Human Wealth, Household Portfolios and Inequality

Giovanni Gallipoli (UBC) and Brant Abbott (Queen's University)

Objectives

The proposed research has two objectives: (i) to examine how the investment decisions of heterogeneous households are shaped by economic incentives, policy environment and conditions in both labor and asset markets; (ii) to assess how households' portfolio composition may, in turn, affect outcomes in the distribution of economic resources, and of wealth in particular.

Research Methodology

The modeling and measurement of households heterogeneity, and their dynamic choices, will be of critical importance. We plan to use microdata (initially, SCF and PSID) to measure differences in observable characteristics of household members, and rely on novel methods to characterize the joint distribution of different forms of wealth for the cross-section of US households at different points in time. All data gathered in the process will be made available online to the wider research community.

Measuring different types of wealth is not a trivial exercise. While it is widely recognized that the set of marketable skills is often a large component of a persons wealth (especially at the earlier stages of life when most of a persons wealth is tied up in future labor income), it is not obvious how to gauge the value of an individual's skill set.

As discussed by Benzoni and Chyruk (2015), ownership of human capital is not transferable (human capital is a non-traded asset). Estimates of the human capital value are typically obtained by computing a present discounted value of the expected income flow generated by a person in the labor market. The way future income is discounted is key. Huggett and Kaplan (2016) convincingly argue that the true value of human capital is far below the value that would be implied by discounting future net earnings at the risk-free interest rate, an approach commonly advocated because of its simplicity. Mechanical discounting rules out state-dependent changes in the valuation of future earnings. In principle, heterogeneous discounting of earnings processes opens up the possibility that households whose members' earnings are similar may in fact hold very different stocks of human wealth and, hence, significantly different wealth portfolios. Individual (stochastic) discount factors, as shown in Cochrane and Culp (2003), capture some of the prevailing uncertainty faced by households. This allows to (i) account for the changing valuation of similar income streams at different stages of the life-cycle of a given individual (or family); (ii) compute the different values associated to similar income streams by people with different characteristics, introducing cross-sectional variation in discounting.

Both the life-cycle and cross-sectional heterogeneity in discounting is not part of the human capital valuation under more naive discounting. One major obstacle to convincingly include state-dependent discounting in models of human capital valuation is the lack of detailed information about the joint evolution of consumption and earnings at the individual household level. Recently micro data surveys have started to include information on households' consumption expenditures. Our plan is to combine rich information about households portfolios from the SCF with estimates of human wealth obtained from panel data, like the PSID. This would allow us to describe how the cross-sectional distribution of different wealth types evolved over time and how changes in the composition (and behavior) of households have contributed to the aggregate outcomes.

The Value of Human Wealth in Households' Portfolios

Valuing yet-to-be realized earnings requires the full consideration of all possible earning paths that may be realized, given the current individual state. Unfortunately, one can not sample alternative realizations of an individual's earnings history. To address this data constraint we plan to use micro-level data about each individual work history. Specifically, at any sample date, we will group sample members in different 'bins', populated by individuals with similar observable characteristics including their current earnings. Then, by tracking the earning trajectories of all individuals in each 'bin', we will approximate the distribution of possible labor market outcomes using the sample of observed outcomes for different individuals. After these trajectories are realized, we would proceed to group individuals again, based on their updated observable characteristics and repeat the process at each age. In this way we could generate conditional labor market histories that: (i) feature a full set of alternative earnings' realizations for any given vector of observable characteristics; (ii) span the entire working life of individuals, and allow for the probability of retirement, unemployment (or non-participation) associated to any initial state. This latter aspect is key because we only observe limited snapshots of the working life of any given individual.

This approach would deliver a sample of 'work histories' for a synthetic panel of individuals. However, to perform the state-dependent discounting described above one would need information about household consumption expenditures. To this purpose we plan to use a modified version of the algorithm suggested by Attanasio and Pistaferri (2014) to approximate the distribution of households' consumption expenditures in the PSID. These synthetic work histories would then be linked to information in the Survey of Consumer Finances, by matching on observable household characteristics.

