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<https://doi.org/10.1057/s41599-022-01064-0>

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Financial wealth and early income mobility

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We study the interaction between financial wealth and early income growth. Using banking data on career starters in Belgium, we find higher income growth for individuals with higher financial wealth as early as 3 years into a career. While the roles of social capital and innate abilities appear limited, our results suggest that individuals with higher disposable wealth are more likely to find a job matching their human capital, in turn, boosting their chances of higher performance and consequent income growth. Policies addressing individuals' capacity to accommodate frictions in the market for first jobs could therefore substantially promote economic mobility.

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Introduction

The stagnation of income mobility combined with the increase of wealth inequality in recent times has become a central focus in both public and academic debate (Autor, 2014; Piketty and Saez, 2014; Piketty, 2015). Concerns over the related social costs, ranging from reduced health (Haushofer and Fehr, 2014; Wilkinson, 2010) to lower economic growth (Bell et al., 2018; Narayan et al., 2018; Ostry et al., 2014), have triggered calls for dedicated policy action (Obama, 2013; Piketty and Saez, 2014). However, designing adequate policies requires a careful understanding of the micro-mechanisms at play.

In modern economies, the start of a professional career stands as a major life event and offers unique opportunities to study how and when wealth inequality interacts with income mobility. Would an individual with more financial support achieve greater income growth during the first years of her professional career, or would more financial support instead keep an individual from pursuing income growth at early career stages? How quickly and through which transmission channel does this relationship materialise? We address these questions by studying the impact of financial wealth accumulated before the start of an individual's professional career on the growth of her income over a window of up to seven years after job market entry.

Literature. In general, countries with more inequality are also associated with less earning mobility across generations, as exhibited empirically by the so-called “Great Gatsby Curve” (Corak, 2013; Durlauf and Seshadri, 2018). Over the last decade, the increase of granular data has boosted research on the micro-mechanisms at play in *inter*-generational transfers and income mobility (Chetty et al., 2017; Heckman and Mosso, 2014). Large drivers of *inter*-generational income mobility include parental income (Blanden et al., 2005; Chetty et al., 2014; Mazumder, 2005; Mitnik et al., 2015), parental health (Aizer and Currie, 2014), geographical location in childhood (Chetty and Hendren, 2018; Chetty et al., 2014), access to and quality of education (Chetty et al., 2017, 2014, 2011), and wealth transfers (Benton and Keister, 2017; Boserup et al., 2014, 2018; Spilerman, 2000; Wolff, 2015).

At the *intra*-generational level, upward income mobility is usually promoted by income growth and career opportunities (Burkhauser et al., 2011). In essence, an individual's level of income is driven by a combination of human capital, financial wealth, and learning capabilities (Huggett et al., 2011). The contribution of each of these dimensions results from both innate abilities and socioeconomic variables (e.g., family, neighbourhood, school, etc.) (Heckman and Mosso, 2014). In particular, initial conditions at the moment of entry in the labour market can substantially impact lifetime earnings, wealth, and utility (Huggett et al., 2011). Such conditions include budget constraints (e.g., rate of depletion of financial wealth) and optimal allocation of human capital in the form of search and matching dynamics in the job market (Rendon, 2006). A concrete example is studied in Baert et al. (2013), who show that a bad initial match between human capital and accepted job offer delays transition into a suitable job and has a significant long-term cost. However, little is known about the short-run materialisation of the transmission channel between wealth inequality and income mobility. In light of the literature, this paper seeks to fill the gap by studying the effects of three transmission channels between financial wealth inequality and early career income growth: social capital, innate ability and job search conditions. By identifying the relevant mechanisms at play, this paper also introduces opportunities for policies to address precise market frictions responsible for persistent inequality in income mobility (e.g., labour market conditions for first time job seekers).

Empirical strategy and findings. We combine data from all financial transactions, financial wealth and demographic characteristics of several million Belgian clients of a large European bank between 2006 and 2016. As a result, we identify career starters as individuals exhibiting a transition to a wage income during the time window of the dataset. We then create an annual account of the financial progress of each career starter from a year before their start to 7 years into their careers. In our setting, social capital is assessed via the demographic and geographic characteristics of an individual; innate abilities are reflected by an individual's own capacity to generate financial wealth before the start of her career; and job search conditions are captured by the economic pressures to secure a job. First, we find consistently and significantly higher early career income growth for individuals with higher financial wealth at the start of their careers. For example, the €5500 difference in initial financial wealth between the 25th and the 75th percentiles produces a 4% difference in income growth 3 years into a career. This effect holds after controlling for demographic and geographical variables such as age, gender, a measure for level of education, and postal and neighbourhood codes. Next, we address innate abilities by separating financial wealth into two sources: self-generated financial wealth (e.g., accumulated through student jobs and possibly reflective of social and innate abilities) and transferred financial wealth (e.g., parental wealth transfers). We construct instruments to isolate transferred financial wealth using the transactions data. By focusing on this source of financial wealth, we exclude sources of wealth related to innate abilities to the best of our possibilities. We find that the economic significance of the impact of transferred start financial wealth on early career income growth is comparable to the effect of total start financial wealth. Henceforth, the contribution of financial wealth originating from external transfers to early career income growth applies beyond the effects of social and innate abilities.

