PARTENARIAT

ERAFP - TSE • 2016 - 2020

Retraite additionnelle de la Fonction publique

Toulouse School of Economics

TSE-Partenariat a pour vocation de rassembler des chercheurs, des professeurs de l'Université Toulouse Capitole, ainsi que d'autres instituts de recherche en économie et des décideurs publics et privés, afin d'explorer de nouveaux domaines de recherche et de rendre plus pertinente la recherche pour le monde économique.
L'ambition étant d'être à la pointe de la recherche internationale et ce en collaboration avec nos partenaires et ainsi contribuer à l'excellence académique et au rayonnement de la Fondation Jean-Jacques Laffont- TSE et de l'université Toulouse Capitole.

MISSION

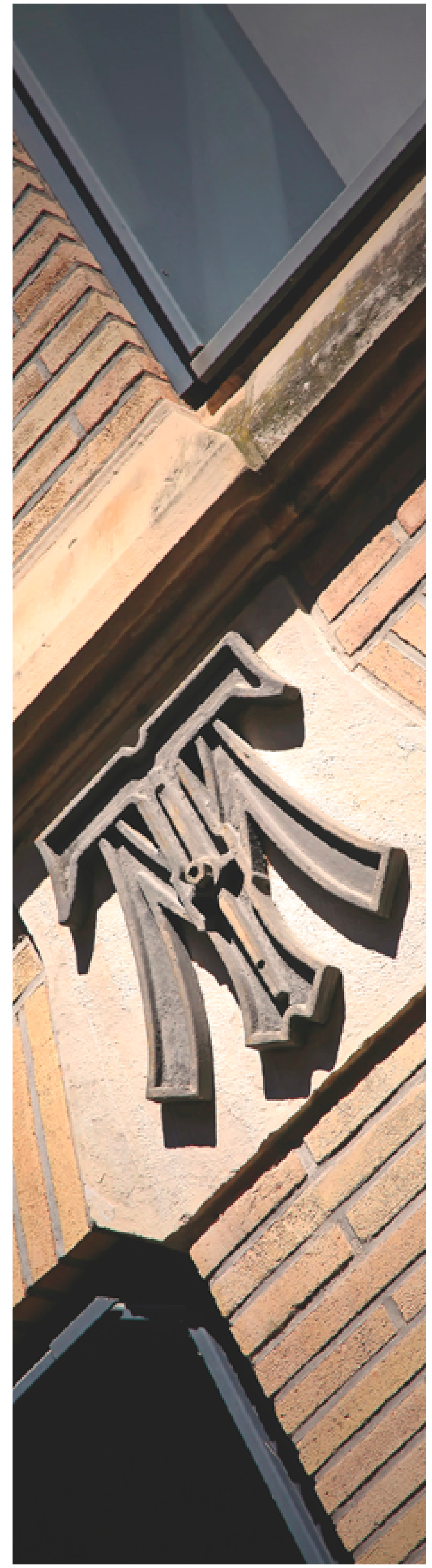
Répondre aux principaux défis économiques et sociaux

Les travaux de nos chercheurs visent à une meilleure compréhension des forces économiques et des institutions qui régissent le monde d'aujourd'hui. Nous nous efforçons de développer une approche scientifique novatrice visant à éclaircir des problèmes réels.

Contribuer au débat public

Nous visons à faire bénéficier les décideurs économiques de notre expertise académique afin d'aider les entreprises, les ONG, les organisations gouvernementales et les instances de régulation à mieux répondre aux défis sociétaux.

TSE-P s'articule aujourd'hui autour de trois centres thématiques de recherche sur l'économie numérique, l'énergie et climat, la finance durable. Ces centres ont été créés autour de thèmes transversaux généraux permettant de couvrir - autour de programmes de recherche - un large spectre de sujets impactant la société dans son ensemble. Ils permettent d'aller beaucoup plus loin en termes de recherche et de sujets traités et offrent à nos partenaires une transparence accrue sur les derniers travaux dans le domaine qui les intéresse.