Finally, we will develop a dynamic model of households' consumption and saving choices to derive an intertemporal equation to 'price' human wealth. This valuation corresponds to the amount of wealth an individual would be willing to accept in exchange for own future earnings, under the assumption of *commitment* to state-contingent future labor supply. This can be accomplished by introducing a hypothetical asset that pays dividends-per-share equal to individual i's yearly labor income. We argue that the price at which individual i would be willing to sell this asset is equal to their valuation of own human capital. Intuitively, the individual would be as well off owning one share of this asset and receiving zero-payment for their (committed) labor as they would be owning zero shares of the asset and receiving full-payment for their labor. Of course, in reality no one would be willing to buy this asset from individual i because of the inherent commitment problems, so the valuation we derive is a shadow price representing what human capital is worth to its owners.[1]

Outcomes and Impact

This project naturally relates to the debate on the evolution of economic inequality (see Saez and Zucman, 2014; Kuhn and Rios-Rull, 2016, for a discussion on US wealth inequality). Establishing an empirically plausible link between different layers of inequality is key to draw credible inference about the evolution and implications of changes in the distribution of resources. In the process we plan to document key facts about the life cycle evolution of different forms of wealth, with a special focus on the changing importance of human wealth as a share of the total wealth portfolio of different households. This would allow us to relate the heterogeneity in wealth composition (human versus financial wealth) to family circumstances, and in particular to early life circumstances.

[1] This approach to valuing a non-traded assets was first introduced by Lucas (1978). Huggett and Kaplan (2016) also adopt this approach.

Proposed Budget

Expense	Amount	Justification
Research Assistance	$7,500.00	This budget will allow for 200 hours of research assistance by a graduate student over the course of the project. The primary need for the RA is organizing and cleaning data. A big component will be replicating the work of Attanasio and Pistaferri (2016) so that the imputed consumption series for the PSID can be extended. (Unfortunately the files provided by those authors do not allow one to merge additional data from the PSID to their existing extractions because of re-coded individual identifiers. We would make our replication publicly available with original data identifiers, of course). There would then be a component of cleaning and organizing the SCF data so that our estimates of human capital values can be imputed there.
Travel	$3,000.00	We propose a small budget for collaborative visits by the co-investigators. This would allow one of us to visit the other for a week in the summer to work on the project.
Submission Fees and Administrative Costs	$1,500.00	This sum would cover journal submission fees and miscellaneous costs, such as printing. It would also contribute to paying the open-access fee for a journal of publication.
Total	**$12,000.00**	

Brant Abbott

Curriculum Vitae updated January 2017

Contact Information

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Research Interests

Macroeconomics, Labor Economics, Human Capital, Inequality

Education

University of British Columbia

Ph.D. in Economics (2013)

University of Victoria

M.A. in Economics (2008)

Simon Fraser University

B.A. in Economics (2006)

Professional Experience

Queen's University, Assistant Professor, 2015-
Yale University, Postdoctoral Fellow, 2013-2015
Langara College (Vancouver), Instructor, 2010-2012

Working Papers

"Education Policy and Intergenerational Transfers in Equilibrium"
(Revise and Resubmit at *Journal of Political Economy*)
(with Giovanni Gallipoli, Costas Meghir and Gianluca Violante)

This paper compares partial and general equilibrium effects of alternative financial aid policies intended to promote college participation. We build an overlapping generations life-cycle, heterogeneous-agent, incomplete-markets model with education, labor supply, and consumption/saving decisions. Altruistic parents make inter vivos transfers to their children. Labor supply during college, government grants and loans, as well as private loans, complement parental transfers as sources of funding for college education. We find that the current financial aid system in the U.S. improves welfare, and removing it would reduce GDP by two percentage points in the long-run. Any further relaxation of government-sponsored loan limits would have no salient effects. The short-run partial equilibrium effects of expanding tuition grants (especially their need-based component) are sizeable. However, long-run general equilibrium effects are 3-4 times smaller. Every additional dollar of government grants crowds out 20-30 cents of parental transfers.