Finally, we address the interaction between job search conditions and human capital allocation in the market for first jobs. While timing and initial conditions are critical in job markets (Huggett et al., 2011; Niederle and Roth, 2003), first-time job-seekers are particularly constrained by the length of the period they can sustain without income. We hypothesise that an individual entering the job market with more financial wealth possesses a higher capacity to sustain an extended absence of income during her search for a first job, irrespective of the origin of her financial wealth. In turn, such an individual would be more likely to find a job matching her human capital, thus increasing her chances of stronger early career income growth through higher productivity (Becker, 1994). In order to test this job search condition hypothesis, we construct a measure of “thriftiness,” that is, an individual's share of financial wealth that is not consumed before the start of a career. Intuitively, thriftiness generates higher savings and should therefore compensate for lower financial wealth transfers. We find that higher thriftiness is indeed consistently associated with higher early career income growth. While thrift and financial wealth are found to have comparable effects on early-career income growth, they exhibit substituting effects on each other: benefits from financial wealth transfers before the start of a career are mitigated by higher individual thrift and vice versa. The persistence of this substitution effect beyond social capital and innate ability also indicates that self-selection processes (e.g., more wealthy individuals choosing degrees and occupation with higher income growth perspectives) have limited capacity to explain away our findings despite limitations in our data set regarding degrees and occupations.

In the absence of any compensating behaviour such as thriftiness, less financially wealthy individuals face larger budget

constraints when entering the job market for the first time. In turn, they exhibit lower income growth early in their career. Stronger pressure when entering the job market for the first time may push job-seekers to accept job offers more promptly at the cost of a poorer match, thus creating a lower path of expected income growth. In particular, this result offers evidence of adverse selection in the inequality distribution for early contracting (Niederle and Roth, 2003).

Overall, our findings suggest that differences in financial wealth give rise to variations in financial pressure during the search for first jobs and may contribute to the perpetuation of income inequality. This effect seems to be at least on par with other drivers of income inequality known from the literature (Heckman and Mosso, 2014; Huggett et al., 2011), such as innate ability and social capital. Furthermore, public efforts to address these job search conditions should bear less challenge and controversy than measures aimed at social capital and innate abilities, the two other channels of transmission studied in this paper.

Limitations. While the data used in this paper covers a relatively small country with 11 million inhabitants, Belgium has consistently ranked as a top-tier country in terms of economic equality and mobility (Lawson and Martin, 2017; Narayan et al., 2018). Figure 1a shows that Belgium's Gini index of income inequality is listed as one of the lowest among the OECD countries. Additionally, price and quality of higher education (both on an institutional level as an educational level) is largely homogeneous throughout Belgium and Belgians do not rely on debt to finance their graduate studies, in contrast with other countries like the US and the UK (Vandone, 2009). Most likely, student debt adds pressure on the budget constraints of a first-time job-seeker. Previous findings (Elliott and Rauscher, 2018) support this claim by showing that individuals with student debt at the start of their career take longer to reach median income levels. Since we find strong effects of initial financial wealth in income mobility in a country like Belgium, the magnitude of our proposed job search channel can be expected to be even more pronounced in other countries with a higher degree of inequality. This is supported by the fact that a wide variety of search frictions in job markets have been found to hold over several countries (Pissarides, 2011), more specifically those frictions directly originating from wealth (e.g. see Bloemen and Stancaelli (2001) for the Netherlands, and Sieg and Wang (2018) for the US). Our results therefore provide arguably only a lower bound for the effects of wealth transfers and saving behaviour on early career income growth. For illustrative purposes, Fig. 1b and c also show median income and

financial wealth per municipality, respectively, for all work-eligible individuals in the dataset.

Data

We use anonymised data for the Belgian customers of a large European bank between 2006 and 2016. The full dataset contains more than 3 million clients (only retail individuals) and covers detailed information about personal characteristics, financial portfolio, and every monetary transaction (incoming and outgoing) from their accounts. All monetary variables are deflated to 2006 money values.

Each transaction contains a flag indicating whether it refers to a point of sale in Belgium, a cash withdrawal, a payment via credit card, etc. From those codes (see S.I. for an overview), we construct relevant variables in order to adopt flexible definitions of an individual's imputed income and consumption. Income is defined here as all incoming electronic transfers below a €5000 single transaction value. Consumption is defined as the sum of point of sale payments, cash withdrawals, cheques, credit card payments, and electronic transfers below €10,000 single transaction value. Results for differing definitions are reported in the S.I. and show no qualitative difference.

In addition to transactional information, we include data on personal characteristics covering date of birth, civil state, gender, postal code, neighbourhood code and nationality. The neighbourhood code is a statistical sector variable constructed by the Belgian statistical office (Statbel) and constitutes the most granular geographical subdivision for government data collection (Jamagne, 2018).

Finally, using complementary data on every client's financial assets held at the bank, we construct a measure of financial wealth aggregating saving deposits, checking deposits, trading account deposits, pension savings, and financial insurance. This measure of financial wealth only ever underestimates the real wealth of individuals. They could hold wealth at other banks or hold unobserved non-financial wealth which may also loosen budget constraints. Higher transferred wealth may be related to (unobserved) higher real estate wealth, implying that wealthy career starters may also enjoy non-wage economic benefits through avoiding rent payments and/or mortgage instalments, which would be reinforcing the studied effect of wealth on early career income growth. An overview of the variable definitions used in the main text is reported in Table S1 in the S.I.