NOTRE HISTOIRE

Les premiers partenariats de recherche à TSE sont nés dans les années 80 d'une adéquation entre un besoin et une opportunité.

Le besoin consistait à trouver une nouvelle approche pour financer la recherche économique en France. Jean-Jacques Laffont, fondateur du groupe des économistes de Toulouse, avait en effet identifié le manque d'attractivité de la France pour les chercheurs. Il réussit à convaincre quelques économistes réputés de venir à Toulouse et à créer un département d'économie de renommée mondiale. Le défi était de trouver des financements sans pour autant compromettre l'indépendance des chercheurs, ni les détourner de leur approche scientifique. C'est ainsi que TSE a développé des partenariats sur le long terme avec des acteurs économiques privés et publics.

L'opportunité était de mettre les chercheurs en relation avec les praticiens afin de bien comprendre les grand enjeux stratégiques et sociétaux émergeants. Le périmètre de ces partenariats couplé aux échanges étroits avec les acteurs économiques, a permis aux chercheurs de développer des sujets de recherche originaux répondant à un double critère : d'une part, être pertinent pour les acteurs économiques et, d'autre part, être validé par la communauté scientifique.

L'année 2018 a vu la création de la fondation TSE-Partenariat (TSE-P) dédiée à la recherche partenariale, sous l'égide de la fondation Jean-Jacques Laffont-TSE.

PARTENARIAT

ERAFP - TSE • 2016 - 2020

Compte tenu de l'intérêt pour ERAFP des travaux menés par les chercheurs TSE, notamment dans la recherche appliquée et fondamentale touchant à l'investissement de long terme et le financement des retraités, l'ERAFP a souhaité avoir recours aux travaux de recherche et plus généralement aux activités de l'institut. Signé en février 2016 entre IDEI et ERAFP, ce contrat arrive à terme en février 2020.

Les fonds de pension peuvent jouer un rôle central dans le fonctionnement des économies modernes. En offrant une épargne longue aux individus, ils leur permettent de pouvoir accéder au niveau de vie qu'ils désirent à la fin de leur vie professionnelle. Les fonds de pension ont donc en principe un horizon de placement long qui leur permet d'investir dans des actifs risqués tels que les actions ou les obligations longues, cruciaux pour le financement de l'économie.

Étant donné leur place centrale et leur rôle crucial, les fonds de pension sont l'objet de multiples enjeux en lien à la fois avec les investisseurs, les entreprises et les pouvoirs publics. Suite à une discussion entre l'ERAFP et l'IDEI, trois projets de recherche, présentés ci-après, ont été identifiés comme particulièrement important pour l'ERAFP.
Suite à une discussion entre l'ERAFP et l'IDEI, trois projets de recherche, présentés ci-après, ont été identifiés comme particulièrement important pour l'ERAFP.

Projet 1. Taux d'actualisation des actifs et passifs à longue échéance

Ce projet propose d'étudier les différentes conditions dans lesquelles les taux d'actualisation peuvent varier sur différentes échéances, et de quantifier ces variations. Ces questions ont des implications considérables pour les fonds de pension dont la gestion financière dépend fortement du taux d'actualisation utilisé pour l'évaluation à la fois des actifs et des passifs.

Projet 2. Incertitude de modèle et ambiguïté -Application aux risques liés au changement climatique

Le degré d'incertitude lié aux risques macroéconomiques sous-jacents (un phénomène également appelé ambiguïté) croît avec l'horizon, ce que rend les projets sûrs plus attrayants en apparence plus leur échéance est longue. Pour les projets risqués, l'impact de l'ambiguïté n'est pas sans importance, et nous proposons de créer des outils théoriques qui permettront d'évaluer les taux d'actualisation dans ce contexte.