"The Effect of Parental Composition on Investments in Children."
(Submitted)

I estimate a model of parenting decisions and child development that captures the disadvantages faced by single-parent households. Single-parents have fewer resources on average, but it is not obvious whether they face other disadvantages as well. There

is no market for parental time inputs, thus costs will be incurred if neither the time of a single-parent nor any market purchased alternative is a perfect substitute for the absent parent's time. Another possibility is that single-parents lack spousal labor supply as a source of economic insurance. To understand whether these differences affect child development we need to know the elasticities of substitution between inputs in the production of a child's skills. I estimate that the elasticity of substitution between parenting time and market purchased inputs is close to two, and the elasticity of substitution between spouses' time inputs is close to five. The quantitative importance of these estimates can be understood in terms of the wage gap between those who were raised in one- and two-parent households, which is 35.6% in the model and similar in the data. After accounting for differences in parental background and resources a 14.9% wage gap remains. More than half of this remaining gap is due to imperfect substitution of market purchased inputs for parental time, and 5% is due to imperfect substitutability between parents' time inputs. The remainder is due to greater use of precautionary savings for self-insurance purposes among single-parents, which crowds out investments in children.

"Universal versus Targeted Preschools: A Mechanism-Design Perspective"
(Submitted)
(with Dominik Sachs)

We study optimal fee schedules for public preschools in the presence of private alternatives and endogenous parental labor supply. Our model includes rich heterogeneity in parental ability, preferences and home environments, all of which are private information. The optimal sliding fee schedule trades-off public enrollment, crowding-out of private enrollment and the labor supply incentives of parents. We estimate our model of parents' preschool and labor supply choices using data from the Early Childhood Program Participation Survey, the Current Population Survey and the Head Start Impact Study. Our model replicates several targeted behavioral observations based on (quasi-) experimental variation, as well as the distributions of enrollment and parental preschool expenditures. We find that overall preschool enrollment could increase by up to 12 percentage points, without raising any new tax revenue, by using the optimal fee schedule to target current subsidies more efficiently. Optimal targeting implies negative fees for the very poor, lower than current fees for parents just above the poverty line, and less crowding out of private preschool enrollment. We show that uncertainty with respect to the optimal policy derives from uncertainty about the mechanisms through which policy affects parenting decisions.

"Housing Consumption Inequality, Credit Market Frictions, and the U.S. Housing Boom."
(Revise and Resubmit at *Review of Economic Dynamics*)

This paper studies the relationships among housing consumption inequality, credit market frictions and the price of housing in the context of the recent U.S. housing boom. Loosening lending standards, falling interest rates and speculation have all been cited as potential causes of the increase in the average price of housing. I identify the relative importance of each of these causes through a structural model that is estimated using housing consumption micro data. Interesting changes in housing consumption occurred over the housing boom period. For example, between 1999 and 2007 housing consumption increased by 3.6% within the top quintile of income and *decreased* by 5.8% within the bottom quintile of income. The price of housing is an endogenous feature of the model. The demand for housing arises from the decisions of households who are subject to exogenous credit constraints and borrowing costs. The model explains 61.8% of actual house price growth, of which 24.8% is due to the falling real interest rate, 20.1% is due to investor speculation and the remainder is due to a loosening debt-to-income ratio constraint. Additionally, the predictions of the model regarding changes in non-housing consumption are similar

to changes observed in the Consumer Expenditure Survey data, which is not used in estimation.

