0.27	0	1	810
Business In-Use Network Connections	4.06	6.93	0	75	1000
Business In-Use Network Kin Connections	2.68	4.45	0	47	1000
Business Out-Use Network Connections	11.17	16.67	0	197	1000
Business Out-Use Network Kin Connections	6.12	9.47	0	145	1000
Startup share financed by Kin	0.16	0.35	0	1	998
Startup share employment Kin	0.85	0.26	0.07	1	1000

Panel D: Proportion of business connections that are kin-based by type of help

	In-use				
	Loans	Bureaucracy	Search	Disputes	
Proportion kin	0.76	0.71	0.60	0.71	
	Out-use				
	Work	Favorable terms	Discounts	Advice	Housing
Proportion kin	0.57	0.48	0.45	0.53	0.79

Table 3: Persistence of Business Networks

Dependent variable =	Business In-Network Kin-based Connections		Business Out-Network Kin-based Connections		Share Business In-Network Kin-based	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Kin share of external startup finance	0.84**	0.89**	1.32*	1.41*	0.13***	0.13***
	[0.346]	[0.371]	[0.701]	[0.735]	[0.034]	[0.035]
Share startup self-financed	0.01***	0.01*	0.02***	0.01*	0.00	0.00
	[0.004]	[0.003]	[0.007]	[0.007]	[0.000]	[0.000]
Startup investment (in logs)	0.28***	0.18**	0.18	0.12	0.00	0.00
	[0.086]	[0.091]	[0.203]	[0.208]	[0.010]	[0.010]
Initial Workers	0.33***	0.29***	0.42**	0.38*	-0.01	-0.00
	[0.109]	[0.102]	[0.212]	[0.198]	[0.008]	[0.008]
Initial Assets (in logs)	0.04	0.05	0.56**	0.57**	0.02	0.02
	[0.140]	[0.142]	[0.222]	[0.231]	[0.011]	[0.012]
Male		0.08		0.11		-0.04
		[0.322]		[0.707]		[0.028]
Age of respondent (in years)		-0.00		0.00		-0.00
		[0.013]		[0.023]		[0.001]
Some higher education		0.17		-0.11		0.02
		[0.306]		[0.652]		[0.027]
Currently Married		0.81**		1.78***		-0.00
		[0.334]		[0.686]		[0.032]
Language of interview Russian		1.01***		2.38***		0.00
		[0.237]		[0.671]		[0.028]
Firm located in Bishkek	1.04***	-0.34	0.03	-1.52	-0.15***	-0.12**
	[0.378]	[0.422]	[0.689]	[1.291]	[0.026]	[0.049]
Firm owner controls	No	Yes	No	Yes	No	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	866	866	866	866	866	866
R-squared	0.121	0.247	0.129	0.189	0.128	0.157

Notes: The dependent variables are business in-network kin-based connections in columns 1 and 2, business out-network kin-based connections in columns 3 and 4 and share of business in-network that is kin-based in columns 5 and 6. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Profit margin

	OLS	OLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Business In-Use Network Kin	1.17***	1.48***	1.42***	5.52***	1.41***	5.39***
	[0.198]	[0.211]	[0.212]	[1.943]	[0.211]	[1.880]
Business Out-Use Network Kin		-0.38***	-0.41***	-0.89**	-0.42***	-0.89**
		[0.120]	[0.124]	[0.449]	[0.124]	[0.441]
Male			1.40	0.87	1.46	0.87
			[1.999]	[2.482]	[2.003]	[2.496]
Age of respondent (in years)			0.10	0.11	0.10	0.11
			[0.080]	[0.095]	[0.082]	[0.096]
Some higher education			-5.81***	-6.90***	-5.74***	-6.91***
			[1.949]	[2.307]	[1.967]	[2.328]
Currently Married			0.47	-2.71	0.61	-2.61
			[2.100]	[2.686]	[2.118]	[2.670]
Language of interview Russian			1.32	-1.65	1.26	-1.55
			[1.889]	[2.341]	[1.889]	[2.301]
Firm located in Bishkek	1.11	0.50	-1.14	1.19	-1.11	1.14
	[1.852]	[1.848]	[3.517]	[3.873]	[3.518]	[3.863]
Partnership					-4.37	-2.17
					[10.202]	[10.535]
LLC					3.88	5.29
					[7.884]	[6.541]
Firm owns place of business					0.25	-0.14
					[0.514]	[0.594]
Firm owner controls	No	No	Yes	Yes	Yes	Yes
Additional firm controls	No	No	No	No	Yes	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
AR statistic of joint significance				9.91		9.97
				0.007		0.007
Observations	772	772	772	705	772	705
R-squared	0.119	0.130	0.166		0.167	

Notes: The dependent variable is profit margin in 2018. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Profits

VARIABLES	OLS (1)	OLS (2)	OLS (3)	2SLS (4)	OLS (5)	2SLS (6)
Business In-Use Network Kin	1,692.34	3,144.60**	2,739.25**	19,639.48*	2,785.20**	17,523.74*
	[1,188.861]	[1,360.781]	[1,393.423]	[10,468.917]	[1,390.612]	[9,753.445]
Business Out-Use Network Kin		-1,752.82***	-1,768.77***	1,057.70	-1,773.17***	1,011.20
		[604.367]	[620.461]	[1,567.741]	[619.546]	[1,536.152]
Assets	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
	[0.004]	[0.003]	[0.004]	[0.004]	[0.004]	[0.004]
Workers	16,333.57***	16,872.98***	15,760.32***	11,365.28***	15,744.76***	11,574.24***
	[3,231.527]	[3,319.057]	[3,374.659]	[4,341.484]	[3,439.384]	[4,257.825]
Male			9,532.54	14,125.08	9,511.63	13,669.05
			[10,212.090]	[12,154.872]	[10,241.565]	[11,832.026]
Age of respondent (in years)			551.08	886.09*	573.09	799.48*
			[426.316]	[487.806]	[429.307]	[479.509]
Some higher education			-1,683.21	-2,835.19	-1,173.76	-3,208.42
			[9,857.098]	[12,056.684]	[9,918.771]	[11,867.727]
Currently Married			12,496.71	-8,125.93	13,395.82	-6,283.85
			[10,863.349]	[14,083.630]	[10,890.095]	[13,892.879]
Language of interview Russian			-4,483.60	-26,416.49**	-5,396.07	-25,322.37**
			[9,747.793]	[11,807.132]	[9,770.182]	[11,471.643]
Firm located in Bishkek	36,288.45***	34,116.95***	-724.73	11,680.44	7.77	11,472.68
	[10,549.458]	[10,691.986]	[20,083.926]	[22,391.898]	[19,979.738]	[21,981.358]
Partnership					6,843.79	21,254.52
					[35,848.487]	[36,809.551]
LLC					57,863.00	88,133.19*
					[43,126.768]	[46,233.037]
Firm owns place of business					1,778.69	-1,984.42
					[2,475.147]	[3,071.730]
Firm owner controls	No	No	Yes	Yes	Yes	Yes
Additional firm controls	No	No	No	No	Yes	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
AR statistic of joint significance				6.65		5.93
				0.036		0.052
Observations	751	751	751	685	751	685
R-squared	0.221	0.230	0.263		0.266	