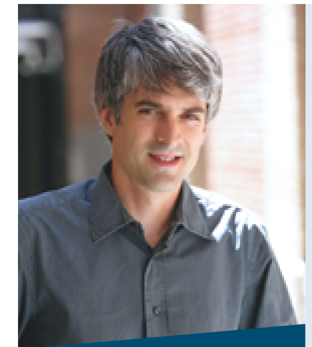
Projet 3. La finance socialement responsable

Investissons-nous suffisamment dans les actifs d'investissement durables ? Sommes-nous suffisamment ouverts aux risques dans nos stratégies d'investissement ? Devrions-nous nous préoccuper des macro-catastrophes potentielles ? Pourquoi devrions-nous accorder aux bénéfices immédiats davantage d'importance qu'aux bénéfices lointains ?

L'ÉQUIPE DE RECHERCHE

Marianne Andries

Professeure adjointe en finance, Marianne a rejoint TSE en 2012. Ses domaines d'intérêt sont l'évaluation des actifs et la théorie de la finance comportementale.
Après avoir travaillé comme banquière d'affaires, elle a obtenu son Doctorat en finance à l'Université de Chicago. Elle a été chercheuse invitée à la Banque de France de 2016 à 2017.



Milo Bianchi

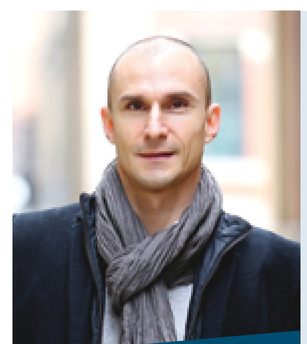
Ancien professeur associé à l'Université Paris-Dauphine, Milo est chercheur à TSE depuis 2013. Membre junior de l'Institut Universitaire de France, il a également remporté le prix Malinvaud 2014 de l'AFSE pour le meilleur article publié par des économistes de moins de 40 ans. Il s'intéresse à l'économie financière et comportementale et au financement des entreprises.

Christian Gollier

Aux côtés de Jean Tirole, Christian a créé TSE et en a ensuite été le Directeur. Il s'intéresse notamment à la théorie de la décision dans l'incertitude, à l'économie de l'environnement, aux finances, aux investissements, à la théorie de la consommation, aux assurances et à l'analyse coûts-avantages. Christian a publié plus de 100 articles dans des revues de premier plan et sept livres, dont *"The Economics of Risk and Time"* et très récemment *"Le climat après la fin du mois"*.

Nour Meddahi

Après 10 ans d'enseignement à l'Université de Montréal, Nour est devenu professeur à TSE en 2013, retournant dans la ville où il a obtenu son Doctorat.Il est également rédacteur en chef adjoint du Journal of Business and Economics Statistics. Ses intérêts de recherche comprennent l'économétrie financière, l'économétrie, les séries chronologiques, l'évaluation des actifs et la gestion des risques.



Sébastien Pouget

Professeur de finance à l'Université de Toulouse Capitole et actuel Directeur de la fondation TSE-P dédiée à la recherche partenariale, Sébastien a également enseigné la gestion des actifs et la finance comportementale à Princeton. Il étudie les marchés financiers selon une approche multidisciplinaire qui combine des connaissances en économie, en psychologie et en histoire. Ses recherches ont été publiées dans des revues universitaires internationales.

BILAN DE L'ACTIVITÉ

1er février 2016

Signature du contrat de recherche : *"Recherches économiques sur les défis des fonds de pension"*

17 mars 2016

Christian Gollier - *Quelques réflexions sur les stratégies d'investissement responsables des assureurs-vie et des fonds de pension.*

"Un des plus sérieux challenges de notre temps est de rapprocher l'épargne de LT des ménages des besoins d'investissement de l'économie. Comment Gérer le triplet rentabilité/liquidité/risque ? Spécificités du long terme : intensité des incertitudes, radicalité des risques, changement climatique, macro catastrophes, …"