Work in Progress

"Permanent Income Inequality"
(with Giovanni Gallipoli)

We characterize the joint evolution of net worth and human capital, and develop a procedure to estimate inequality of permanent income. Our measure is related to Friedman's original (1957) notion of "permanent income", but does not assume linear-quadratic utility. Standard theory suggests that our measure is directly proportional to a household's standard of living, which is not true of either wealth or income alone. Our measure includes all financial and real wealth, as well as the certainty equivalent value of a household's potential future earnings, which we refer to as human wealth. We combine publicly available consumption and income data from the PSID with net worth data from the SCF to obtain our estimates of lifetime resources. Our approach imposes no restrictions on the dynamics of the income processes observed in data, and features state-dependent stochastic discount factors, as opposed to the risk-free discount factors commonly used in literature estimating the present value of lifetime earnings. We use our estimates of permanent income to study how inequality in the U.S. evolved between 1989 and 2013, and how the human component of wealth varies over the life cycles of different households. Our findings suggest that accounting for human wealth significantly changes the assessment of aggregate inequality and of its evolution. Specifically, we find that: (i) top 10% and top 1% shares of permanent income are substantially smaller (roughly 1/2) than the corresponding shares of net worth typically reported in the literature; (ii) however, top shares of permanent income have grown much faster over the 1989-2013 period than top shares of net worth, suggesting that effective wealth inequality has increased more than previously thought. For example, the share of financial wealth owned by the top 10% of the wealth distribution grew over that period by 8 percentage points while the share of permanent income attributable to that same group grew by 14 percentage points. These results document a robust link between rising wealth and income inequality.

"Intergenerational Persistence of Heterogeneity in Human Capital and Occupations"

I seek to understand how inequality within levels of education is related to intergenerational mobility. I show that measures of heterogeneity in skills are correlated across generations, and that a large part of this is orthogonal to education. Furthermore, I show that a substantial part of intergenerational persistence of incomes is accounted for by skill heterogeneity. Because costs of education are similar within levels of attainment, I propose that this aspect of intergenerational persistence is due to a combination of (1) the transmission of preferences for occupations and (2) advantages in learning the same skills that one's parents possess. This work will employ structural restrictions based on optimizing behavior by parents to identify the contributions of these sources of persistence in skill heterogeneity.

"Can Cheap Credit Explain Rising Wealth Inequality"
(with Frederic Tremblay)

"Consumption Insurance with Rate Risk"
(with Stephen Snudden)

Publications

Macroeconomics:

Abbott, Brant and Giovanni Gallipoli (2017). Human capital spill-overs and the geography of intergenerational mobility. *Review of Economic Dynamics*. Forthcoming, published online June 21, 2016.

Abbott, Brant and Christina Martinez (2008). An Updated Assessment of the Lucas Supply Curve and Inflation-Output Trade-off, *Economics Letters*, 101(3), p199-201.

Other:

Abbott, Brant, Brad Stennes and G. Cornelis van Kooten (2009). Mountain Pine Beetle, Global Markets and the British Columbia Forest Economy, *Canadian Journal of Forest Research*, 39(7), p1313-1321.

Abbott, Brant and G. Cornelis van Kooten (2011). Can domestication of wildlife lead to conservation? The economics of tiger farming in China, *Ecological Economics*, 70(4), p721-728.

Media Coverage: Oster, Shai, China's Tiger Farms Spark a Standoff. In The Wall Street Journal, February 12, 2010.

Grants

SSHRC Insight Development Grant, $66,022, for "Economic Insurance and Redistribution when Growth is Endogenous". 2016-2018

Russell Sage Foundation Presidential Authority Grant, $35,000, for "Human Capital Spillovers and the Geography of Intergenerational Mobility" (with Giovanni Gallipoli). 2015-2016

SSHRC Post-Doctoral Fellowship and Research Grant, $5,000 (research grant portion), 2013-2015.