Our analysis is exclusively concerned with active clients starting their career between 2006 and 2016 and remaining active through the full time-window of the study data. In the following

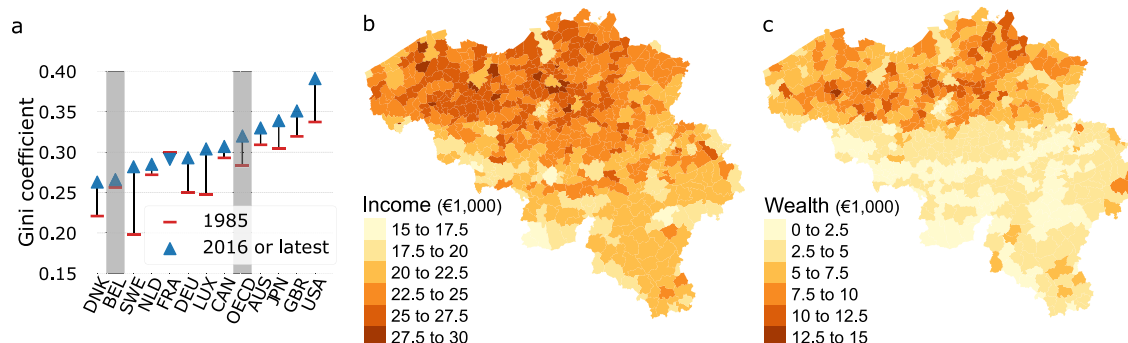


Fig. 1 Measures for economic equality in Belgium. Panel a: The Gini coefficient of disposable income (post taxes and transfers) for 12 OECD countries for the mid-1980s and for 2016 or the latest available year. Belgian and the OECD average incomes are highlighted. Note that a Gini of 0(1) stands for complete (in)equality. Panel b: The observed median income per municipality in the data for all clients (aged 18–60) in 2006. Panel c: The observed median financial wealth per municipality in the data for all clients (aged 18–60) in 2006.

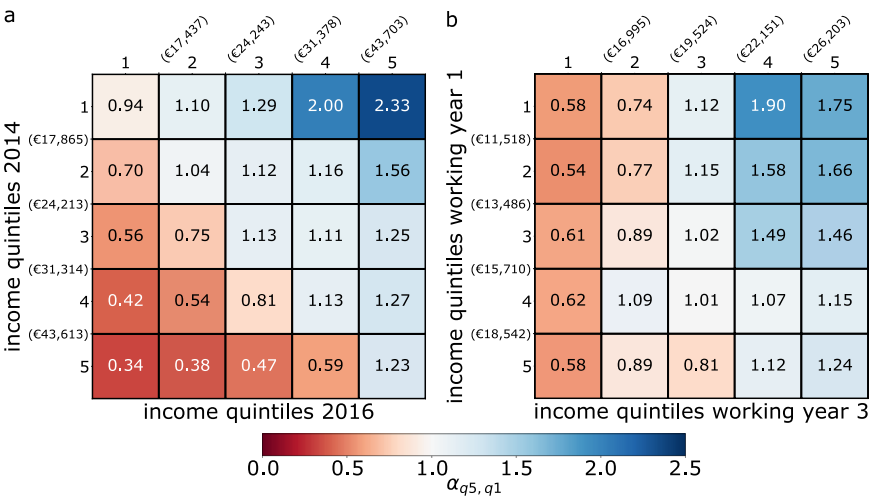


Fig. 2 Relative income mobility over a time span of three years for the Belgian customers of large European bank. We compare individuals starting in the highest quintile of financial wealth relative to those starting in the lowest financial wealth quintile (read from row to column). Panel **a**: results based on the sample of work-eligible customers. Panel **b**: results based on the sample of career starters.

we provide a brief overview of the identification procedure (see S.I. for a detailed description).

Conditioning on the presence of regular client activity (i.e., no inactivity lasting longer than 3 months), we are left with 852,331 individuals who are eligible to work for the full sample period. The next step is to identify career starters and homogenise their starting point. Our identification consists of a series of thresholds based on consumption surveys used for living standards statistics in Belgium (Bosch, 2009). Throughout the procedure, we adopt a conservative approach: cleaning decisions are driven by the need to avoid false positives at the potential cost of losing false negatives.

The following conditions distinguish between ‘active and not working’ and ‘active and working’ for an individual in year y . An individual i is ‘active and not working’ in year y if their $\text{Consumption}_{i,y} > \text{€}300$ and their $\text{Income}_{i,y} < \text{€}6,000$. If their $\text{Consumption}_{i,y} > \text{€}2400$ $\text{Income}_{i,y} \geq \text{€}10,000$, they are categorised as ‘active and working’.

The upper income bound for ‘non-working years’ (€6000) is meant to account for the student worker earning limits in Belgium. The lower income bound for ‘working years’ (€10,000) is based on minimum wage statistics in Belgium. Further analyses of our main results with varying values of income bounds are provided in the S.I. and show no qualitative differences. Individuals with a yearly income between €6000 and €10,000 are excluded from the sample. This condition excludes individuals who experienced discontinuous job experiences in their first year or started working late in the year. Using public statistics on first job-seeking individuals in Belgium, we assess that our sampling strategy covers the majority of the population (see S.I.). To control for outliers, we also trim those in the top 1% of starting wealth and the top 1% of income growth (other choices presented in S.I.).

