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Position: Post-Doctoral Fellowship
NBER Productivity, Innovation and Entrepreneurship Program
National Bureau of Economic Research, Inc.

Dear Members of the Search Committee,

I am applying for the Post-Doctoral Fellowship in the NBER Productivity, Innovation and Entrepreneurship Program as advertised in JOE. My dissertation research focuses broadly on development economics, and in particular on constraints limiting entrepreneurship – and the growth of non-farm enterprises in particular – and the pace of technological change in rural areas of the developing world. As such, I believe my research is consistent with both the ‘Entrepreneurship’ and ‘Innovation Policy’ themes described in the listing. Methodologically my research uses field experiments and quasi-experimental techniques to analyze large sample secondary datasets. This proposal proceeds by laying out the research I propose to conduct during this fellowship. It then describes related research in my dissertation and concludes with a discussion of ongoing projects.

Using micro-data from more than 100 developing countries, recent research shows that value-added in the non-agricultural sector is twice as high as in the agricultural sector (Gollin, Lagakos, Waugh 2014). In spite of this, in many developing countries a majority of the labor force persists in agriculture and the reasons for this misallocation of labor are poorly understood. I primarily intend to utilize this Post-Doctoral Fellowship to build upon my dissertation research and investigate specific sources of labor misallocation and, in particular, constraints limiting the development of the non-farm sector in rural India. In my job market paper, I show that where land market frictions and cultural obligations are salient, the inheritance of agricultural land limits rural-urban migration and entry in to the non-farm sector in rural areas. As a consequence, inheriting land may have no effect or, perversely, even reduce the long-run consumption of inheritors. These findings suggest that reforms to inheritance laws and rural land markets may have implications for labor market misallocation and the development of the non-farm sector, providing a compelling test for sources of misallocation and the mechanisms through which they operate. I have recently obtained a panel dataset drawn from nearly 250 village censuses covering over 110,000 households across rural India that would allow for a cohort-type design that leverages spatial and temporal variation in such reforms to understand their influence on labor market misallocation and the development of non-farm enterprises.

As previously noted, in my job market paper I examine the long-term effects of inheriting agricultural land in rural India. While productive assets like agricultural land are thought to improve the well-being of the rural poor, where cultural obligations and market frictions limit the sale, rental or ability to relinquish such assets, they may instead limit labor mobility causing a microeconomic parallel to the ‘resource curse’. I test this hypothesis by estimating the causal effect of inheriting land using an instrumental variables strategy that relies on a combination of sibling sex composition and Hindu inheritance customs. As expected, I find that inheriting land facilitates borrowing and increases household consumption. However, where the ability to fully utilize land through markets is severely constrained by frictions, either cultural obligations or land market transaction costs, the effect on consumption is *entirely* attenuated and *negative* for those who inherit when they are especially young. Those who inherit land are also significantly less likely to migrate to urban areas and enter non-agricultural work in rural areas; those inheriting land a particularly less likely to start non-farm enterprises.

A caveat to these findings is that consumption-based measures may not adequately account for the non-pecuniary benefits of satisfying obligations, thereby tempering the evidence for misallocation. While production-based measures (e.g. yield) avoid this concern, when they are combined with individual-level variation they may capture competing effects of multiple market failures such as those resulting from incomplete contracts and shirking costs of hired labor. In sum, individual-level variation in this context is not conducive to establishing sources of misallocation.

However, these results suggest that aggregate-level variation resulting from reforms that erode the importance of inheritance laws and encourage activity in rural land markets should produce testable and quantifiable implications related to the misallocation of labor. In particular, while 95% of land is inherited across India, this figure masks spatial heterogeneity resulting from land ceiling reforms and the differential extent of land market activity (Deininger et al., 2008). With support from this post-doctoral fellowship, I intend to understand whether such reforms serve to reduce ‘wedges’ in the returns to factors induced by market frictions and cultural obligations leading to a more efficient allocation of both land and labor. Over time, land ceiling reforms and changes in rental activity may encourage entry into agriculture of individuals whose families were historically landless, potentially allowing for greater sorting by comparative advantage. I envision that this research will include both applied theory and empirical work, with the former component drawing upon research which finds that declining racial barriers to high-paying occupations in the US reduced labor market misallocation (Hsieh et al., 2013). For the empirical component, I have recently been granted access to the 2006 round of the ARIS-REDS survey which includes panel data from nearly 250 village censuses covering over 110,000 households across rural India that allow for a cohort-type design analyzing the implications of these reforms for labor market misallocation, agricultural productivity and the development of non-farm enterprises.

For the second paper in my dissertation, I successfully wrote grants that raised over \$300,000 from the Gates Foundation and USAID (joint with Prof. Shawn Cole, Harvard Business School). We ran a field experiment to assess the importance of agricultural advice in influencing technology adoption and agricultural productivity. In order to achieve this, we randomized access to a mobile phone-based agricultural consulting service, Avaaj Otalo (AO), to over 1000 households in rural Gujarat, India. Farmers made substantial use of this service, dramatically influencing their sources of information in making agricultural decisions. This advice also influenced technology adoption through changing the input choices farmers made and ultimately improved harvest yields for the principal crops these farmers cultivated. We also found evidence to suggest that farmers receiving the service influenced the sources of information and agricultural decisions of their peers. Interestingly, farmers appear willing to follow the advice provided by the service without understanding why it is correct: we do not observe gains in agricultural knowledge. Overall, we estimate that for every \$1 a farmer invested in this service it generated over \$10.

I am also currently involved in a number of field experiments that address issues that are broadly related to technological change in the agricultural sector: one is a scaled-up version of the research on mobile phone-based extension that looks at estimating information spillovers and understanding the mechanisms through which technologies and information spreads (joint with Shawn Cole, HBS and HK Seo, Chicago-GSB). The second project looks at underinvestment in crop quality by farmers in India (joint with Sara Hernandez, MIT; Reshmaan Hussam, MIT; and Natalia Rigol, MIT). Finally, using data from the agricultural census of India matched to data on rural morbidity, I explore the long-term effects of pesticide exposure on depression, and its implications for economic outcomes (with Supreet Kaur, Columbia University).

Thank you for your consideration,
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Bibliography

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