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Dissertation Abstract

My research interests include Quantitative Macroeconomics Theory, Aggregate Fluctuations, Growth and Development, Economics of the Family.

1. **Aggregate Effects of HIV/AIDS on Development** (2007) [Job Market Paper] In this article I study the consequences of the HIV/AIDS epidemic for economic development. To this purpose I model HIV/AIDS as a shock that replicates the main demographic effects of the HIV/AIDS epidemic on the rate of growth of the population, the individual labor efficiency, and the age distribution in Sub-Saharan Africa. I quantify the impact of this shock in an extension of the development theory described in Hansen and Prescott (2002). This theory explains the transition from stagnation to growth with a model of sectoral reallocation from a Malthus-agricultural technology to a Solow-industrial technology. I find that the HIV/AIDS epidemic slows down the transition from agriculture to industry by about one century. I find also that, if the HIV/AIDS epidemic had not existed, per capita consumption would have been 12% larger in 2008. Finally, I find the impact that HIV/AIDS has on the age distribution of the population accounts for 32% of its effects on development.

In ongoing research I am extending the set of channels through which the AIDS epidemics alters populations: 1) reduces life expectancy; 2) reduces fertility rates; 3) creates a large numbers of widows and orphans; and, 4) increases marital reshuffling. In this pursuit, I construct a population projection matrix model that inherits the properties of the HIV/AIDS demography and calibrate it using the Malawi Diffusion and Ideational Change Project panel data set. The ultimate goal of this project is to evaluate the implications for development of family planning and reproductive health policies set forth to extend life expectancy, reduce HIV infection rates in children and adults, and support households fostering and caring for orphans.

2. **Redistributive Shocks and Productivity Shocks**, with José-Víctor Ríos-Rull (2007). We document the cyclical properties of the labor share: it is quite volatile; an innovation to productivity produces an initial reduction of labor share, making it countercyclical, but it also produces a long-lasting subsequent increase that peaks five years later at a level larger in absolute terms than the initial drop. We pose and estimate a bivariate shock to the production function that, under the assumption of competition in factor markets, simultaneously accounts for movements in the Solow residual and in the factor shares of production. We then incorporate this bivariate process into an otherwise standard real business cycle model and compare the outcomes with those that result from the specification of a univariate productivity shock that matches the properties of the Solow residual. The volatility of hours worked in the bivariate shock economy is a lot smaller than that in the standard univariate shock economy (about 33% of the standard deviation or 11% of the variance), with productivity innovations in the bivariate economy generating 6% of the variance of hours displayed in the univariate economy. The effect of the productivity innovation on labor share reduces dramatically the incentives to work now relative to later both because wages will increase later and because the rate of return will go down. This behavior can be described in terms of a very strong positive wealth effect in the bivariate shock economy relative to the univariate shock economy,

while the implied substitution effects tend to delay, first intra- and then intertemporally, the response of hours and not to mitigate them. Our results hold independently of the Frischian elasticity of labor supply. We conclude that understanding the cyclical movements of labor share, and hence constructing a theory of its particular movements should become an important piece of business cycle research.

3. **Method versus Substance: Measuring the Effect of Technology Shocks on Hours**, with José-Víctor Ríos-Rull, Frank Schorfheide, Cristina Fuentes-Albero and Mark Kryshnov (2007) Different empirical methodologies have coexisted in macroeconomics over the past decades: calibrated dynamic stochastic general equilibrium (DSGE) models, econometrically estimated DSGE models, and structural vector autoregressions. Using these methodologies we re-visit a long-standing question in business cycle research: what fraction of variation in hours worked is due to technology shocks. We analyze to what extent and why the methodologies generate different quantitative answers to our substantive question