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Does financial literacy improve financial inclusion? Cross country evidence

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ABSTRACT

While financial inclusion is typically addressed by improving the financial infrastructure, we show that a higher degree of financial literacy also has a clear beneficial effect. We study this effect at the cross-country level, which allows us to consider institutional variation. Regarding "access to finance", financial infrastructure and financial literacy are mainly substitutes. However, regarding the "use of financial services", the effect of higher financial literacy strengthens the effect of more financial depth. The causal interpretation of these results is supported by IV-regressions. Moreover, the positive impact of financial literacy holds across income levels and several subgroups within countries.

1. Introduction

Lack of financial inclusion is still a far reaching problem. The Findex data for 2014 show that 2 billion adults are unbanked; this number fell to 1.7 billion in 2017, still representing almost 40 percent of adults in the world (Demirguc-Kunt, Klapper, Singer, & Van Oudheusden, 2015, Demirgüç-Kunt, Klapper, Singer, Ansar, & Hess, 2018). Thus, financial inclusion, measured as access to and use of financial services, is an important goal of economic and, in particular, financial development; accordingly it has been argued to be an important policy tool that can help to achieve the Sustainable Development Goals (SDGs) (Klapper, El-Zoghbi, & Hess, 2016). It is hence of high interest for policy makers to learn about drivers of financial inclusion and how these can be influenced by national policies.

The positive impact of financial depth on growth and (less income) inequality has been well established in the literature (Beck, Demirguc-Kunt, & Peria, 2007; Levine, Loayza, & Beck, 2000). By contrast, there is less evidence for a link between financial inclusion and economic growth or inequality, but existing evidence points into this direction (Demirguc-Kunt, Klapper, & Singer, 2017). For example, improved financial inclusion can decrease rural poverty (Burgess and Pande, 2005), increase employment (Bruhn and Love, 2014), expenditures (Dupas and Robinson, 2013) and savings (Brune, Giné, Goldberg, & Yang, 2016). Hence, better financial inclusion can have welfare effects that extend beyond benefits in the financial realm to the real economy.

Research at the country level documents the state of access to financial services (Beck et al., 2007): It shows that better financial inclusion is related to country and institutional characteristics, such as more financial depth, physical proximity of financial institutions, low costs for financial accounts, or a strong legal system (Allen, Demirguc-Kunt, Klapper, & Peria, 2016). Thus, country studies on financial inclusion so far focus on the supply side of financial markets. However, shouldn't financial development consider more than the various aspects of financial infrastructure and legal background? Which role does the demand side play? It seems plausible that functioning financial markets do not only need good infrastructure but also informed customers, i.e. customers with a higher degree of financial literacy. Informed customers make better financial decisions for themselves and for their businesses, they support the effectiveness of the financial system by demanding more sophisticated financial services and they will demand financial inclusion. If, indeed, the degree of financial literacy makes a difference for financial inclusion, this seems to have a clear policy message.

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Despite this almost natural line of argument, we provide the first empirical study at the country level examining the relation between financial literacy and financial inclusion. This has become possible due to a new dataset documenting the degree of financial literacy for 143 countries as described in Klapper, Lusardi, and van Oudheusden (2015). These novel data complement the World Bank's Findex data on the access to and use of financial services (2013; Demirguc-Kunt and Klapper, 2012; Demirguc-Kunt et al., 2015), and, of course, earlier data on financial and institutional country characteristics. These data allow us to contribute to the literature on financial inclusion in two major ways:

First, we establish the stylized fact that higher financial literacy is systematically related to better financial inclusion at the country level. We show this relationship for four measures of financial inclusion. These relations provide the first cross country evidence, extending studies with specific samples from single countries, thereby demonstrating a high external validity of this relationship. Of course, financial development is a comprehensive process so that the stylized fact of a relation between financial literacy and financial inclusion should be controlled for by potentially confounding country characteristics. Thus, we use a large set of variables which have been introduced in the literature, including relevant general country characteristics, such as GDP per capita and the level of education, and standard variables of financial infrastructure (see e.g. Allen et al., 2016). When adding these variables to the main relation of interest, we show that these variables reduce the coefficient on financial literacy but none of them eliminates the significant relation between financial literacy and financial inclusion. This suggests that financial literacy (demand side) has the expected influence on financial inclusion, independent from the known positive influence of financial infrastructure, i.e. the supply side (Beck and de la Torre, 2007).

