Informal employment and business cycles in emerging economies: The case of Mexico

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A B S T R A C T

We document how informal employment in Mexico is countercyclical, lags the cycle and is negatively correlated with formal employment. This contributes to explaining why total employment in Mexico displays low cyclicality and variability over the business cycle when compared to Canada, a developed economy with a much smaller share of informal employment. To account for these empirical findings, we build a business cycle model of a small, open economy that incorporates formal and informal labor markets and calibrate it to Mexico. The model performs well in terms of matching conditional and unconditional moments in the data. It also sheds light into the channels through which informal economic activity may affect business cycles. Introducing informal employment into a standard model amplifies the effects of productivity shocks. This is linked to productivity shocks being imperfectly propagated from the formal to the informal sector. It also shows how imperfect measurement of informal economic activity in national accounts can translate into stronger variability in aggregate economic activity.

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1. Introduction

A growing literature on the sources of business cycles in emerging market economies (EMEs) has documented how frictions matter when it comes to amplifying the effects of technology or interest rate shocks. Such frictions can either be broadly recovered as permanent shifts to total factor productivity (TFP) or, more narrowly, be associated with financial frictions that amplify interest rate shocks.[2] However, an important observation to be made on this literature is that it has largely abstracted from a closer analysis of the labor market and its link with aggregate fluctuations. And even less attention has been given to informal employment, despite the fact that informality is often a distinctive characteristic of

labor markets in EMEs.[3] In Latin America, for instance, recent estimates have found that, on average, one out of every two workers is employed in the informal labor market.[4]

This observation raises both empirical and theoretical questions. On the empirical side, does informal employment exhibit any distinctive pattern across the business cycle of EMEs? If so, is it relevant in shaping the dynamics of aggregate employment? And are those aggregate dynamics different from those in advanced economies? On the theoretical side, how should the current framework for studying aggregate fluctuations in EMEs be modified to account for the large share of informal employment in these economies and their business cycle properties? And how does our understanding of the sources of business cycles in EMEs change from such a modified framework?

This paper aims at providing answers to these questions. Our strategy is divided into two parts. First, we empirically document the link between informal employment and business cycles. To do this we use a dataset of five alternative measures of informal employment at a quarterly frequency for 23 years in Mexico, a representative emerging economy. We then investigate the business cycle properties of our proxies for informal employment.

This empirical exploration reveals several stylized facts. We start by highlighting the differences in terms of labor market dynamics between Mexico and Canada, the latter often taken as a representative developed small open economy. Relative to output, aggregate cyclical employment in Mexico is nearly half as volatile as it is in Canada. Moreover, in Mexico employment displays a correlation with the cycle that is considerably lower than that of Canada. We then argue that both the large share of informal employment in Mexico *and* its distinctive cyclical properties play an important role in explaining the different labor market dynamics across the two countries. In particular, we document that in Mexico informal employment is unambiguously countercyclical, lags the cycle and is negatively correlated with formal employment to the point that total employment's variability and procyclicality are reduced. Finally, self-employment is relatively well synchronized with the other proxies for informality.

Motivated by these new stylized facts, a second part of our work is devoted to building a small open economy (SOE) model with both formal and informal labor markets with which we can rationalize these empirical findings. In the model, households choose how much labor to allocate to each market. They accumulate two different capital stocks, which are sector-specific, and consume formal and informal goods produced in each sector. Formal capital is rented to firms, while informal capital is used in the informal sector. Households can buy or sell one-period non-contingent bonds in foreign capital markets. Production in the formal sector is done by firms. In the informal sector people are self-employed, given the tight link between informality and self-employment that we document for Mexico. Both technologies have constant returns to scale and use capital and labor in production. Formality entails costs and benefits. The formal firm has to pay taxes on the wage bill but enjoys high productivity levels. The informal producer is less productive but does not pay taxes. The productivity gap is motivated by the evidence on the large TFP differential across formal and informal firms in Mexico. The only source of uncertainty in the model is a shock to the growth factor of labor-augmenting productivity in the formal sector. Shocks to the formal sector are passed through to the informal sector. Crucially, however, we allow for an imperfect propagation of these shocks from the formal to the informal sector, as a reduced-form device to capture institutional or other types of channels that prevent business cycle drivers from spreading uniformly across labor markets. Finally, the government taxes personal income (wages and capital rents) and the hiring of labor by formal firms to finance a stream of government purchases in formal goods.

The model is calibrated to Mexican data so that it matches two empirical targets. In particular, the standard deviation of the productivity shock is set so that formal output volatility matches the one in the data. We additionally set the parameter that measures the propagation of shocks across sectors to match the empirical correlation between informal employment and output. The model is then evaluated in terms of its performance along some of the other unconditional second moments that describe business cycles in Mexico. We further assess its performance conditional on the two largest recessions of our sample. The experiments yield several results of interest. First, the relative size of the shocks needed to account for the observed output volatility is around 10 percent lower than that required if labor informality is absent. Hence a first quantitative result is that of an *amplification* of shocks, in the sense that the inclusion of informal employment in an otherwise standard SOE model amplifies the effects of growth shocks. Second, this amplification is linked to an imperfect *propagation* of shocks across sectors. Seen through the lens of the model, the strong countercyclicality of informal labor implies a relatively low pass-through level of shocks across sectors, as roughly 36 percent of a shock in the formal sector is not contemporaneously propagated into the informal sector. The imperfect transmission of shocks generates differences in relative productivity that create more labor reallocation. In equilibrium, this reallocation is accompanied by more macroeconomic volatility, which is at the center of the model's mechanism for generating business cycles. A third quantitative result of interest is that proper *measurement* of informal activity matters when quantifying this macro volatility. In particular, we show that the volatility of the aggregate variables falls if informality is properly accounted in national accounts. For instance,

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[3] Notable exceptions that study labor market frictions in small open and emerging economies are Altug et al. (2011), Boz et al. (2009), Fernández and Meza (2011), Li (2011), and Lama and Urrutia (2013). Also Conesa et al. (2002), Fiess et al. (2010), Restrepo-Echavarria (2011), and Finkelstein (2012) explicitly model an informal sector in a dynamic general equilibrium setting. A comprehensive literature review is given in the Appendix (posted on https://sites.google.com/site/andresfernandezmartin8/research).

[4] See Powell (2013). This study reports that the (population-weighted) average of informality across Latin American countries is 44.1 percent. Dispersion by income quintiles is also significant within countries: the bottom quintile rarely exceeds 20 percent coverage of formal employment. In this work informality is measured as the percentage of employed workers in each income quintile, aged 20 and older, who are not contributing to social security.