Notes: The dependent variable is business profits in 2018. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Business Growth

	FE	FE	FE	FE	FE	FE
	New Firm: Established in 2016			New Firm: Established 2014-2016		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
New firm	0.02	0.04	-0.12	0.09***	0.09**	0.06
	[0.039]	[0.050]	[0.084]	[0.027]	[0.038]	[0.087]
Has Business Network	0.09***	0.10***	0.13*	0.09***	0.09***	0.16*
	[0.026]	[0.036]	[0.077]	[0.025]	[0.036]	[0.097]
Proportion of business network that is kin	-0.11***	-0.11***	-0.16*	-0.11***	-0.12***	-0.27***
	[0.033]	[0.038]	[0.095]	[0.031]	[0.036]	[0.094]
Has Business Network*New Firm	0.52***	0.47**	0.57***	0.17***	0.17***	0.15
	[0.194]	[0.197]	[0.217]	[0.039]	[0.048]	[0.105]
Proportion of business network that is kin*New firm	-0.39	-0.33	-0.34	0.03	0.05	0.11
	[0.243]	[0.244]	[0.268]	[0.081]	[0.083]	[0.096]
Assets	0.16**	0.11	-0.01	0.11	0.07	-0.04
	[0.073]	[0.071]	[0.083]	[0.073]	[0.067]	[0.082]
Workers	-0.00	-0.02	0.02	-0.01	-0.03	0.01
	[0.022]	[0.030]	[0.016]	[0.016]	[0.025]	[0.017]
Effect size for different types of firms:						
New firm, no network	0.02	0.04	-0.12	0.09***	0.09**	0.06
	[0.039]	[0.050]	[0.084]	[0.027]	[0.038]	[0.087]
New firm, no-kin business network	0.64***	0.61***	0.59***	0.35***	0.35***	0.38***
	[0.19]	[0.19]	[0.21]	[0.04]	[0.05]	[0.11]
New firm, all-kin business network	0.14*	0.16**	0.09	0.27***	0.28***	0.22**
	[0.08]	[0.08]	[0.09]	[0.07]	[0.08]	[0.11]
Old firm, no-kin business network	0.09***	0.10***	0.13*	0.09***	0.09***	0.16*
	[0.026]	[0.036]	[0.077]	[0.025]	[0.036]	[0.097]
Old firm, all-kin business network	-0.015	-0.016	-0.029	-0.026**	-0.023	-0.11
	[0.012]	[0.027]	[0.088]	[0.012]	[0.026]	[0.104]
Business-type specific growth rate	No	Yes	Yes	No	Yes	Yes
Only 2017 and 2018 Obs.	No	No	Yes	No	No	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,384	1,384	965	1,384	1,384	965
R-squared	0.092	0.151	0.183	0.200	0.246	0.200
Number of Firms	573	573	569	573	573	569
Number of New Firms	131	131	131	299	299	299

Notes: The dependent variable is log of business revenue in a given year. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Business Growth and Startup financing

	FE	FE	FE	FE	FE	FE
	New Firm: Established in 2016			New Firm: Established 2014-2016		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
New firm	0.25***	0.23***	0.17**	0.24***	0.21***	0.17***
	[0.074]	[0.074]	[0.074]	[0.036]	[0.039]	[0.062]
Has Startup finance	0.00	-0.02	-0.07	-0.01	-0.03	-0.16
	[0.017]	[0.021]	[0.073]	[0.016]	[0.020]	[0.106]
Proportion of finance that is kin	0.04	0.06*	0.16*	0.03	0.05*	0.23**
	[0.027]	[0.029]	[0.084]	[0.026]	[0.029]	[0.115]
Has Startup finance*New Firm	-0.04	0.00	0.04	0.02	0.05	0.13
	[0.113]	[0.115]	[0.138]	[0.061]	[0.065]	[0.140]
Proportion of startup finance that is kin*New firm	0.19	0.14	0.01	0.04	0.02	-0.12
	[0.204]	[0.210]	[0.243]	[0.069]	[0.072]	[0.166]
Assets	0.17**	0.13*	-0.02	0.12	0.08	-0.06
	[0.074]	[0.070]	[0.085]	[0.073]	[0.067]	[0.083]
Workers	0.00	-0.03	0.03	-0.01	-0.03	0.02
	[0.024]	[0.031]	[0.021]	[0.017]	[0.025]	[0.020]
Effect size for different types of firms:						
New firm, self-finance only	0.25***	0.23***	0.17**	0.24***	0.21***	0.17***
	[0.074]	[0.074]	[0.074]	[0.036]	[0.039]	[0.062]
New firm, no-kin finance	0.21**	0.21**	0.13	0.24***	0.23***	0.15**
	[0.19]	[0.09]	[0.10]	[0.05]	[0.05]	[0.072]
New firm, all-kin finance	0.45***	0.41**	0.31	0.31***	0.31***	0.26***
	[0.08]	[0.17]	[0.19]	[0.04]	[0.037]	[0.092]
Old firm, no kin finance	0.00	-0.02	-0.07	-0.01	-0.03	-0.16
	[0.017]	[0.021]	[0.073]	[0.016]	[0.020]	[0.106]
Old firm, all-kin finance	0.04**	0.04	0.09	0.02	0.02	0.08
	[0.02]	[0.025]	[0.06]	[0.02]	[0.024]	[0.070]
Business-type specific growth rate	No	Yes	Yes	No	Yes	Yes
Only 2017 and 2018 Obs.	No	No	Yes	No	No	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,383	1,383	964	1,383	1,383	964
R-squared	0.048	0.125	0.167	0.159	0.217	0.188
Number of Firms	572	572	568	572	572	568
Number of New Firms	131	131	131	299	299	299

Notes: The dependent variable is log of business revenue in a given year. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Reinvestment