15 décembre 2016

Marianne Andries - *L'aversion pour le risque en fonction de l'horizon et le moment et le prix de l'incertitude.*

L'aversion au risque est plus faible pour les risques lointains et plus élevée pour les risques imminents. Prendre en compte cette caractéristique observée dans un modèle de préférences permet de calibrer les moments usuels d'actifs financiers mais aussi de rationaliser les "puzzles" qui subsistent en ce qui concerne :

I) la préférence pour une résolution précoce plutôt que tardive de l'incertitude,

II) lla structure à terme parfois décroissante des rendements excédentaires des actions (par exemple, durant la crise financière de 2007 - 2009, les actifs à horizons de paiement lointains avaient un rendement attendu inférieur à ceux à horizons de court terme).

Christian Gollier - *Risques et rendements de long terme sur les marchés financiers et dans l'économie.*

Comment évaluer les actifs de très long terme? Pouvons-nous utiliser les même méthodes que pour les autres actifs? En particulier, quels taux d'actualisation faut-il utiliser? Apport des nouvelles théories d'asset pricing intégrant "long-run risks", incertitudes profondes, macro catastrophes, et recursive utility.

12 juin 2017

(Réunion en préparation du conseil d'administration)

Sebastien Pouget - Les engagements de retraite pris en charge par l'ERAFP sont de très long-terme. Dans ce contexte, on a la nécessité de choisir une fréquence de reporting sur les performances adaptées à un horizon d'investissement long.

14 décembre 2017

Karen Khanh Huynh - *Fréquence de visionnage et décision d'investissement : une brève revue de la littérature*

Dans la théorie financière classique, la fréquence de reporting a un rôle positif ou neutre sur la prise de risque. Une théorie plus récente *(e.g. par le Nobel d'économie Richard Thaler)* indique que si les investisseurs ont une aversion aux pertes (et pas seulement au risque qui porte sur sa richesse finale), ils devraient être plus prompts à prendre des risques sans information intermédiaire plutôt qu'avec. Cette hypothèse a été teste dans plusieurs expériences en laboratoire et sur le terrain.

Marianne Andries - *L'aversion pour l'information*

L'aversion pour l'information, une peur intrinsèque des flux d'informations entrant dans les préférences, a de riches implications pour les décisions impliquant l'information et la prise de risques. Elle permet d'expliquer les principaux faits empiriques concernant la manière qu'ont les ménages d'accorder de l'attention à leur épargne, à savoir que les investisseurs n'observent leurs portefeuilles que rarement, en particulier lorsque les cours boursiers sont bas ou volatils. Les investisseurs averses à l'information font preuve d'un comportement d'autruche : entendre des nouvelles négatives incite à plus d'inattention. Leur peur de recevoir de trop fréquentes informations les incite à détenir des portefeuilles non diversifiés.

29 mai 2018

(Réunion avec le conseil d'administration)

Sebastien Pouget *(w/ Marianne Andries, Milo Bianchi, Karen Khanh Huynh)* - *Reporting Frequency, Return Predictability, and Long-Term Investment*

Jeux d'investissement : deux actifs financiers sont disponibles: Un fonds d'investissement dont le taux de rendement par période est aléatoire, un actif sans risque qui génère un taux de rendement nul.

• *Jeu N°1 :* chaque jeu comporte 30 périodes. Vous pouvez choisir votre portefeuille toutes les 6 périodes. Vous receviez ou pas des informations intermédiaires.

• *Jeu N°2 :* lors de chaque répétition du jeu, vous observez le taux de rendement du fonds lors des 40 périodes précédentes ainsi que le taux de dividende qui peut ou non, en fonction des répétitions, être utile pour prévoir le taux de rendement. Vous devez choisir combien d'ECU investir dans le fonds pour deux horizons: une période ou cinq périodes

• *25 ECU = 1 chocolat.*

Débriefing : Que nous dit la théorie financière sur ces questions? Que se passe-t-il en pratique? Que s'est-il passé pendant les jeux?