Our framework identifies a career starter as a person for which there is exactly one persistent switch from ‘active and not working’ to ‘active and working’. Their starting year is then the first calendar year in which they are categorised as ‘active and not working’. To further reduce possible false positives, we focus on starting years between 2009 and 2014. Doing so ensures that at least three consecutive working and non-working years are observable. Since individuals have different starting years, we synchronise them on a working-years timeline. Finally, we restrict the starting age to a window between 18 and 30 years old. This window covers all the standard starting ages for individuals completing basic or higher education in Belgium.

Our final dataset consists of 17,576 career starters with observed monthly income coverage between 3 and 7 years into their careers. While the reduction in size from the original dataset is significant, the final population sample contains a unique level of granularity and reliability to study the effects of financial wealth on income mobility in the first years of a career.

In order to capture those exposed to a common environment, we filter out isolated individuals by dropping locations for which we have too few data-points: the threshold is set to more than or equal to 10 and 3 career starters in the same year for postal codes and neighbourhoods to be included, respectively. Despite its richness, our data sets face multiple limitations. In particular, the fact that we do not observe an individual’s degree and precise occupation constitute an important limit to the purpose of our research. However, exploiting specific features of the Belgian education system and labour market conditions, we can extract valuable information to address these gaps. Appendix A presents institutional background information and solutions. We also elaborate on this below.

Results

We first assess whether the data show evidence of differential income mobility for individuals with higher financial wealth.

To this end, let $T_{\Delta t}(i \rightarrow j|q)$ be the share of the population starting in the q th quintile of the financial wealth distribution at t_0 , moving from the i th income quintile at t_1 , to the j th income quintile over Δt years. Further let $\alpha_{q5,q1}$ be the ratio in this conditional transition probability between the highest (5th) and lowest (1st) financial wealth quintile, such that $\alpha_{q5,q1} = T_{\Delta t}(i \rightarrow j|q5)/T_{\Delta t}(i \rightarrow j|q1)$. Intuitively, this ratio indicates the comparative performance in income mobility between individuals with the highest and the lowest financial wealth. Note that financial wealth here is computed with a one-year lag. We motivate this choice below. Figure 2 reports values of $\alpha_{q5,q1}$ for all combinations of income quintile mobility for $\Delta t = 3$. Figure 2a includes all work eligible individuals, whereas Fig. 2b is restricted to the population of career starters. The results indicate that over a relatively small time-span of 3 years, upward income mobility is dominated by individuals from the top financial wealth quintile (i.e., almost all right triangle cells are larger than one). The maximal upward income transition, $T_{\Delta t}(1 \rightarrow 5)$, is achieved by up to 2.3 times (1.75 times)

more individuals from the top financial wealth quintile than individuals from the bottom financial wealth quintile for all work-eligible individuals (career starter-individuals). While the results for the career starters (Fig. 2b) are less pronounced, they provide evidence at first glance of a positive relationship between financial wealth and early career income growth.

We report detailed summary statistics on the sample of career starters in the S.I. Most career starters are Belgian, unwed, and around 22–23 years old at the end of their first working calendar year. Gender is almost equally divided between males and females.

In the following, we unpack the relationship between financial wealth owned in the last non-working year (henceforth *start wealth*) and early career income growth. The reason we lag financial wealth by one year is driven by a specific Belgian rule, according to which first-time job-seekers (e.g., new graduates) have a legal waiting period of one year before being eligible for unemployment benefits. As such, a one-year lag ensures that the level of financial wealth we use is captured at the beginning of the waiting period or earlier. Our *start wealth* measure is therefore not affected by potential desaving or financial depletion during the waiting period.

Our first analysis quantifies the association of growth in income and *start wealth*. The baseline model is defined as follows:

$$\begin{aligned} \log(\text{income}_{i,t_0+x} + 1) = & \text{constant} + \alpha_1 \log(\text{income}_{i,t_1} + 1) + \alpha_2 \log(\text{start wealth}_i + 1) \\ & + \alpha_3 \text{married}_{i,t_0+x} + \alpha_4 \text{female}_i + \alpha_5 \text{start age}_i + \alpha_6 \text{start year}_i \\ & + \alpha_7 \text{location}_{i,t_0} + \alpha_8 \text{Belgian}_{i,t_0+x} + \alpha_9 \text{married}_{i,t_0+x} : \text{female} \\ & + \alpha_{10} \log(\text{income}_{i,t_1} + 1) : \text{start age}_i + \epsilon_i. \end{aligned} \quad (1)$$

where x is the year horizon, t_0 the last non-working year and t_1 is the first working year. Note that *start age* and *start year* are not lagged and thus taken at time t_1 . The *location* variable controls for environmental factors, including location-based social capital and available amenities. It covers three different levels of geographical granularity: region, postal code, and neighbourhood code. This ensures that the individuals were exposed to the same environmental influences. We note that while education and job occupation is not explicitly known, we control for *start age* and its interaction with starting income (income_{i,t_1}). This should largely capture the heterogeneity in education and the linked occupations within the sample. In fact, the Belgian education system exhibits features such as pay-per-credit (ECTS) fees, good and cheap public education system, limited entry selection in higher education and regulated salary scales which allow us to argue that (1) wealth-related concerns about unequal access to the Belgian educational system are limited and that (2) age and starting wage are relevant proxies to sort out between types of educational levels. Appendix A presents further institutional background on the relevant features and support for our identification approach. The model parameters are estimated using OLS methods with robust standard errors. The main results from Eq. 1, namely the effect of *start wealth* over the different horizons and granularity of location controls, are shown in Table 1. The table shows a positive effect of starting wealth on income growth as early as three years into a career. The full regression table, which reports all the control variable estimates and standard errors, is presented in S.I.