In addition, it seems interesting to examine the relation of financial literacy and infrastructure to each other: Do demand and supply act rather as substitutes or complements? We find that the answer depends on the type of financial inclusion, which is our second major contribution. For access to financial services, in particular having a bank account, the marginal benefit of financial literacy decreases with higher financial depth, indicating that the two are mainly substitutes. If inclusion is about the use of financial services, however, and in this sense more advanced, financial literacy has a complementary effect on financial depth, so that the two even reinforce each other. Economically, it makes sense, for example, that active use of a bank account requires both, infrastructure and understanding about the infrastructure.

While a causal interpretation of these results with the effect going from financial literacy to financial inclusion seems to be logical, there is also more direct evidence for this. Such evidence with high internal validity is provided by micro-based studies, such as Cole, Sampson, and Zia (2011), Doi, McKenzie, and Zia (2014), and Jamison, Karlan, and Zinman (2014). These studies hint at the positive role of financial literacy for financial inclusion. However, the samples and designs of these studies are specific so that it remains unclear to which extent results can be generalized. Thus we propose, in addition to our OLS results, an instrumental variable approach allowing for causal inference in our regressions.

We use the level of numeracy of primary school children as a conventional external instrument. As numeracy is a precondition for financial literacy, numeracy and financial literacy are indeed highly correlated. Moreover, we argue that numeracy only affects financial inclusion through financial literacy as this financial understanding is needed on top of mathematical ability for the decision to, for example, open an account. Reassuringly, it is indeed exactly the numeracy aspect of education that matters because reading ability, for example, does not pass the test for an instrument. This divergence between numeracy and reading ability is relevant for our case as it indicates that the numeracy measure does not just capture cognitive ability or general educational quality. Thus, using numeracy of children as an instrument for financial literacy of adults also supports the causal interpretation of financial literacy on financial inclusion. We show that our results hold for both men and women, furthermore in robustness tests we show that main results hold for various sub-groups of income levels, i.e. samples of the poorest 40% and richest 60% of the population within a country.

As a further robustness check, we also apply the instrumental variable method developed by Lewbel (2012) in addition to conventional IV methods. This method does not rely on an external instrument, but instead uses heterogeneity in the error term of the first stage regression to generate instruments from within the existing model. Results also confirm those based on our OLS regressions. Leading on from these results we argue that improving financial literacy would be beneficial for all countries at different stages of economic and financial development.

Literature: Our research is related to three strands of literature, i.e. on (i) financial inclusion at the country level, (ii) financial inclusion in micro studies and (iii) financial literacy. (i) Recent studies measure and explain financial access as a measure of outreach and inclusion. Beck et al. (2007) present a dataset designed to measure financial outreach by looking at both elements of physical access to banking infrastructure and deposit and credit use per capita. They show that these measures of financial access are not determined by the same indicators as financial depth (see Levine et al., 2000). Neither religion nor (French) legal origin (LaPorta, Lopez-de-Silanes, & Shleifer, 2008) are significantly correlated with these variables.

When researching the barriers to financial inclusion, a number of supply side factors have been studied. Factors such as high transaction costs, uncertainty, asymmetric information or a lack of physical access are often discussed as hindering the efficient use of financial services (Armendariz de Aghion and Morduch, 2005; Beck, Demirguc-Kunt, & Peria, 2008; Karlan and Morduch, 2009). Hence, these are supply-side reasons why formal banks and other financial institutions may not give credit or offer a savings account to clients. Klapper et al. (2016) elaborate on how lifting these barriers promote financial inclusion. Thus, providing access and promoting the use of financial services, may directly reduce extreme poverty (Jack and Suri, 2014; Karlan, Ratan, & Zinman, 2014; Pande, Cole, Sivasankaran, Bastian, & Durlacher, 2012).

(ii) The findings from cross-country studies are largely supported by a number of micro-studies that assess the causes of financial inclusion by looking at the individual or household level via surveys or by running a randomized controlled trial. Allen et al. (2016) show that women, the poor and those living in rural areas tend to be financially excluded. Similarly, Ghosh and Vinod (2017), using data from India, show that women are still more likely to be financially excluded. Further, a growing body of evidence suggests that providing access to bank accounts increases take-up rates of these accounts, household savings (Brune et al. 2016; Somville and Vandewalle, 2016), labor market activity (Bruhn and Love, 2014), income (Bruhn and Love, 2014), private and business expenditures (Ashraf, Karlan, & Yin, 2010; Dupas and Robinson, 2013) and decreases rural poverty (Burgess and Pande, 2005). Particularly, the effect of providing savings accounts seems to be robust as people shift away from storing money at home or holding it in the form of livestock or jewelry (Demirguc-Kunt et al., 2017). While Cole et al. (2011) also find that subsidized bank accounts have a positive effect on bank account take-up, even very short financial literacy trainings can have a (smaller) desired effect, in particular for poor households. Beyond the provision of bank accounts, mobile money may support inclusion in other