4 septembre 2018

Marianne Andries, Milo Bianchi, Karen Khanh Huynh, Sebastien Pouget - *Rapport sur la répartition du portefeuille à long terme : Fréquence de rétroaction et prévisibilité des retours.*

Nous menons une série d'expériences pour aborder certaines questions clés liées à l'investissement à long terme. Tout d'abord, nous étudions comment la fréquence de rétroaction des rendements influe sur la répartition des sujets en actifs risqués. Comme dans les études précédentes, nous constatons que les sujets allouent initialement une plus grande part de leur patrimoine à l'actif risqué lorsque la rétroaction sur le rendement est moins fréquente. Cependant, dans les séries ultérieures, les sujets ont tendance à réduire leur portefeuille à risque lorsque la rétroaction est moins fréquente, ce qui peut s'expliquer par l'anxiété des sujets à l'égard du rendement de leur portefeuille. Nous examinons ensuite si les sujets peuvent percevoir correctement quand les rendements sont prévisibles et ajustent leurs investissements en conséquence. Nous constatons que les prévisions des sujets ainsi que les décisions d'investissement peuvent correctement prendre en compte la prévisibilité du rendement, mais seulement lorsque l'horizon de placement est court. De plus, les sujets semblent plus disposés à prendre des risques à plus long terme. Cela n'est pas dû à des prévisions plus optimistes quant aux rendements futurs, mais au fait qu'ils perçoivent les investissements à long terme comme étant moins risqués.

Nous avons reproduit l'expérience sur 58 étudiants à TSE les 29 et 30 janvier 2019. De nouveaux résultats seront bientôt disponibles.

23 novembre 2018

CONFERENCE ERAFP/CHAIRE FDIR

Christian Gollier - *L'évaluation éthique des actifs et la bonne société*

En contrôlant l'allocation des capitaux, les marchés financiers détiennent la clé des grands défis de notre temps, tels que la lutte contre la pauvreté, le changement climatique et le cancer. Ce pouvoir ne peut être efficace que si nous pouvons déterminer les prix financiers compatibles avec le bien public. En particulier, l'évaluation du risque et du temps à long terme, fondée sur des principes moraux transparents, peut aider à guider nos choix pour l'avenir.

Participation de Philippe Desfossés à la table ronde sur Stratégies d'investissement de long terme, avec Thomas Coutts *(Partner, Baillie Gifford)* et Jean-Laurent Granier *(Président Directeur Général, Generali France)*

5 et 6 DÉCEMBRE 2019

CONFÉRENCE INAUGURALE DU TSE SUSTAINABLE FINANCE CENTER

Toulouse School of Economics | Sustainable Finance Center

4 sessions, chacune autour de l'un des 4 thèmes du centre :

I/ Finance responsable et investissement à long-terme

II/ Fintech

III/ Intermédiaires financiers et réglementation

IV/ Efficacité des marchés financiers.

Chaque session fera intervenir 3 chercheur(-euse)s de TSE ou extérieurs, et sera suivie d'un panel impliquant au maximum nos partenaires.

RESEARCH HIGHLIGHTS

RESEARCH THAT RESHAPES SOCIETY

ERAFP representatives can access cutting-edge economic research and interact with TSE members at regular events organized by the partnership.

Structured around key research themes, here we feature some of the partnership's recent publications. Presented in English, the next few pages will run you through the implications of our understanding of investor behavior, with Marianne Andries on optimal information. Followed by Christian Gollier on ethical asset valuation: in other words investing in a better world. Sébastien Pouget's paper will show us what returns can socially responsible investors expect. Lastly, financial literacy and investment with lessons from French households as covered by Milo Bianchi.

WHO'S AFRAID OF NEWS?