The results confirm that financial wealth in the last non-working year has a significantly positive effect on income growth during the first working years. More importantly, the granularity of the location controls has a limited effect on the main result. This indicates that social capital variables, as proxied by fixed effects for increasingly granular bins of living location, hold a restrained role in the transmission channel between financial wealth and early career income growth. In the case of Belgium,

most social interactions take place at the neighbouring municipalities level (Blondel et al., 2010). Using location as a measure of social capital therefore allows to include both strong and weak social ties (Granovetter, 1973; Henning and Lieberg, 1996).

All levels of location precision except those for the 7-year horizon with neighbourhood controls are consistent. The drop observed for the seven-year horizon data can be attributed to the fact that sample size per neighbourhood becomes too small. For this reason, we do not include neighbourhood controls in the remainder of the paper.

Absent social capital as the main driver of the positive impact of financial wealth on income mobility, we study the effect of innate ability as our second hypothesis. In fact, a high level of *start wealth* might originate from hard work and other innate abilities which also translate into faster-rising income in the early stages of a career, in this way creating spurious correlation between start wealth and income growth. In order to address this concern of endogeneity, we construct instrumental variables using categorised transactional data in the non-working years. Using said variables allows to distinguish between transferred financial wealth and self-originated financial wealth. The former is an exogenous transfer from another account (e.g., from parents) whereas the latter captures the financial wealth earned by the individual herself (e.g., from student jobs) and possibly reflecting innate abilities.

The first dummy instrument indicates whether an individual is the recipient of a large amount on her trading account (*financial boost*). The second and third instruments indicate whether an individual is the recipient of a transfer on a savings and/or current account (*cash boost*). These instruments mainly differ in the magnitude of the transfer. Here, we set thresholds for the two *cash boosts* at, respectively, €5000–10,000, and above €10,000; for the *financial boost*, the limit is set to €5000 or more. In the S.I., we report several other settings and show that they produce qualitatively similar results. Finally, we also construct a merged dummy variable (*recipient*) which is equal to 1 if an individual has been subject to at least one of the three above-mentioned transfers in their non-working years.

We classify the population of career starters according to the *recipient* dummy variable and report the complete summary statistics of each resulting sample (recipients and non-recipients) in the S.I. Personal characteristics of the two samples do not vary by more than 3% in the median. Income after 5 years however, is larger by almost 6% for the *recipient* sample compared to the non-recipient sample.

Table 2 reports the estimates of the effect of transferred wealth on income growth through two different econometric methods: instrumental variable regression, where a proxy is constructed to more precisely capture the effect of wealth transfers, and dumification, where the presence of wealth transfers is converted into a binary variable. In the IV-columns, we report the estimates of straightforward two-stage least squares models where the independent variable of interest *start wealth* is instrumented first by the *financial boost* dummy and then by the *cash boost* dummies. Instrumenting *start wealth* with these variables restricts the variation in *start wealth* to the variation that originates from wealth transfers and thus excludes other sources of variation, e.g. those related to innate abilities. In the *Dummy*-columns, we report the results where the start wealth variable in Eq. 1 is not instrumented with, but replaced by the *recipient* dummy variable. This dummy variable captures the effect of having received a wealth transfer prior to the start of job search, irrespective of whether the transfer was saved until the actual start of the job search.

Results for these regressions are shown at different horizons and with different location controls in Table 2. The table shows a

Table 1 The effect of starting wealth on income growth three years (columns 1–3), five years (columns 4–6), and seven years (columns 7–9) into a career using ordinary least squares (OLS) regressions.

	Dependent variable								
	log(income after 3y + 1)			log(income after 5y + 1)			log(income after 7y + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
log(start wealth + 1)	0.012*** (0.001)	0.013*** (0.002)	0.016*** (0.004)	0.013*** (0.001)	0.014*** (0.003)	0.018*** (0.005)	0.011*** (0.002)	0.015*** (0.003)	−0.004 (0.009)
Constant	7.575*** (0.395)	7.526*** (0.836)	9.269*** (1.984)	8.896*** (0.515)	9.085*** (0.932)	10.884*** (2.351)	8.794*** (0.651)	6.955*** (1.436)	9.242*** (2.618)
Personal controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region	✓			✓			✓		
Postal code		✓			✓			✓	
Neighbourhood code			✓			✓			✓
F Statistic	76.73***	6***	5.37***	57.34***	5.13***	4.26***	36.55***	4.32***	7.91***
Observations	17,576	4856	1416	12,573	3761	1090	6682	2121	609
Adjusted R ²	0.159	0.158	0.195	0.150	0.148	0.102	0.161	0.146	0.086

The columns within each horizon have different levels of location controls. The estimates for the used control variables (Married, Female, Start age, Start year, Region, and Belgian) are given in Appendix F. ✓ Indicates that the controls are included.
p* < 0.1; *p* < 0.05; ****p* < 0.01 and robust standard errors in parentheses.

consistent positive effect of transferred financial wealth on income growth through both methods of estimation. The full regression tables are presented in the S.I.