	OLS	OLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Business In-Use Network Kin	-0.41**	0.17	0.22	-3.26*	0.26	-3.24**
	[0.194]	[0.255]	[0.282]	[1.672]	[0.288]	[1.652]
Business Out-Use Network Kin		-0.74***	-0.73***	-1.20	-0.72***	-1.04
		[0.175]	[0.195]	[2.179]	[0.194]	[2.060]
Male			0.29	2.01	-0.46	1.83
			[2.487]	[2.964]	[2.474]	[3.008]
Age of respondent (in years)			0.13	0.18	0.14	0.20*
			[0.105]	[0.118]	[0.107]	[0.117]
Some higher education			3.87	6.20**	3.59	6.24**
			[2.424]	[2.865]	[2.421]	[2.938]
Currently Married			2.82	5.75	2.79	5.59
			[2.858]	[5.279]	[2.868]	[5.281]
Language of interview Russian			3.01	6.60	3.15	6.16
			[2.547]	[4.639]	[2.537]	[4.420]
Firm located in Bishkek	-19.56***	-20.58***	-20.88***	-21.37***	-21.36***	-21.39***
	[2.511]	[2.473]	[3.998]	[7.143]	[4.007]	[7.033]
Partnership					18.99**	14.00
					[8.679]	[10.999]
LLC					-17.61*	-14.40
					[10.683]	[13.724]
Firm owns place of business					-0.49	0.68
					[0.645]	[0.907]
Firm owner controls	No	No	Yes	Yes	Yes	Yes
Additional firm controls	No	No	No	No	Yes	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
AR statistic of joint significance				4.28		3.90
				0.118		0.142
Observations	686	686	686	631	686	631
R-squared	0.173	0.199	0.243		0.252	

Notes: The dependent variable is percent of profits in 2018 that are reinvested in 2019. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Kin Networks, Orientation and Performance

	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)
VARIABLES				
Business In-Use Network Kin	1.38**	1.77***	2.00***	2.00***
	[0.604]	[0.574]	[0.609]	[0.615]
Business In-Use Network Kin *Intermediate degree	0.01	-0.26	-0.60	-0.61
	[0.643]	[0.633]	[0.668]	[0.676]
Business In-Use Network Kin *High degree	-1.71**	-1.33	-1.64*	-1.63*
	[0.844]	[0.849]	[0.890]	[0.892]
Business Out-Use Network Kin		-0.49*	-0.63**	-0.63**
		[0.261]	[0.266]	[0.266]
Business Out-Use Network Kin *Intermediate degree		0.34	0.46	0.45
		[0.339]	[0.342]	[0.343]
Business Out-Use Network Kin *High degree		-0.22	-0.09	-0.09
		[0.310]	[0.305]	[0.306]
Intermediate degree of best practices	-4.06	-5.12*	-4.11	-4.19
	[2.824]	[3.104]	[3.142]	[3.150]
High degree of best practices	-1.99	-2.36	-2.42	-2.32
	[3.580]	[3.840]	[3.909]	[3.927]
Effect size for different types of firms:				
In-Network for firms with low degree	1.38**	1.77***	2.00***	2.00***
	[0.604]	[0.574]	[0.609]	[0.615]
In-Network for firms with intermediate degree	1.40***	1.50***	1.39***	1.39***
	[0.228]	[0.270]	[0.269]	[0.267]
In-Network for firms with high degree	-0.32	0.17	-0.24	-0.24
	[0.876]	[0.890]	[0.930]	[0.933]
Out-Network for firms with low degree		-0.49*	-0.63**	-0.63**
		[0.261]	[0.266]	[0.266]
Out-Network for firms with intermediate degree		-0.15	-0.17	-0.18
		[0.213]	[0.212]	[0.214]
Out-Network for firms with high degree		-0.36	-0.26	-0.27
		[0.380]	[0.377]	[0.379]
Firm owner controls	No	Yes	Yes	Yes
Additional firm controls	No	No	No	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes
Observations	738	738	738	738
R-squared	0.133	0.148	0.187	0.189

Notes: The dependent variable is profit margin in 2018. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Appendix A: Survey Instrument

We developed the survey instrument in several steps. First, we carried out 20 structured interviews with small business owners (12 in Bishkek, 8 in Osh), in which a professional local interviewer (native-speaker of Kyrgyz and Russian) asked a series of questions about the history of informants' business activities (including sources of the original business idea, startup capital, initial hires, and growth trajectory of their current business), their use of kin and non-kin resources for various business purposes, the types of business and non-business support and favors they provide to kin, their experiences and general views of the advantages and disadvantages of using kin relations for such purposes and giving them that type of help, their education and family backgrounds, and their assessments of the current business climate. These interviews yielded a range of perspectives on our key topics of interest, pointing to variation among small business owners in their approach to drawing on kin for business help and providing them with support. We also learned about the different types of support and assistance (in both directions) that appeared to be more and less common, based on these qualitative interviews. Thus, the interviews gave us some insights into what specific questions to ask.

We then prepared a pilot version of the survey, in which we included some questions from other firm surveys, but also wrote original questions specifically designed to get at our research questions and to reflect some specificities of the Kyrgyz Republic context (for example, the specific types of licensing and tax reporting requirements that Kyrgyzstani small businesses face). The pilot instrument was translated into Kyrgyz and Russian (few business owners even in Osh, where there is a large Uzbek minority, do not speak one of these two languages), and it was pretested with 12 respondents in Bishkek and 8 in Osh. Based on the results of the pretest, we revised the instrument for clarity, comprehensibility, and length. We consulted with our partners at Crossroads Central Asia on such issues as whether certain questions were too politically or

economically sensitive to include in the instrument without alarming respondents, which response categories would be most intelligible to respondents (for example, it took many discussions to arrive at the optimal way to ask about members of the respondent's network who are of the same clan or from the same village, because these are both somewhat more complicated and ambiguous concepts in the Kyrgyz Republic than in other contexts where similar studies have been conducted), and whether some questions should be re-formulated (most often, simplified), given our target population.

Our goal was to survey 1000 small business owners. The sample was drawn using the following procedures. First, lists were prepared of all 204 electoral precincts in Bishkek and all 73 in Osh. Then, 60 precincts were randomly selected in Bishkek and 40 in Osh. This distribution by city was based on the target distribution of the sample across cities, which was determined based on the larger size and greater number of businesses in Bishkek, but also a concern to have a sufficient number of firms to analyze between- and within-city differences. In each randomly selected precinct, field workers employed by Crossroads Central Asia conducted a census of all businesses which identified, based on initial contacts with employees, those that have under 50 employees. For all such businesses, field workers recorded their names and addresses. This yielded a total of 4080 businesses (2457 in Bishkek, 1623 in Osh) identified by the field workers as having fewer than 50 employees, for an average of roughly 41 per precinct in each city, with a minimum of 2 and a maximum of 176 in individual precincts. In the final step, the lists were stacked and a step procedure combined with a random start number was used to draw a random sample of businesses in each precinct with each precinct proportionately represented, as well as a random sample of substitute firms to be contacted as replacements for firms that either refused to participate or could not be contacted. Interviewers were then assigned to specific business names and addresses, and instructed to make a minimum of three attempts to

contact the business owner and invite him or her to take part in the survey. Replacements were permitted if the initially sampled firm's owner refused to participate or could not be contacted after three tries.

