Research Proposal

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Project Executive Summary

The aim of this research project is to understand who receives disability insurance (DI), at what stage of the process they receive it, and to understand how these individuals respond to incentives. The existing literature on this subject is limited in important ways. It lumps together different types of disability, and among those who are healthy does not distinguish between those who have a strong preference for leisure, and those who have low productivity. In contrast, the proposal is to model disability related work limitations as consisting of a verifiable and non-verifiable component, identified through a factor model of health. Two dimensions of health are likely to affect an individual's probability of succeeding in an application: someone with a verifiable limitation is more likely to obtain DI benefit immediately, whereas someone with a non-verifiable limitation may have to wait longer, and in particular appeal an initial negative decision. The proposal is also to model preferences for leisure separately from productivity, and to identify these through information on past labour supply and self-reported willingness to work for a given wage.

The proposal is for a structural model of DI to capture the way DI incentives affect different types of individual. Aspects of DI, such as waiting times, may act as a screening mechanism designed to separate healthy applicants from the disabled. I examine the value of the DI program both to the truly disabled and also to those individuals who, although not work-limited, may be suffering from large and persistent low productivity and may be in need of partial insurance.

Discussion

There are at least two possible papers as part of the research project:

1. A paper estimating a model of health outcomes as a function of the verifiable and non-verifiable indicators, creating a multi-index model of health and showing how it evolves over an individual's life. This project uses HRS information on health outcomes to estimate a latent factor model of health.

2. A paper examining who gets DI, and in particular using the split into verifiable and non-verifiable health to show how this matters for DI application, labour supply and wages. In this framework, the two dimensions of work limitation estimated in the former paper now affect wages and can influence the probabilities of success at different stages of the application process. A structural model of consumption, saving, labour supply and DI application over a lifetime allows us to capture selection into application and appeal and to match data I observe on application, appeal, consumption and labour supply. I will then

simulate the reform of the appeal process, capturing the trade-off between insurance and incentives.

Theory predicts that the optimal level of insurance against negative health shocks depends on the degree to which such insurance distorts labour-supply behaviour. In the context of disability, labour-supply responses to the program are likely to differ according to individual characteristics. I introduce three categories of individuals, which for brevity I label the 'sick', the 'lazy', and the 'unlucky'. While it may be optimal to make transfers to an individual with a poor health condition, it may also be difficult to *ex ante* differentiate someone with a non-verifiable condition from an otherwise healthy individual. Non-verifiable illnesses can be mimicked by those who are healthy but who want the insurance nonetheless. Hence, a form of screening may be optimal, such as requiring individuals without verifiable health conditions to wait longer for DI benefits: if healthy individuals would not be prepared to bear this extra cost, such a mechanism may lead to only deserving individuals persisting with the application, but those with nonverifiable illnesses having to wait longer. To investigate this question quantitatively, I identify the two types of disability among individuals. Secondly, I model how the two dimensions of health factor into the DI application process and how this affects decisions to apply for DI.

A further dimension of heterogeneity among prospective DI applicants involves individuals who have experience a permanently low level of earnings, not because they are unhealthy, but either because they have low lifetime productivity or because they have experienced a permanent or transitory negative productivity shock, such as the collapse of an industry for which they have developed a unique skill-set. It may be optimal for policymakers to at least partially insure these types of shocks, and it remains an open question whether in the absence of other programs the DI program can perform this role. However, the optimality of such insurance again would depend on the ability to screen out such individuals from otherwise healthy applicants, and about whether a screening mechanism based on waiting times may play a role. The structural model would thus investigate the optimality of the current DI program in the United States in the face of this additional group among prospective DI applicants.[1]

[1] The project would differentiate between those who have a high preference from leisure from those who have (either temporary or permanent) low productivity by using the marginal rate of substitution (MRS) condition for intra-temporal labour-supply choice. This condition predicts that, for constant consumption and wages, a person with more leisure must have a stronger preference for leisure. Those with low productivity (the 'desperate' and the 'unlucky') would be identified based on earnings, hours-of-work information and self-reported reservation wages.

Tom A. Zawisza

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Louise Cross *Phone*:	+44 (0) 1223 335 206	lc100@cam.ac.uk

Education

2010 – Present *PhD Economics,* **University of Cambridge**
Thesis title: Essays on Optimal Taxation and Transfer Programs
Supervisor: Prof Hamish Low
(Expected completion: March 2017)

References

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Jan-June 2012 *Visiting Scholar,* **University of California, Berkeley**

2008 – 2010 *MPhil Economics (Distinction),* **University of Cambridge**
Thesis title: Costly State Verification in a New Keynesian Framework: A Groundwork for Monetary Policy Analysis
Supervisor: Dr Demosthenes Tambakis

2005 – 2008 *BA (Hons) Philosophy, Politics and Economics,* **University of Oxford**

2003 – 2005 *A Levels,* **Box Hill School, Surrey, UK**

"Intensive and Extensive Margins of Response to Taxation: Evidence from the 2009 Polish Reform " (JOB MARKET PAPER)