The persistent positive effect observed after restricting the variation in *start wealth* to wealth transfers suggests a limited role of innate abilities as the underlying mechanism for interpreting the found relationship between *start wealth* and income mobility. This result holds over all time horizons considered. The typical instrumental variable regression test statistics find no complications with the validity of these results. Moreover, the Wu–Hausman test, which tests for endogeneity and thus for the consistency of ordinary least squares, does not find sufficient evidence of endogeneity beyond the 3-year horizon. Interestingly, the results in the *Dummy*-columns also suggest that recipients experience higher income growth irrespective of whether they save or spend their transferred financial wealth. One possible explanation is that (access to) wealth signals access to privileged information about income mobility prospects of certain degrees or occupations (beyond that captured in social capital). By this reasoning, it is possible that wealthy people self-select into programs or occupations with higher income mobility prospects, explaining the observed effect. Due to data limitations on educational and occupational backgrounds, we can not directly study this effect. However, by further discerning between the origins of wealth (transferred or saved), we would expect the observed wealth effect to then only (or at least largely) persist for transferred wealth and not for saved wealth. We return to this point below.

Tables 1 and 2 highlight that social capital and innate abilities do not fully cover the mechanisms driving the positive relationship between financial wealth and early career income growth. We now turn to a third candidate mechanism: the effect of *start wealth* on improving the job search conditions of first-time job-seekers. Recall that Table 2 has shown that financial wealth transfers positively correlate with early-career income mobility irrespective of the consumption behaviour. Such finding supports the claim that recipients of financial wealth transfers may be less economically pressured to rush into securing their first job. As a result, these individuals might find opportunities which would better match their human capital and aspirations, therefore increasing their chances of higher productivity and higher income growth (Becker, 1994).

In order to test the validity of this job search condition hypothesis further, we explicitly estimate the effects of saving behaviour. We proceed by constructing a *thrift* variable for the population and adding it to the model. An individual's level of *thrift* is computed as the share of the total incoming and available financial wealth that is consumed in a given time frame. Let this measure be $\text{Thrift} \in [0, 1]$, with 0 representing no saving and 1 complete saving of income.

In principle, saving more extends the capacity of an individual to sustain themselves during periods without an income. Relaxing the budget constraints should provide a first-time job-seeker with less economic pressure. This alternative scenario should then also increase job matching quality in turn generating higher expected performance and subsequent income growth for individuals exhibiting higher thrift (Baert et al., 2013; Becker, 1994; Rendon, 2006). By the same token, *thrift* should only have an effect on individuals whose external sources of financial wealth are limited. In the following, we test this hypothesis.

Formally, we have the following definition:

$$\text{thrift}_{i,y} = \frac{\text{financial wealth}_{t_0}}{\text{financial wealth}_{t_0-y} + \sum_{x=1}^y (\text{incoming financial wealth}_{t_0-x})} \quad (2)$$

where

$$\text{incoming financial wealth}_t = \text{financial wealth}_{t+1} - \text{financial wealth}_t \quad (3)$$

and *y* is either equal to 2 or 3 years as we only consider the years before the start of the waiting period. Limiting the analysis to this period avoids reverse causality with income. It also treats *thrift* as a personal characteristic resulting from personal and family endowment, in line with the literature (Guner, 2015; Heckman and Mosso, 2014). Complete summary statistics on *thrift* are reported in the S.I. In the median, recipients save almost half of their incoming financial wealth, while only the top quartile of non-recipients match the same level of *thrift*. The combination of *thrift* and *recipient* can be used to re-assess the *start wealth* parameter in Table 1 according to two dimensions: one capturing the origin of *start wealth* (i.e., how much of the initial wealth results from transfers) and the other one capturing the saving behaviour (i.e., how much of the wealth is saved or spent).

Table 2 The effect of transferred financial wealth on income growth 3 years (columns 1–4), 5 years (columns 5–8), and 7 years (columns 9–12) into a career using OLS regressions.

	log(income after 3y + 1)			log(income after 5y + 1)			log(income after 7y + 1)		
	IV financial (1)	IV cash (2)	Dummy (3)	IV financial (5)	IV cash (6)	Dummy (7)	IV financial (9)	IV cash (10)	Dummy (12)
log(start wealth + 1) _{iv}	0.020*** (0.003)	0.024*** (0.006)	0.037***	0.017*** (0.004)	0.017*** (0.008)	0.032***	0.011* (0.006)	0.026*** (0.011)	0.025**
Constant	7.567*** (0.394)	7.477*** (0.843)	7.617*** (0.396)	8.902*** (0.514)	9.105*** (0.931)	8.909*** (0.520)	8.793*** (0.651)	7.026*** (1.407)	(0.011) 8.772*** (0.663)
Personal controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region	✓	✓	✓	✓	✓	✓	✓	✓	✓
Postal code	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	17,576	4856	17,576	12,573	3761	12,573	6682	2121	6682
Adjusted R ²	0.156	0.153	0.155	0.150	0.147	0.144	0.161	0.142	0.158
Weak instruments	0	0	0.155	0	0	0.144	0	0	0
Wu-Hausman	0	0.06	0.155	0.3	0.65	0.144	0.94	0.31	0
Sargan	0.37	0.97	0.155	0.36	0.49	0.144	0.13	0.1	0
F Statistic			73.56***			54.43***			36***
			5.66***			4.81***			4.27***

The effect is estimated in two ways: first, in the IV columns by instrumenting start wealth with three dummies indicating the presence of different kinds of financial wealth transfers (+€5k financial boost, €5–10k cash boost, and +€10k cash boost); second, in the Dummy columns by combining the aforementioned dummies into one Recipient dummy indicating at least one kind of received (+€5k) financial wealth transfer and replacing the start wealth parameter by it. The columns within each estimation model have different levels of location controls. The estimates for the used control variables (Married, Female, Start age, Start year, Region, and Belgium) are given in Appendix F. ✓ indicates that the controls are included.