Trainings of supervisors and interviewers were held in Bishkek and Osh by the project managers of Crossroads Central Asia under the supervision of the co-principal investigator. The trainings explained the aims of the study, reviewed the sampling procedures, went through the instrument question by question, and clarified skip logic, standard missing value codes, and ensured that field personnel understood procedures for eliciting informed consent and protecting the rights of human subjects. In the course of interviewer training, additional changes to some questions were suggested by the interviewers, at times based on their prior experiences interviewing business owners, and some of these were implemented prior to finalization of the instrument. Also, during the training it became clear that many questions would not be relevant for firms that were less than one year old, so an initial filter question was added to ascertain whether the business had been in operation prior to 2018. This introduced a challenge in the fieldwork phase, because the census had not obtained this information; so, some originally sampled firms had to be replaced because they had started up in 2018 or 2019. The field version was prepared in Russian (based on the Russian-language pilot version) and translated into Kyrgyz (eventually, 468 respondents opted to complete the survey in Kyrgyz, 532 in Russian). Interviewers were provided with a cover letter from the director of Crossroads Central Asia explaining the purpose of the study, identifying the research team and the funding source, and requesting participation. Respondents were offered modest cell-phone top-up cards as a moderate incentive to participate.

Field work began on April 22, 2019, and concluded on May 30, 2019. Interviewers reported several common problems in fieldwork: owners of larger firms were more likely to

refuse (in most cases simply expressing lack of interest in the survey and/or lack of time), respondents most often balked at answering questions about their firm's finances and details about their family and kin (in some cases, they could be persuaded to provide answers by reassurances from interviewers about the confidentiality of the study and reminders about the larger aims of the study), and in some cases interviews were subject to frequent interruption because the generally took place at the site of the firm while business activity was underway. Overall, 1000 surveys were completed, as planned. The response rate was 56.2%, with reasons for non-response distributed as follows: 574 refusals, 195 non-contacts during 3 attempts, 3 cases where a sampled business listed in the census could not be located, and 7 "other" reasons.

For quality control, first, supervisors accompanied interviewers on a random 5% of completed interviews. Then, an additional randomly chosen 15% of respondents were contacted by phone by supervisors to verify that the survey had been completed, on the specified date, check responses to 4-5 questions for conformity with the answers recorded by the interviewer, and obtain evaluations of the interviewer's conduct. Third, an additional 10% of respondents, again randomly chosen, were visited in person by field supervisors, who used the same procedures to verify completion of the interview by the correct respondent. All completed survey forms were visually checked by supervisors for irregularities or systematic response patterns suggestive of interviewer fraud or other misconduct. No cases of interviewer misconduct were uncovered. Data entry, variable construction, and initial cleaning for consistency and logic were completed by June 20, 2019.

Altogether, the advantages of these data collection procedures include randomization at two levels (selection of precincts and selection of respondent firms within precincts), removal of interviewer discretion from the sampling procedure, non-reliance on official registry lists (which

are often obsolete and which by design omit unregistered businesses), and thorough quality control.

Given that the study population consists of people who tend to be busy and the incentives to participate were minimal, one cannot expect a tremendously high response rate. By using highly trained, locally based professional interviewers, we obtained a rather high response rate of 56.2%. This is substantially higher, for example, than the response rate of the 2008 implementation of BEEPS in Kyrgyzstan was 16.9% (calculated from BEEPS 2010, p.146) and the 2013 BEEPS. Researchers who conducted another survey of entrepreneurs in Kyrgyzstan did not report the response rate for that survey (Aziz et al. 2013). Globally, Bloom et al. (2016) report an average response rate for World Management Surveys of firms in developing countries is 40%, a substantially shorter survey to administer than ours (Management and Organizational Practices Survey, a closed-ended, email-based survey, achieves a response rate of 80%). Lupu and Mitchelitch (2018), a metastudy on survey methods employed in household surveys in developing countries find an average response rate of 74%. We would expect firms to have a lower response rate than households. Moreover, the most common sampling method used is multistage area sampling (which we do) combined with a "random" walk within an area (which we do not). Our sampling procedure is superior given the well-known problems with random walk sampling and one would expect a higher response rate for the random walk approach.

In any case, although high response are generally desirable, extensive studies by survey methodologists have concluded that there is no direct or simple connection between response rates and non-response bias, despite the common misconception that lower response rates automatically introduce more bias (Biener et al. 2004; Groves and Peytcheva 2008; Holbrook et al. 2008). These studies show that extraordinary measures to induce reluctant respondents to participate may produce poorer quality data and that non-response bias is best understood as

item-specific rather than as a function of overall non-response, and that in many cases declining response rates for specific surveys have had no impact on the accuracy of parameter estimates. In our case, we lack any independent benchmark data (e.g. on the demographic characteristics of small-firm owners in Bishkek and Osh) that can be used to validate the representative of our sample or derive post-sampling weights. The preponderance of refusals among non-responses suggests that, indeed, the primary obstacle to participation was the busy schedule and lack of material incentives to participate among business owners, particularly large ones. We lack strong priors as to the directions of potential biases introduced by non-random non-response: for example, it is equally plausible that owners of less successful firms would disproportionately refuse to participate (because of embarrassment at the poor performance of their firms) as it is that owners of more successful firms would (because of a desire to conceal their firms' success or simply because they are more busy.) Lacking either a good theory as to the direction of potential bias or a means of assessing bias empirically, we are left with no alternative other than to treat our sample as representative, and our unusually high overall response rate for a firm survey in Kyrgyzstan is, if anything, reassuring regarding the soundness of our field procedures.