In this paper I examine two crucial questions regarding the design of the optimal tax system, exploiting the 2009 Polish tax reforms for identification. Firstly, we estimate the degree of substitution between the employment and self-employment tax bases on the extensive margin. In particular, we quantify the impact of changes in the differential in rates of taxation between the two tax bases on the propensity of taxpayers to declare any positive level of employment or self-employment income. Secondly, we contribute to the literature on elasticities of taxable income by providing estimates which are robust to changes in year-to-year income dynamics. We do this by exploiting variation in marginal tax rates around the 2009 reforms which occurs independently of an individual's position in the income distribution as a result of joint reporting with a spouse. The estimates jointly make possible the decomposition of the deadweight losses of the tax reform into intensive and extensive-margin responses, with the contribution of the extensive margin found to be around 7 percent of the total.

"Saving Behaviour of Disability Insurance Applicants: Are Waiting Times Effective Screening Devices?" (in progress, joint work with Hamish Low and Luigi Pistaferri)

The paper examines the consumption and saving behaviour of Disability Insurance (DI) applicants using a life-cycle model. We include a two-dimensional health process which determines an individual's health and has implications for the chances of succeeding at the application and appeals stage. Saving behaviour for disability applicants of different types is examined, testing the validity of the predictions of Golosov and Tsyvinski (2006). The model can provide an explanation for higher saving rates observed among moderately or 'non-verifiably' disabled individuals. The paper finally asks whether the length of the compulsory time out of the labour force before making a DI application can improve the DI system in terms of the insurance-efficiency trade-off.

"Estimating Health Dynamics using a Dynamic Factor Model" (in progress)

This paper estimates the dynamics of health using a dynamic panel factor model on data from the Health and Retirement Study (HRS). It finds that the many potentially collinear health indicators found in the HRS can be summarized into four underlying factors. The first three of these corresponds to subjective health measures, such as self-assessed mobility, fine motor skills and psychological well-being, while the fourth corresponds to more objective measures of health-care utilization, such as the number of overnight hospital stays. The dynamics of the factors are estimated as an underlying VAR process using the system-GMM approach, and the discreteness of the HRS health indicators is dealt with by assuming a multinomial functional form. There is significant variation among the factors in terms of their deterministic age-paths by gender and level of education, as well as their age-specific level of risk.

"Banking Sector Efficiency in Sub-Saharan Africa" (*Journal of African Economies* 2014, pp.1-17, IMF Working Paper WP/13/51, work undertaken during internship at the IMF, joint work with Francois Boutin-Dufresne and Oral Williams)

This paper examines the determinants of net interest margins in four regional blocks in Sub-Saharan Africa. Using bank-level data, we find that countries with a high level of operating costs, a high low level of non-interest income, a high ratio of equity to total assets and high treasury-bill interest rates have higher net interest margins. Moreover, high operating costs are associated with low measures of institutional quality and a small size of bank operations. We find support for the view that market structure is also partly responsible for high net interest margins in Sub-Saharan Africa, although quantitatively this effect is somewhat less important. High operating costs, high treasury-bill rates and a high ratio of equity to total assets and, indirectly, institutional factors such as the rule of law, are the most important factors in accounting for high interest margins in the East African Community, relative to other regions.

Awards & Scholarships

2015 – 2016	Royal Economic Society Fellowship
2013 – 2015	Faculty Trust Fund Award, University of Cambridge
Jan-June 2012	UC Berkeley Exchange Scholarship, University of Cambridge
2010 – 2013	ESRC Research Scholarship (full PhD funding)
2008 – 2010	European Trust Scholarship, University of Cambridge
2008 – 2010	Studentship for Students from Central and Eastern Europe, University of Cambridge
2005 – 2008	Scholar, Hertford College, University of Oxford (for first-year results)

Research and Professional Experience

2016-2017 **Faculty of Economics, University of Cambridge**
Keynes Fund Post-Doctoral Fellow (anticipated)
- Post-doctoral position to continue working on aspects of health over the life-cycle and disability insurance

2014-2016 **Faculty of Economics, University of Cambridge**
Teaching Fellow, Public Economics
- Taught 3rd-year Public Economics classes (53 students across University, 20 hours)

2014-2015 **St Catherine's College, University of Cambridge**
Teaching Associate, Public Economics
- Taught in supervisions for Public Economics for 3rd-year students (30 students, 20 hours)

2013-2014 **Faculty of Economics, University of Cambridge**
Research Assistant to Prof Hamish Low
- Programming in Fortran 90
- Solving, simulating and estimating life-cycle model using data

Jan-Jun 2014 **Fitzwilliam College, University of Cambridge**
Supervisor of Studies
- Supervisor for Part IIA Macroeconomics (19 students from four Colleges, 50 hours)