Awards

SSHRC Post-Doctoral Fellowship and Research Grant, 2013-2015

Canadian Labour and Skills Research Network Fellowship, 2012-13

Canadian Labour and Skills Research Network Fellowship, 2011-12

David Dodge Scholarship in Economics, 2011-12

SSHRC Joseph-Armand Bombardier CGS Doctoral Scholarship, 2008-present

UBC Four Year Fellowship, 2009-present

UBC Faculty of Arts Graduate Award, 2008

SSHRC CGS Master's Scholarship, 2007

UVic Howard E. Petch Research Scholarship, 2007

UVic President's Research Award, 2007

UVic Van Dusen Fellowship, 2006

UVic The Henry Poulton Fund Award, 2006

SFU Economics, Top Undergraduate Honor's Thesis Award, 2006

Referee Reports

American Economic Review, American Economic Journal: Macroeconomics, Journal of the European Economic Association, International Economic Review, Journal of Public Economics, Review of Economic Dynamics, Canadian Journal of Economics, Canadian Public Policy, The World Economy, Economics Letters, Ecological Economics, Journal of Environmental and Resource Economics, Canadian Journal of Agricultural Economics, Journal of International Trade and Economic Development

Invited Presentations

University of Toronto, Pennsylvania State University, Queen's University, Arizona State University, LAEF Santa Barabara, Dalhousie University

Curriculum Vitae, 3/2017

GIOVANNI GALLIPOLI

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Vancouver School of Economics
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EDUCATION AND EMPLOYMENT

Associate Professor, Vancouver School of Economics, UBC (Canada), since 2014

Assistant Professor, Vancouver School of Economics, UBC (Canada), until 2014

Ph.D. (Economics), University College London (UK), 2007.

OTHER PROFESSIONAL ACTIVITIES

Past and present memberships, visiting positions and affiliations

Visitor, INET Centre, University of Cambridge (UK), October 2015.

MRRC network member, University of Michigan, (USA), 2013 -

HCEO working group member, University of Chicago (USA), 2011 -

Visitor, Federal Reserve Bank of Minneapolis (USA), September 2008.

Senior Fellow and Trustee, Rimini Centre for Economic Analysis (Italy), 2008 -

Research Scholar, Institute for Fiscal Studies, London (UK), 2001 - 2006.

JP Morgan-Chase (equity), London (UK), 2001.

Honors and awards

FEEM Award (co-author), European Economic Association, 2009.

Best paper prize (co-author), XIV Workshop on Dynamic Macroeconomics, Vigo (Spain), 2009.

Young Economist Award, European Economic Association, 2003.

ESRC, Research Scholarship (UK), 2001 - 2004.

Fulbright Scholar (host: University of Illinois, Urbana-Champaign, USA), 1998 - 2000.

Scholar (Allievo Ordinario), Scuola Superiore S.Anna, Pisa (Italy), 1993 - 1997.

GRANTS

Hampton Small Research Grant, "Skills and intergenerational Persistence", 2016

Russell Sage Foundation, Presidential Authority Award, (New York, USA), "Human Capital Spillovers and the Geography of Intergenerational Mobility", 2015

Social Sciences and Humanities Research Council (Insight Grant), "Individual Heterogeneity and Aggregate Outcomes: Measurement and Policy", 2012-2015.

Hampton Fund Research Grant, "Understanding the Determinants of Retirement Decisions of Individuals and Couples", 2012.

Social Sciences and Humanities Research Council (Standard Research Grant), "Aggregation and Policy Analysis in Heterogeneous Agents Economies", 2009-2011.

Mitacs Globalink grant, "Measuring Inter Vivos Transfers", 2009.

Hampton Fund Research Grant, "Relationship between Health Risk, Life-Cycle Economic Outcomes and Income Inequality", 2009.

Arts Undergraduate Research Award (UBC), 2008, 2009, 2010.

Canadian Labour Market and Skills Researcher Network, "Disability Policies for an Aging Workforce: a Household Level Analysis", 2008.

Statistics Canada, "Explaining Differences in High-School Dropout Rates Across Gender and Parental Income", (co-investigator with David Green), 2007.

Humanities and Social Sciences Research Grant (UBC), "Education, Inequality, Taxation", 2007.

Institute for Fiscal Studies, London (UK), "Modeling Binary Decisions in Computational Choice Models", 2006.

