

# Thesis title: The economics of diabetes in middle-income countries

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## Abstract

This thesis focuses on the economic analysis of type 2 diabetes (T2D) in middle-income countries. Given its rising prevalence, in-depth country specific analysis is key for understanding the economic consequences of T2D in middle-income countries (MICs). I analyse the economic burden of T2D in terms of labour market consequences, taking into account the heterogeneity of the diabetes population, for both Mexico and China. For China I further investigate the effects of a diabetes diagnosis on health behaviours that may help to curb the adverse consequences of diabetes.

The thesis consists of four essays with the unifying theme of improving our understanding of the causal relationship between diabetes and economic outcomes. Essay (1) provides an updated overview, critically assesses and identifies gaps in the current literature on the economic costs of T2D using a systematic review approach; essay (2) studies the effect of self-reported diabetes on employment probabilities in Mexico, using cross-sectional data and making use of a commonly used instrumental variable approach; essay (3) extends the previous essay via the use of panel data and fixed effects and considering a broader range of outcomes, including wages and working hours; it also makes use of cross-sectional biomarker data that allows for the investigation of measurement error in self-reported diabetes; essay (4) investigates the effect of a diabetes diagnosis on employment and income as well as health behaviours in China, using longitudinal data and applying two distinct identification strategies: fixed effects and marginal structural model estimation.

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The findings of the first paper document a considerable increase in studies on the economic costs of diabetes in MICs. It also illustrates that most of the evidence is based on cost-of-illness studies and the literature on labour market and potential earning effects of diabetes in MICs is scarce. The thesis fills part of this void and shows that self-reported diabetes has a considerable impact on employment probabilities of people living in Mexico and China. The findings are robust to the application of different estimation strategies. No consistent evidence of an adverse effect of diabetes on wages or working hours is found, suggesting that diabetes mainly affects the extensive margin. The findings for Mexico indicate that particularly people working in the informal or agricultural, hence less protected and often more physically demanding, sectors bear the brunt of the negative effects of diabetes. Taking into account the undiagnosed population, the adverse effect of diabetes is reduced because undiagnosed diabetes itself does not show an adverse association with any labour market outcome. This suggests that the undiagnosed population is distinctly different from the diagnosed population, likely due to differences in health information and health status. Therefore, research using self-reported diabetes information should limit its claims to the diagnosed population as economic effects are likely different for the undiagnosed. With regards to the effect of a diabetes diagnosis on health behaviours, the results from China suggest that a diagnosis leads to moderate reductions in body mass index (BMI), waist circumference, alcohol and caloric consumption. Perhaps surprisingly, especially men appear to be able to lose weight and reduce their caloric consumption. Not accounting for unobserved heterogeneity leads to a change in the coefficient sign for the effect of a diagnosis on BMI and waist circumference, while the differences in estimates are less pronounced for other outcomes.