Sep-Oct 2012 **World Bank, Washington, DC**
Intern, Poverty Reduction & Economic Management Division
- Assisted with preparation of Fiscal Sustainability Report for Azerbaijan

Jun-Aug 2012 **International Monetary Fund, Washington, DC**
Fund Intern, Africa Division
- Co-authored paper on banking in Sub-Saharan Africa (see above)

Skills

Languages: English (Fluent), Polish (Fluent), French (Intermediate)

Computing Skills: proficient in Fortran 90, Matlab, Stata, EViews, LaTeX, Bloomberg

From: **Hamish Low**
Professor of Economics



UNIVERSITY OF CAMBRIDGE
Faculty of Economics

November 9, 2016

Reference for Tom Zawisza

Tom Zawisza is a PhD student in the Faculty of Economics at Cambridge due to complete his Phd in the next month. I have been his main supervisor since the end of his second year when his supervisor, Hashem Pesaran, moved to the University of Southern California. This switch of supervisor slowed Tom down a bit, but he has produced an excellent PhD: Tom is one of the best that I have supervised or had contact with in the 18 years that I have been in Cambridge. He works on issues of social insurance and taxation, trying to understand the incentive costs associated with providing social insurance. His main insights have been in understanding how individuals are affected by tax reform, and also on how individuals can use their own savings alongside government provided insurance.

Tom has four main papers: (1) his job market paper: "*Taxable Income Elasticities in the Presence of Tax-Base Shifting: Evidence from the 2009 Polish Tax Reform;" (2) Health over the Life-Cycle*; (3) *Saving Behaviour of US Disability Insurance Applicants: Are Waiting Times Effective Screening Devices?*; and (4) *Banking Sector Efficiency in Sub-Saharan Africa*. I have not been involved in the last of these projects, which he has published in the *Journal of African Economies*, but I will comment on each of the others.

Tom's job market paper estimates the effects of tax reform in Poland. Tom's starting point was to recognise that tax changes have an extensive as well as intensive margin on taxable income: when rates change, individuals can change the basis on which they are taxed and this can contaminate estimates of the elasticites of taxable income. The clearest example of this is switching between business income and personal earnings. The intensive margin is the effect on, for example, taxable personal earnings of people filing personal tax returns when the rate changes. Tom shows using a reform of tax law in Poland in 2009 that there is also substantial movement between tax bases – individuals respond by cutting their taxable income and increasing their business income. The identification in the model is very careful. This separation of the intensive and extensive margins is new and very interesting – it should publish very well indeed. I should add that this project has been developed entirely on his own initiative, and it has involved a lot of negotiation with the finance ministry in Poland to access the data. The ministry has released substantial amounts of data to Tom for him to analyse which has not been accessed before. It is a real credit to his persuasiveness, entrepreneurship and motivation that he has managed to obtain this data and to push forward this agenda.

The second project is a sole-authored empirical paper into health and disability insurance. Tom uses dynamic factor analysis to decompose shocks to health into verifiable and non-verifiable components, and further identifies what observable measures are correlated with

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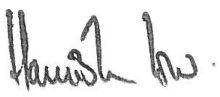
each component, and how the persistence of each component differs. The US Social Security Administration relies heavily on verifiable components, where it is easier to minimise false acceptances onto disability insurance. Tom's analysis shows the importance of non-verifiable illnesses (such as back pain) which are highly persistent and yet are not well insured. The econometric issues in this paper proved complex. This is a dynamic factor model where the persistence in the latent variables differs across variables and is non-symmetric autoregressive process. Tom has worked this all out pretty much on his own. It provides interesting insights into how the different dimensions of health evolve over the lifetime – and how the SSA measures of these dimensions evolve.

This analysis feeds into the third of his projects, which is co-authored with me and with Luigi Pistaferri. In this project, Tom models the application and appeal process for disability insurance allowing for the different verifiability and persistence of health shocks that people can face. The key question this project addresses is how quickly should the processing be carried out and whether the length of time to process is an effective screening device. The problem is that once we allow individuals to save, the individuals who are willing to wait are those with assets, rather than those who have suffered the worst work limitation shocks. The idea to distinguish between verifiable and non-verifiable illnesses was Tom's and we have used this to build on mine and Luigi's earlier work.

Tom has also worked for me as a research assistant in this area, solving and simulating dynamic programming problems in Fortran. He is the only research assistant I have had to date whose programming I would rely on.

Tom has a keen academic desire to get to the bottom of problems. He is enterprising in his research and has enormous potential to produce original and careful research. He has achieved excellent academic results as an undergraduate at Oxford and on the MPhil in Cambridge. In his time as a PhD student, in addition to his research, he has worked at the IMF and at the World Bank as well as being my research assistant. I have been extremely impressed by Tom – easy to get on with, hard working, motivated to get to the bottom of problems and academically outstanding. He is able to understand the economics, the econometrics and to do the programming - a very unusual combination. I hope to keep working with him once he has finished his PhD and I recommend him very highly indeed to any department.

Yours sincerely,



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