RESEARCH

Publications

"Skill Dispersion and Trade Flows," with Matilde Bombardini and Gérman Pupato, *American Economic Review,* 102 (5), 2327-2348, 2012.

"Macroeconomic Effects of Job Reallocations: A Survey," with Gianluigi Pelloni, *Review of Economic Analysis*, 5 (2), 127-176, 2013.

"Unobservable Skill Dispersion and Comparative Advantage," with Matilde Bombardini and Gérman Pupato, *Journal of International Economics,* 92 (2), 317-329, 2014.

"Ability, Parental Valuation of Education and the High-School Drop Out Decision," with Kelly Foley and David Green, *Journal of Human Resources,* 49 (4), 906-944, 2014.

"Education and Crime over the Life Cycle," with Giulio Fella, *Review of Economic Studies,* 81 (4), 1484-1517, 2014.

"Distortions, Efficiency and the Size Distribution of Firms," with Jonathan Goyette, *Journal of Macroeconomics,* 45, 202-221, 2015.

"Skill Complementarity and the Geography of Intergenerational Mobility," with Brant Abbott *Review of Economic Dynamics,* (forthcoming).

"The Costs of Occupational Mobility: An Aggregate Analysis," with Matias Cortes, *Journal of the European Economic Association,* (forthcoming)

Working papers

"Education Policy and Intergenerational Transfers in Equilibrium," (revision requested by the Journal of Political Economy) with Brant Abbott, Costas Meghir and Gianluca Violante, (March 2016).

"Revisiting the Relationship Between Unemployment and Wages," with Joao Galindo da Fonseca and Yaniv Yedid Levi, (October 2016).

"Interactive Procedural Decision Making: Experimental Evidence," with Guidon Fenig and Yoram Halevy, (July 2016).

"Households' Responses to Idiosyncratic Shocks: Disability and Labor Supply," with Laura Turner, (June 2016).

"Thresholds in Voluntary Contribution Mechanisms with Complementarity," with Guidon Fenig and Yoram Halevy, (April 2016).

"Markov-Chain Approximations in Life-Cycle Models," with Giulio Fella and Jutong Pan, (October 2015).

"How Robust is the Skill-Dispersion-Complementarity Hypothesis?," with Matilde Bombardini and Gérman Pupato, (March 2014).

"Social Security, Endogenous Retirement and Intra-Household Cooperation," with Laura Turner, (September 2013).

"Non-Convexities in Dynamic Programming Problems," with Lars Nesheim, (September 2013).

TEACHING

Graduate courses

PhD Research Seminar (UBC PhD, second year and beyond),2015-2017.

Macroeconomics (UBC PhD, first year),2013-2017.

Topics in Macroeconomics (UBC PhD,second year),2007-2010,2012-2015.

Topics in Macroeconomics (UBC Master),2015.

Mathematical Methods (University College London, MSc),2002,2003.

Undergraduate courses

Intermediate Macroeconomic Analysis I (UBC),2009.

Honors Macroeconomic Theory I (UBC),2006,2007.

Honors Intermediate Macroeconomics II (UBC),2010,2011.

Topics in Macroeconomics (UBC),2008.

PhD ADVISING

Advisor or PhD committee member (first placement in parenthesis)

Gaelle Simard-Duplain (expected, 2019) Joao Alfredo Galindo da Fonseca (expected 2017); Jutong Pan (Analysis Group Consulting, Montreal, Canada); Guidon Fenig (2016, Assistant Professor, University of Saskatchewan, Canada); Wendy Kei (2016, Statistics Canada); Brant Abbott (2013, Post Doc, Yale, USA); Matias Cortes (2012, Lecturer, University of Manchester, UK); Jonathan Goyette (2011, Assistant Professor, Université de Sherbrooke, Canada); Gérman Pupato (2011, Assistant Professor, Getulio Vargas Foundation, Brazil); Kelly Foley (2008, Assistant Professor, Copenhagen Business School, Denmark); Laura Turner (2008, Assistant Professor, University of Toronto, Canada).