The corresponding low levels of non-response due to non-contact and other reasons suggest that the census was performed effectively, though not without a small number of errors. It is, to be sure, quite possible that some businesses were hidden to the census enumerators: for example, business conducted in homes or in apparently abandoned buildings. The exclusion of such businesses from the sampling frame may introduce bias, though we lack strong priors about its direction. We do know, based on the accounts of interviewers, that owners of larger businesses were more likely to refuse, which indicates that smaller firms are over-represented in our sample. However, we lack official or other data on the local distributions of firm sizes that could be used to correct for this source of bias using weights. It may also be the case that less

easily observed (by interviews visiting the firms) characteristics such as revenue, or reliance on kin, are also associated with non-response, but we have no way to measure the direction or the magnitude of any bias of this nature.

References

Aziz, Nergis, Barry A. Friedman, Aichurek Bopieva, and Ibrahim Keles. 2013. 2"Entrepreneurial motives and perceived problems: An empirical study of entrepreneurs in Kyrgyzstan." *International Journal of Business*. 18(2): 163-76.

BEEPS. 2010. *The Business Environment and Enterprise Performance Survey (BEEPS) 2008-2009: A Report on methodology and observations.* April 2010. https://www.ebrd.com/downloads/research/economics/beeps_report_ebrd_april10.pdf. Accessed 1/20/20.

Biener, Lois, Catherine A. Garrett, Elizabeth A. Gilpin, Anthony M. Roman, and Douglas B. Currivan. 2004. "Consequences of declining survey response rates for smoking prevalence estimates." *American Journal of Preventive Medicine* 27(3): 254-257.

Bloom, Nicholas, Renata Lemos, Raffaella Sadun, Daniela Scur and John Van Reenen, "International Data on Measuring Management Practices" American Economic Review: Papers & Proceedings 2016, 106(5): 152–156

Groves, Robert M. and Emilia Peytcheva. 2008. "The Impact of Nonresponse Rates on Nonresponse Bias: A Meta-Analysis." *Public Opinion Quarterly.* 72(2): 167-89.

Holbrook, Allyson L., Jon A. Krosnick, and Alison Pfent, 2008. "The causes and consequences of response rates in surveys by the news media and government contractor survey research firms." *Advances in Telephone Survey Methodology*, 1:.499-528.

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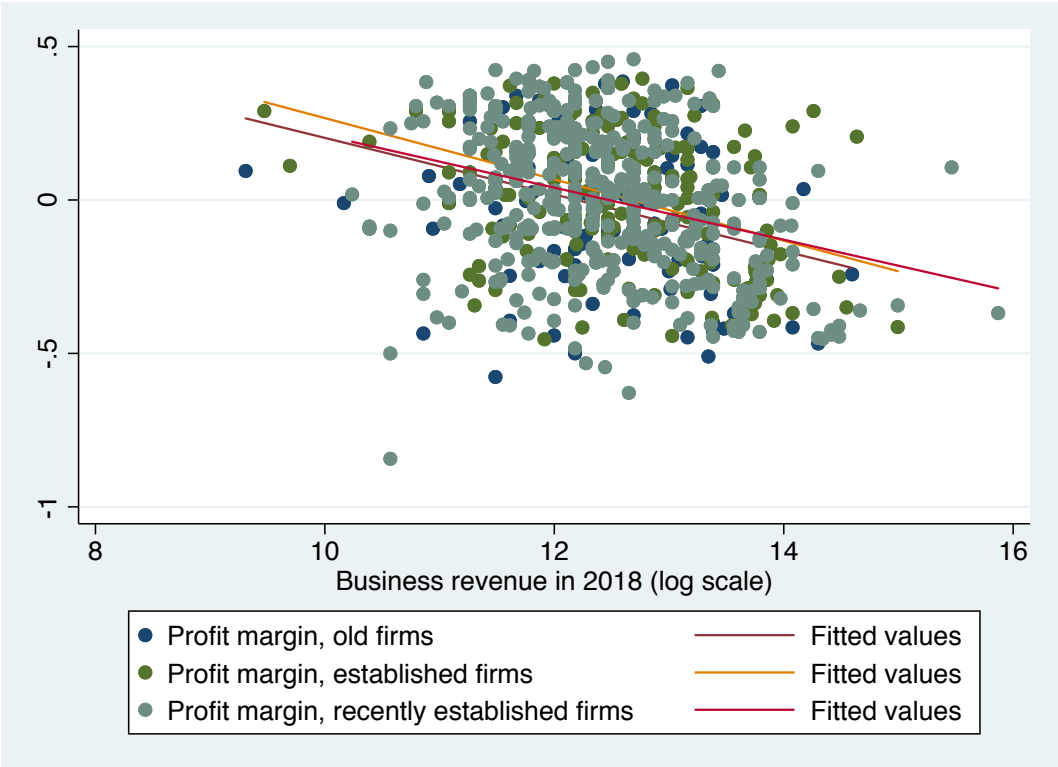
Appendix B: Figures and Tables

Figure B1: Profit Margin and Firm Size by Cohort



Notes: The figure presents the scatter plot of profit margin (demeaned by business type and location) and business revenue in 2018 (in logs). Fitted values are presented separately for old firms (started in 2010 or earlier), established firms (started between 2010 and 2015) and recently established firms (establish in 2015 or later)