*p < 0.1; **p < 0.05; ***p < 0.01 and robust standard errors in parentheses.

Table 3 shows the estimates for the model where *start wealth* is replaced by the 2 or 3-year *thrift* and the *recipient* dummy variable. It includes several horizons with different *location* controls. The full regression tables are presented in the S.I. The results confirm a significant positive effect of being the recipient of transferred financial wealth on early career income growth. Furthermore, the results show a comparable positive effect of *thrift* on early career income growth. This suggests that financial wealth frugality before the start of a career is associated with greater income growth. Importantly, the negative interaction term between *thrift* and *recipient* shows that the marginal effect of *thrift* diminishes when an individual is simultaneously recipient of transferred financial wealth. The benefits of thriftiness and financial wealth transfer thus tend to substitute for one another: a lack of transferred financial wealth can be compensated by more thriftiness but the effects do not add up. Since thrift may be correlated with some otherwise unobserved productivity-enhancing personal characteristics, that are bound to increase the productivity of *start wealth*, the found substitutability suggests these personal characteristics are not driving our results. Indeed, in this case we would expect wealth and thrift to be complements, not substitutes.

This substitutability also confirms the importance of budget constraints: being the recipient of large financial wealth transfers may indicate access to financial resources (e.g., parents) to support any absence of income thus alleviating pressure on the job market independently from the way such transfers are consumed. Lastly, it indicates that the observed effect cannot be fully explained by wealth transfers being a proxy for access to privileged information on income mobility prospects of certain degrees and/or occupations, since saving would not alleviate such a constraint. Overall, the results confirm the positive relationship between financial wealth, job search conditions, and early career income mobility.

Conclusion

The major contribution of this paper is to show a substantial effect of financial wealth at the time of first-time job search on income mobility as early as 3 years into a career. We find that the impact of social capital and innate abilities does not allow one to fully explain this connection. Furthermore, we find evidence that a channel of transmission exists when wealth inequality translates into differential economic conditions among first-time job-seekers.

Financial wealth, by extending an individual's capacity to remain without income, relaxes search frictions in the job market. More precisely, it alleviates the optimal stopping problem in labour markets resulting from the trade-off between job opportunities and the uncertainty in the job search sequence (Rendon, 2006). Less economic pressure increases the expected quality of the achieved match with a job seeker's human capital. A better match, in turn, increases the likelihood of higher productivity and income growth in the early stages of a career (Baert et al., 2013; Becker, 1994). In contrast, less financially wealthy individuals face higher economic pressure and tend to accept job offers at the cost of a low match, thus reducing their expected income mobility. This interplay provides a channel of transmission between intergenerational financial wealth transfers and early-career income mobility. The interpretation of our finding that individuals at the lower end of the wealth distribution will more often settle for job matches with less opportunities for income mobility suggests the presence of adverse selection in the wealth inequality distribution for early contracting and market unravelling (Li and Rosen, 1998; Niederle and Roth, 2003).

Table 3 The effect of transferred financial wealth and thrift on income growth 3 years (columns 1-4), 5 years (columns 5-8), and 7 years (columns 9 and 10) into a career using OLS regressions.										
Dependent variable	log(income after 3y + 1)			log(income after 5y + 1)			log(income after 7y + 1)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(+5k) Recipient Dummy	0.045*** (0.010)	0.044** (0.019)	0.041*** (0.010)	0.041** (0.018)	0.051*** (0.012)	0.045*** (0.020)	0.051*** (0.014)	0.028 (0.024)	0.048** (0.019)	0.097*** (0.037)
2y thrift	0.051*** (0.008)	0.073** (0.016)			0.066** (0.011)	0.082** (0.019)			0.063** (0.016)	0.100** (0.032)
3y thrift			0.051*** (0.010)	0.079** (0.020)			0.067*** (0.014)	0.084*** (0.028)		
(+5k) Recipient Dummy :2y thrift	-0.042** (0.018)	-0.054 (0.033)			-0.074*** (0.019)	-0.096*** (0.028)			-0.074** (0.034)	-0.153** (0.069)
(+5k) Recipient Dummy :3y thrift			-0.038* (0.018)	-0.047* (0.028)						
Constant	7.703*** (0.468)	7.081*** (0.997)	7.737*** (0.556)	6.323*** (1.189)	8.389*** (0.600)	8.253*** (1.154)	8.139*** (0.750)	7.778*** (1.182)	9.107*** (1.079)	6.485*** (2.205)
Personal controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Postal code	68.14*** (17.109)	5.8*** (47.35)	53.38*** (13.382)	4.73*** (35.47)	50.28*** (12.103)	4.74*** (36.40)	35.45*** (8.383)	3.83*** (24.58)	32.55*** (62.16)	8.3*** (2001)
F Statistic	17.109	47.35	13.382	35.47	12.103	36.40	8.383	24.58	62.16	2001
Observations	0.155	0.155	0.153	0.144	0.145	0.141	0.140	0.132	0.162	0.147
Adjusted R ²										

Thrift is measured over the last two (2y thrift) or over the last three non-working years (3y thrift). The columns within each estimation model have different levels of location controls. The estimates for the used control variables (Married, Female, Start age, Start year, Region, and Belgium) are given in Appendix F. ✓ indicates that the controls are included.
*p < 0.1; **p < 0.05; ***p < 0.01 and robust standard errors in parentheses.

