Research Proposal:
Can Consumers Distinguish Persistent from Transitory Income Shocks?

Thomas H. Jørgensen
Jeppe Druedahl
Department of Economics, University of Copenhagen

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1 Project Proposal

One of the most widely used income processes in Economics is one in which households face both permanent and transitory income shocks.[1] While this income process has been argued to represent income data fairly well, little is known about households ability to distinguish between these two types of shocks.

The assumption that households can perfectly distinguish between permanent and transitory shocks, and thus know their own permanent income, is so standard in Economics, that it is rarely stated explicitly, let alone tested empirically. This is, however, not an innocuous assumption, but have implications for our interpretation of observed consumption-saving behavior.

At least since Friedman's Permanent Income Hypothesis in the 1950s it has been understood that transitory income shocks should only render a small adjustment in household consumption-saving behavior, while permanent income shocks should lead to a significant change in consumption. Clearly, this relies heavily on the ability of consumers to distinguish between permanent and transitory income shocks. In a recent survey, Blundell (2014) thus asks for research on "the consumer's ability to distinguish between permanent and transitory shocks" (p. 312).

We want to expand the current international research frontier on this highly relevant topic by asking:

Can Consumers Distinguish Persistent from Transitory Income Shocks?

[1] See e.g. Jappelli and Pistaferri (2010), Meghir and Pistaferri (2011) and Blundell (2014).

Policy Relevance. This research question has important implications for many fields of economics, and in particular with respect to estimation of the marginal propensity to consume (MPC), which is naturally central for fiscal as well as monetary policy. Recently, a growing literature focus on the response of consumption to income shocks by estimating what is referred to as "transmission parameters" or "insurance coefficients" using panel data on income and consumption. These parameters are closely related to the MPC and is interpreted in that light; see e.g. Blundell, Pistaferri and Preston (2008) and Kaplan and Violante (2010).[2] However, we can show that the assumption about the households' degree of knowledge about its permanent income has important consequences for the interpretation of transmission parameters to permanent and transitory income shocks. Understanding the households' degree of knowledge is thus central for credibly estimating the MPC.

Method and Contribution. In this project, we construct a consumption-saving model where the household needs to infer its permanent income, and thus whether a shock is permanent or transitory, from the realization of its actual income path and an additional noisy private signal. This allows us to consider a continuum of cases such that the household in one extreme knows the persistent component of its own income process perfectly, and in another extreme infer it using the same information set as the econometrician. In the perfect information case the private signal is noiseless and in the imperfect information case the private signal is infinitely noisy.

We can show identification of the degree of knowledge of households using panel data on income and consumption data. We can then utilize the proposed moments calculated in the US Panel Survey of Income Dynamics (PSID) to estimate our novel model. With the estimated model, we can test whether households in the PSID seem to be able to distinguish between permanent and and transitory income shocks.

To perform the proposed estimation above we need to numerically solve a complex state-of-the-art consumption model many times while searching over all parameters of the model (see e.g. Jørgensen, 2013 on these type of estimators). One key requirement for the success of this project is therefore sufficient computational power.

2 Time Frame and Expected Outcome

The current project is initiated and some of the theoretical results, such as identification, is established. Computer code solving the model has been developed using state-of-the-art methods (specifically the method developed in Druedahl, 2017). Unfortunately this model still takes minutes to solve for a given value of parameters. With the computer equipment we currently have access to, this implies that time constraints make it unfeasible to make the required robustness checks and Monte Carlo experiments. A

[2]See also Blundell, Low and Preston (2013) and the surveys in Jappelli and Pistaferri (2010), Meghir and Pistaferri (2011) and Blundell (2014).

large part of the funding we apply for is therefore in form of new computer equipment, which can be used for this and similar future projects.

Once the missing robustness checks and Monte Carlo results are done, the paper will be close to submission. We expect to be able to publish a working paper by early 2018 and hopefully submit the paper in late 2018 if we get the funding applied for in the current application. We expect to aim high with this project and thus submit the paper to American Economic Review after a serious effort in presenting it to relevant international researchers.

3 Budget

Table 1 reports the budget. We apply for funding to buy a dedicated computer for this project, two months of salary for Thomas Jørgensen and some travel funding to present the paper at international workshops and conferences. Traveling funding is also intended to cover costs associated with the authors visiting their network around the world. We have connections to researchers such as Ian Preston (UCL), Richard Blundell (UCL), Hamish Low (Cambridge), Giovanni Violante (Princeton) and Christopher Carroll (Johns Hopkins) whom we intent to visit to discuss this project. These researchers are among the leading in the world on the topic of the current project and their inputs are extremely valuable.

Table 1: Budget, in Danish Kroner.

	Cost
Computer (see attached quote)	96,619.50
Salary, Thomas Jørgensen (2 months a 44,255 in 2018)	88,510
Travel expenses	15,000
Sub-total	200,129.5
Overhead 20%	40,025.9
Total	240,155.4

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