Figure B2 : Kin proportion of Business Networks across firm cohorts

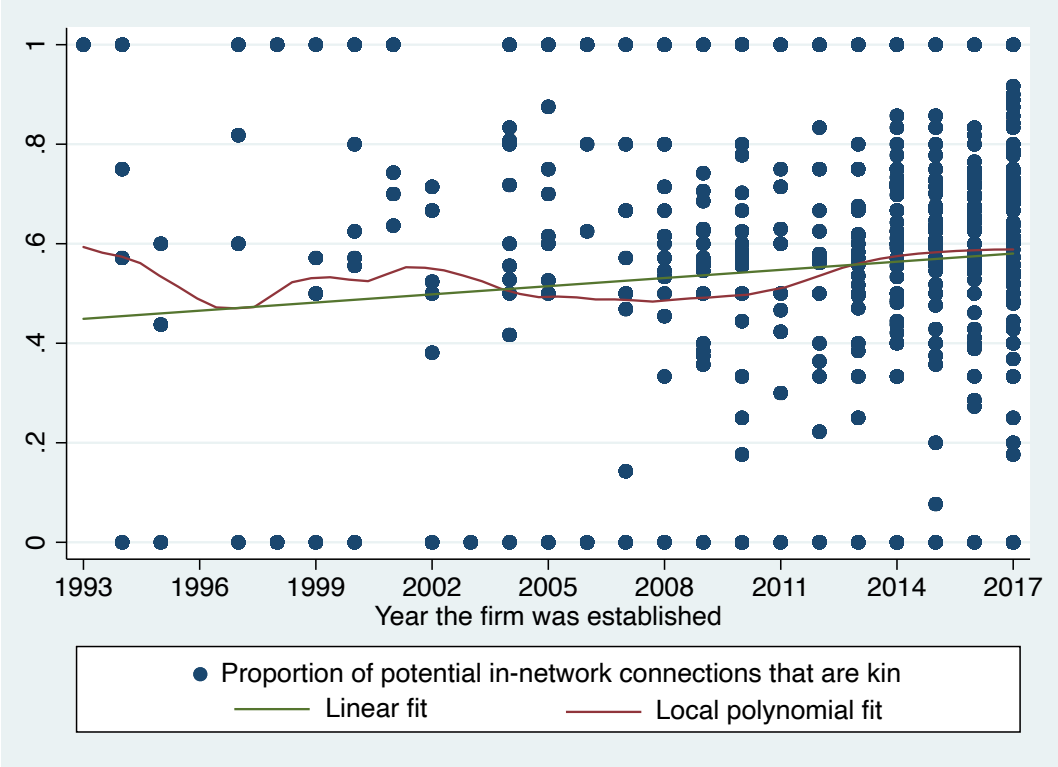


Table B1: Literature on Networks and Firm Growth

Author, Year	Network Type	Method	Data	Finding
Nguyen & Nordman, 2017	Family	C	IVS	- (technical efficiency)
Gassie-Falzone, 2016	Family	B	IVML	- (performance)
Acquaah, 2012	Family	B	IIL	- (performance)
Kowalewski et al., 2010	Family	C	IIIL	Mixed (U-shaped effect)
Miller et al., 2009	Family	B	IIL	Null
Bertrand et al., 2008	Family	B	IIIL	- (performance)
Anderson and Reeb, 2003	Family	B	IIIL	Mixed (U-shaped effect)
Fafchamps and Minten, 2002	Family/Social	D	IIIS	Mixed (- for family, + for social)
Fafchamps and Minten, 1998	Family/Social	A	IIIS	Mixed (- for family, + for social)
Khayesi et al. 2014	Kinship	D	IISM	+ (performance)
Alsosa et al., 2014	Kinship	A	IS	+ (startup, spinoff firms)
Grimm et al., 2017	Kinship	C	IIIS	Mixed (+ growth-oriented, - subsistence-oriented)
Grimm et al., 2013	Kinship	B	IVS	- (firm size, investment)
Gupta et al., 2017	Ethnicity	C	IVM	+ (growth)
Gil and Hartmann, 2011	Ethnicity	B	IISM	+ (specialization, profitability)
Biggs & Shah, 2006	Ethnicity	B	IISML	+ (startup size, productivity, growth)
Fisman, 2003	Ethnicity	B	IISML	+ (credit access)
Biggs and Raturi, 2001	Ethnicity	B	IIIML	+ (informal credit access)
Fafchamps, 2000	Ethnicity	D	IISM	+ (informal credit access)
Li et al., 2008	Political	B	IVL	+ (credit, performance)
Fisman, 2001	Political	D	IL	+ (market value)
Dai et al., 2018	Social	D	IVSML	+ (profits)
Nguyen & Le, 2018	Social	B	IVSM	+ (export propensity)
Burt & Opper, 2017	Social	B	IIIML	+ (startup funding)
Kuépiéa et al., 2016	Social	D	IIIS	+ (profitability)
Kemeny et al., 2016	Social	D	IIIML	+ (growth)
Li et al., 2015	Social	B	IIISM	+ (performance)
Stam et al., 2014	Social	F	NA	+ (performance)
Ayako et al., 2014	Social	C	IIS	+ (sales, skills)
Fafchamps & Quinn, 2013	Social	E	IIIS	+ (performance, capital)
Qian & Kemelgor, 2013	Social	B	ISML	Mixed (U-shaped effect)
Horton et al., 2012	Social	B	IIIML	+ (executive pay, performance)
Berrou & Combarnous, 2012	Social	B	IIISM	+ (performance, given strong ties)
Eisingerich et al. , 2010	Social	A	IISML	+ (performance, innovation)
Chipika & Wilson, 2006	Social	A	ISM	+ (productivity)
Zaheer & Bell, 2005	Social	B	IIL	+ (performance, given structural holes)
Uzzi, 1999	Social	A	IL	+ (formal credit)

Key:

Method:	**A**	Case Studies and Descriptive Statistics
	B	Cross-Sectional Firm Survey
	C	Panel Firm Survey
	D	Quasi-Experimental: IV, Matching, Event Study, etc.
	E	Experimental
	F	Meta-analysis
Data:	**I**	< 50 firms
	II	51 to 200 firms
	III	201 to 1000 firms
	IV	> 1000 firms
Firm Size:	**S**	Micro and Small Enterprises
(designations variously defined)	**M**	Medium Enterprises
	L	Large Enterprises
Finding:	+	Measure of network strength positively associated with firm performance
(outcome variable in parentheses)	-	Measure of network strength negatively associated with firm performance
	Mixed	Measure of network strength has mixed association with firm performance
	Null	Inconclusive findings

Table B2: First stage

	In-use kin connections		Out-use kin connections	
	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)
VARIABLES				
Number of cousins	-0.0624***	-0.0633***	-0.0658*	-0.0670*
	[0.015]	[0.015]	[0.035]	[0.035]
Number of cousins squared	0.0004***	0.0004***	0.0007**	0.0007**
	[0.000]	[0.000]	[0.000]	[0.000]
Estimated Minimum	78	79	47	48
Firm owner controls	Yes	Yes	Yes	Yes
Additional firm controls	No	Yes	No	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes
Observations	884	884	884	884
R-squared	0.275	0.279	0.191	0.201

Notes: The dependent variable is in-use kin connections in the first two columns and out-use kin connections in the last two columns. The estimated minimum refers to the point in which the number of cousins begins to have a positive effect on the number of connections, according to the estimates. Firm owner controls and cohort and business-type fixed effects are included in all regressions.

Table B3: Production Function

	OLS	OLS	OLS
	(1)	(2)	(3)
VARIABLES			
Assets (in logs)	0.09***	0.09***	0.09***
	[0.030]	[0.030]	[0.030]
Workers	0.10***	0.09***	0.09***
	[0.017]	[0.018]	[0.018]
Male		0.11	0.11
		[0.072]	[0.072]
Age of respondent (in years)		-0.00	-0.00
		[0.003]	[0.003]
Some higher education		0.17**	0.17**
		[0.071]	[0.071]
Currently Married		0.15*	0.16*
		[0.081]	[0.081]
Language of interview Russian		-0.10	-0.10
		[0.070]	[0.070]
Firm located in Bishkek	0.44***	0.20	0.20
	[0.069]	[0.134]	[0.134]
Partnership			0.29
			[0.207]
LLC			0.44**
			[0.190]
Firm owns place of business			0.00
			[0.018]
Firm owner controls	No	Yes	Yes
Additional firm controls	No	No	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes
Observations	749	749	749
R-squared	0.190	0.230	0.234

Notes: The dependent variable is log business revenue in 2018.