Our analysis was conducted with data that extends over a 7-year time frame and that included limited information about parental affiliation, educational background and job occupation for each career starter. The lack of such demographic details represents a major limitation of this study. Frictions between supply and demand in the labour market are not homogeneous along education levels (Zimmer et al., 2012), causing heterogeneous search frictions. Accounting for the specificities of the Belgian educational system and labour market, explained in detail in Appendix A, we were able to (partially) overcome these limitations through proxies (e.g. starting age and starting income). As a result, attempts to measure the effect of specific educational background or type of occupations would therefore falls outside the scope of this work. These more granular dimensions are left for future work and will be key to pinpoint which sectors bear the largest search frictions.

Our conclusions regarding the impact of financial wealth on income mobility are applicable to a time horizon of up to 7 years in the early careers. Findings in the literature however show that early-career conditions have a long-lasting effect on income (Baert et al., 2013; Oreopoulos et al., 2012). Policies addressing job search conditions at the start of a career may therefore be effective in promoting income mobility over longer time horizons than the seven years studied in this paper. It follows that policies addressing these initial wealth inequalities and job search frictions may be more effective in promoting income mobility than policies targeting more traditional factors such as social capital and innate abilities, that are typically unresponsive to policy. In his recent book “capital and ideology” Piketty (2020) proposes citizens should receive a lump-sum cash payment of € 120,000 from the government when they turn 25 Our empirical design analyses the empirical implications of this type of early-life wealth transfer, and our evidence suggests that much smaller pre-career wealth transfers would suffice to significantly boost subsequent income mobility. Future work featuring income mobility over a longer time horizon, with explicit intergenerational mapping and a full knowledge of the career path over decades will further deepen the scope of our findings and assess potential heterogeneous effects in education background and job occupation cross sections. This future work has the potential to further tailor policies designed to support relevant segments of the population of first-time job seekers, but requires highly granular data over long future time horizons that are currently unavailable.

We use data that uniquely stem from one bank in a particular country (Belgium). According to Belgian law, an individual with no income record must wait for one year before being entitled to unemployment benefits. This one-year lag provides a suitable test-bed for analysing the effect of initial differences in financial wealth on early-career income growth to job search frictions. The fact that we find a connection between financial wealth and income growth is all the more surprising given the following observations. First, Belgium ranks high in both wealth/income equality and income mobility worldwide (see Fig. 1). Second, in contrast with economies with a comparable level of gross domestic product per capita, Belgium has a very low rate of consumer debt (Vandone, 2009). In particular, the Belgian educational system is mainly public, low barrier of entry, affordable along both the institutional and the educational level, and does not have not have a student debt system (see Appendix A). Third, being limited to data from one bank can only lead to an underestimation of wealth because clients could keep saving accounts at other banks or might own unobserved non-financial wealth that could loosen budget constraints. Additionally, transferred wealth may be related to (unobserved) non-wage economic benefits (e.g. through avoiding rent payments and/or mortgage instalments), which would be reinforcing the studied effect of wealth on early

career income growth. Countries such as the United States featuring higher wealth inequality and larger sources of budget pressure, including large tuition fees and student debts, will likely exhibit more-pronounced effects.

Data availability

The data fall under an NDA agreement between the undisclosed European Bank and Ghent University. Extensive aggregate statistics are provided in the supplementary materials, more details can be provided upon request and at the discretion of the data provider.

Received: 22 March 2021; Accepted: 17 January 2022;

Published online: 11 February 2022

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Acknowledgements

The authors would like to thank Bart Cockx, Dirk Van de gaer, Gerdie Everaert, Ilse Ruyssen, Bruno Merlevede, Ruben Dewitte, and Bram De Lange for their valuable feedback. The authors would also like to thank Benjamin Vandermarliere, Ken Bastiaensen and a bank that wishes to remain anonymous for access to the data and their valuable guidance in this project. Views and conclusions in this document should not be interpreted as representing the policies, either expressed or implied, of the sponsors. This research was supported by the Research Foundation Flanders (FWO) under Grant Number G018115N, Bijzonder Onderzoeksfonds BOF2452014000402, BOF Postdoctoral Fellowship (BOF20/PDO/030), and the National Bank of Belgium (DOZA/IL/DDC/AM/133b-2021). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Author contributions

MvdH, TR designed research; MvdH performed research; MvdH, TR analysed and processed results; and MvdH, TR, JR and KS wrote the paper.

Competing interests

The authors declare no competing interests.

Ethical statements

Not applicable.

Informed consent

Not applicable.

Additional information

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1057/s41599-022-01064-0>.

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