Table B4: Profitability and Kinship: Honest respondents only

	OLS	OLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Business In-Use Network Kin	1.16***	1.57***	1.41***	46.59	1.42***	52.22
	[0.448]	[0.492]	[0.499]	[184.261]	[0.493]	[227.518]
Business Out-Use Network Kin		-0.47***	-0.52***	-6.53	-0.52***	-6.78
		[0.130]	[0.136]	[22.077]	[0.137]	[25.597]
Male			1.44	-8.71	1.44	-9.12
			[2.588]	[37.297]	[2.598]	[43.513]
Age of respondent (in years)			0.12	0.29	0.13	0.43
			[0.099]	[0.648]	[0.100]	[1.235]
Some higher education			-5.93**	-24.45	-5.77**	-24.11
			[2.321]	[72.184]	[2.356]	[78.577]
Currently Married					0.12	-18.60
					[2.535]	[76.255]
Language of interview Russian					-0.39	-8.69
					[2.283]	[40.315]
Firm located in Bishkek	-1.39	-2.49	-3.40	40.18	-3.47	47.09
	[2.407]	[2.418]	[4.464]	[197.986]	[4.479]	[248.296]
Partnership					0.95	57.08
					[14.124]	[291.435]
LLC					3.93	11.22
					[7.119]	[62.968]
Firm owns place of business					0.56	5.23
					[0.652]	[21.446]
Firm owner controls	No	No	Yes	Yes	Yes	Yes
Additional firm controls	No	No	No	No	Yes	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	497	497	497	450	497	450
R-squared	0.157	0.175	0.227		0.229	

Notes: The dependent variable is profit margin in 2018. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table B5: Firm Growth and Kinship: Honest respondents only

	FE	FE	FE	FE	FE	FE
	New Firm: Established in 2016			New Firm: Established 2014-2016		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
New firm	0.08*	0.13**	-0.05	0.10***	0.07	0.11
	[0.047]	[0.059]	[0.127]	[0.027]	[0.046]	[0.104]
Has Business Network	0.13***	0.13***	0.19**	0.12***	0.13***	0.24**
	[0.032]	[0.039]	[0.094]	[0.031]	[0.038]	[0.116]
Proportion of business network that is kin	-0.15***	-0.15***	-0.23*	-0.15***	-0.15***	-0.35***
	[0.039]	[0.045]	[0.124]	[0.037]	[0.042]	[0.125]
Has Business Network*New Firm	0.51*	0.40	0.52*	0.16***	0.17***	0.11
	[0.282]	[0.289]	[0.305]	[0.043]	[0.058]	[0.133]
Proportion of business network that is kin*New firm	-0.38	-0.29	-0.32	0.08	0.10	0.12
	[0.345]	[0.353]	[0.357]	[0.102]	[0.108]	[0.121]
Assets	0.15*	0.06	-0.06	0.11	0.03	-0.09
	[0.083]	[0.081]	[0.090]	[0.082]	[0.077]	[0.090]
Workers	-0.02	-0.06**	0.02	-0.03*	-0.07***	0.02
	[0.019]	[0.025]	[0.024]	[0.015]	[0.021]	[0.026]
New firm, no-kin business network	0.71***	0.66**	0.66**	0.38***	0.37***	0.46***
	[0.276]	[0.28]	[0.28]	[0.04]	[0.05]	[0.14]
New firm, all-kin business network	0.18*	0.22**	0.11	0.30***	0.32***	0.23*
	[0.10]	[0.11]	[0.11]	[0.095]	[0.102]	[0.13]
Old firm, all-kin business network	-0.02	-0.017	-0.037	-0.03**	-0.025	-0.12
	[0.013]	[0.027]	[0.105]	[0.013]	[0.027]	[0.12]
Business-type specific growth rate	No	Yes	Yes	No	Yes	Yes
Only 2017 and 2018 Obs.	No	No	Yes	No	No	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	949	949	664	949	949	664
R-squared	0.121	0.233	0.183	0.210	0.305	0.199
Number of Firms	392	392	390	392	392	390

Table B6: Non-linear least squares estimation with skewed error distribution

Dependent variable=	Profit margin in 2018		Profits in 2018	
	NLLS	NLLS	NLLS	NLLS
	(1)	(2)	(3)	(4)
VARIABLES				
Business In-Use Network Kin	1.45***	1.38***	3399.44***	3139.48**
	[0.26]	[0.20]	[1171.04]	[1394.96]]
Business Out-Use Network Kin	-0.37***	-0.35***	-1690.98***	-1827.41***
	[0.12]	[0.11]	[535.96]	[512.87]
Expected mean of asymmetric error	-0.001	-0.004	-16175.44	-24992.75
	[0.002]	[1.79]	[17472.91]	[26288.14]
Firm owner controls	No	Yes	No	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes
Observations	722	722	741	741

Notes: Robust standard errors are reported in brackets. Scaling variables are the firm's assets, employment and location and the firm owner's age, ethnicity, sex, education, preferred language, and region of birth. For the profits regression, we trim the top and bottom 1% of the distribution.

Table B7: Profitability and Kinship: Missing data

	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Missing DV in any possible year		Profit margin	Missing DV in 2018		Profit Margin
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Family would have info	-0.05	-0.06		-0.04	-0.02	
	[0.041]	[0.043]		[0.030]	[0.030]	
Owner-operator	-0.17***	-0.19***		-0.12***	-0.12***	
	[0.039]	[0.040]		[0.025]	[0.025]	
In-use business network kin	-0.00		4.93***	0.00		5.38***
	[0.005]		[1.682]	[0.003]		[1.842]
Out-use business network kin	0.00*		-0.85**	0.00*		-0.97**
	[0.002]		[0.418]	[0.001]		[0.445]
Cousins		0.00***			0.00	
		[0.002]			[0.001]	
Cousins squared		-0.00**			-0.00	
		[0.000]			[0.000]	
Inverse Mills ratio			3.40			5.90
			[5.270]			[5.085]
Firm owner controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	980	864	688	970	852	676
Pseudo R-squared	0.257	0.246		0.222	0.196	
F-test, network variables	3.29			4.61		
p-value	0.193			0.0996		
F-test, information variables	19.32	21.33		20.25	21.72	
p-value	0.00	0.00		0.00	0.00	

Table B8: Profit margin: Network measures by types of received help

	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)
VARIABLES					
Business In-Use Network Kin: Loans	2.79***				2.61***
	[0.450]				[0.650]
Business In-Use Network Kin: Bureaucracy		1.77			-1.92
		[1.110]			[1.190]
Business In-Use Network Kin: Search			3.53***		1.12
			[0.719]		[1.070]
Business In-Use Network Kin: Dispute				2.91***	1.64*
				[0.793]	[0.956]
Business Out-Use Network Kin	-0.34***	-0.18	-0.36***	-0.26*	-0.42***
	[0.130]	[0.132]	[0.125]	[0.134]	[0.127]
Firm owner controls	Yes	Yes	Yes	Yes	Yes
Additional firm controls	No	No	No	No	No
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	772	772	772	772	772
R-squared	0.165	0.133	0.155	0.143	0.175

Notes: The dependent variable is profit margin in 2018. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table B9: Profit margin: Network measures by types of help given

VARIABLES	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	OLS (6)
Business In-Use Network Kin	1.19***	1.16***	1.17***	1.20***	1.11***	1.25***
	[0.194]	[0.214]	[0.198]	[0.195]	[0.195]	[0.220]
Business Out-Use Network Kin: Work	-2.26***					-1.36*
	[0.772]					[0.809]
Business Out-Use Network Kin: Overpaid		-0.10				-0.01
		[0.193]				[0.194]
Business Out-Use Network Kin: Discounts			-0.97**			-0.39
			[0.466]			[0.370]
Business Out-Use Network Kin: Advice				-1.21***		-0.69
				[0.429]		[0.447]
Business Out-Use Network Kin: Housing					-1.14***	-0.63
					[0.386]	[0.443]
Firm owner controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional firm controls	No	No	No	No	No	No
Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	772	772	772	772	772	772
R-squared	0.165	0.154	0.157	0.165	0.165	0.174

Notes: The dependent variable is profit margin in 2018. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table B10: Profitability and kinship: Controlling for clan

	OLS	OLS	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Business In-Use Network Kin	1.08***	1.46***	1.38***	6.27**	1.36***	6.14**
	[0.241]	[0.244]	[0.242]	[2.505]	[0.243]	[2.407]
Business Out-Use Network Kin		-0.46***	-0.51***	-0.87**	-0.51***	-0.87**
		[0.116]	[0.117]	[0.392]	[0.118]	[0.388]
Male			1.30	0.12	1.36	0.11
			[2.091]	[2.794]	[2.093]	[2.805]
Age of respondent (in years)			0.13	0.13	0.14*	0.12
			[0.082]	[0.104]	[0.084]	[0.106]
Some higher education			-4.75**	-7.17***	-4.63**	-7.16***
			[2.045]	[2.539]	[2.063]	[2.555]
Currently Married			0.54	-3.54	0.68	-3.49
			[2.195]	[3.138]	[2.205]	[3.117]
Language of interview Russian			0.94	-1.39	0.83	-1.37
			[1.954]	[2.301]	[1.957]	[2.268]
Firm located in Bishkek	-0.96	-1.60	-2.21	-0.45	-2.19	-0.39
	[2.512]	[2.498]	[3.668]	[3.882]	[3.663]	[3.864]
Partnership					-0.73	3.00
					[11.294]	[11.770]
LLC					2.62	4.05
					[8.638]	[6.988]
Firm owns place of business					0.43	-0.17
					[0.544]	[0.654]
Firm owner controls	No	No	Yes	Yes	Yes	Yes
Additional firm controls	No	No	No	No	Yes	Yes
Clan, Cohort and Business-type Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	768	768	768	701	768	701
R-squared	0.173	0.188	0.224		0.225	

Notes: The dependent variable is profit margin in 2018. Firm owner controls are gender, age, education, ethnic group, religion, birth location, marital status, language of interview. Additional firm controls are legal type and whether the firm owns the place of business. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table B11: Business Growth: Accounting for decay in kin proportion

	FE	FE	FE	FE	FE	FE
	New Firm: Established in 2016			New Firm: Established 2014-2016		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
New firm	0.02	0.03	-0.12	0.09***	0.09**	0.06
	[0.039]	[0.050]	[0.084]	[0.027]	[0.037]	[0.088]
Has Business Network	0.12***	0.11***	0.15*	0.10***	0.10***	0.11
	[0.027]	[0.035]	[0.078]	[0.027]	[0.036]	[0.094]
Proportion of business network that is kin	-0.13***	-0.14***	-0.19**	-0.13***	-0.13***	-0.19*
	[0.032]	[0.037]	[0.094]	[0.031]	[0.036]	[0.108]
Has Business Network*New Firm	0.50**	0.46**	0.55**	0.19*	0.19*	0.29*
	[0.194]	[0.197]	[0.216]	[0.109]	[0.111]	[0.154]
Proportion of business network that is kin*New firm	-0.36	-0.31	-0.31	-0.04	-0.03	-0.17
	[0.242]	[0.243]	[0.266]	[0.143]	[0.142]	[0.205]
Assets	0.15**	0.11	-0.01	0.10	0.07	-0.03
	[0.073]	[0.071]	[0.083]	[0.072]	[0.067]	[0.081]
Workers	-0.01	-0.02	0.02	-0.01	-0.03	0.01
	[0.022]	[0.031]	[0.016]	[0.016]	[0.026]	[0.017]
New firm, no-kin business network	0.64***	0.60***	0.58***	0.39***	0.38***	0.46***
	[0.19]	[0.19]	[0.21]	[0.10]	[0.10]	[0.15]
New firm, all-kin business network	0.14*	0.15**	0.08	0.22***	0.22***	0.10
	[0.08]	[0.08]	[0.09]	[0.05]	[0.05]	[0.11]
Old firm, all-kin business network	-0.014	-0.025	-0.038	-0.022**	-0.027	-0.08
	[0.01]	[0.026]	[0.087]	[0.011]	[0.026]	[0.11]
Business-type specific growth rate	No	Yes	Yes	No	Yes	Yes
Only 2017 and 2018 Obs.	No	No	Yes	No	No	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,384	1,384	965	1,384	1,384	965
R-squared	0.108	0.165	0.185	0.211	0.255	0.199
Number of Firms	573	573	569	573	573	569
Number of New Firms	131	131	131	299	299	299

Notes: The dependent variable is log of business revenue in a given year. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.