MARIANNE ANDRIES ON OPTIMAL INFORMATION

Fear of disappointment can make us fearful of new information, says TSE researcher Marianne Andries, and this has important implications for our understanding of investor behavior. In a new working paper, she proposes a theory of inattention based on the idea of information aversion. Sometimes, her results suggest, withholding information may serve us better than transparency.

> Experiencing the roller coaster of life can be stressful. A natural way to avoid this stress is to close your eyes for the ride

When information costs are due to technological limitations, finding ways to provide more information can greatly improve market efficiency. But Marianne's research suggests such policies are not always desirable. This idea that people might want to stay away from information draws a very different picture to that provided by standard models of inattention. In her recent working paper, titled 'Information Aversion', Marianne's theory of inattention is solely based on fear of information, rather than on cognitive limitations or the external costs of acquiring in-formation.

In her model, disappointment-averse agents optimally decide to stay away from some sources of information. This framework has rich implications reflecting key observations on information and risk-taking behavior in the lab and in the field, among participants in financial markets.

Information costs

Together with co-author Valentin Haddad (UCLA), Marianne starts by characterizing the endogenous information costs implied by disappointment aversion, and finds them to differ fundamentally from both the cognitive constraints and the exogenous costs commonly used in the economics literature on inattention.Under disappointment aversion, agents inflate the probabilities of outcomes that disappoint. As information arrives, each piece of news creates scope for disappointment. The agent therefore prefers to receive less fragmented information and observe simultaneous bundles of news in which good news can cancel out bad, disappointing, news. Such information aversion is a direct consequence of the agent's attitude towards risk.

Fearful thinking

To analyze how agents cope with their fear of information, Marianne looks at how the frequency of information observations impacts the valuation of risky lotteries. She finds her model justifies the experimental evidence that shows agents' valuations of risky assets de-crease when they are given more frequent and more detailed information. She also studies how agents balance the cost of paying attention to the economic environment with the benefits of making better informed decisions. In an illustrative example, Marianne considers an information-averse investor who manages his or her wealth to fi-nance consumption over time, alloca-ting savings between a risk-free asset, and a risky asset yielding higher ave-rage returns.

Marianne shows that this investor optimally decides to observe the value of the risky portfolio at equally spaced points in time. In between observations, the investor consumes deterministically from a risk-less portfolio, and allocates any remaining wealth to the risky asset. The marginal cost of infrequent observation is due to the loss in expected returns when more wealth is placed in the risk-free as-set. Unique to Marianne's model, the marginal bene-fit comes from a relief from the stress of receiving information.

More risk-averse investors are also more inattentive, Marianne finds. Attention de-creases in periods of high volatility, even when higher expected returns keep the difference between risk-adjusted re-turns and the risk-free rate constant. This prediction reflects an increase in the marginal cost of information as risk increases and is in line with recent empirical evidence.

Information supply

> Financial institutions can foster more investment by providing 'distress' signals following sharp market downturns

How can suppliers of infor-mation best serve the needs of information-averse inves-tors? Marianne's model pro-vides the basis for a theory of optimal information. Her results suggest financial institutions can foster more investment by providing "distress" signals following sharp market downturns. While an in-depth treatment of this area is left for future research, she outlines a few implications. One way to help information-averse agents is to lump news together in bundles delivered at precise points in time. Such behavior is consistent with company dis-closure policies organized around scheduled earnings announcements. Similarly, monetary policy and other macroeco-nomic announcements, such as employment numbers or quarterly growth, are disclosed at precise points in time, and mostly sche-duled in advance.

Agents do not want to receive information too often. However, when they do observe information, they want it to be as precise and "trans-parent" as possible. In Marianne's framework, it can be beneficial if suppliers sometimes refrain from releasing information; but the re-lease of partial or distorted information is not beneficial.

However, Marianne warns that this form of information withholding generates asymmetric information, and agency problems are likely to arise (for example, between an investor and her wealth mana-ger). To account for information aversion, optimal compensation contracts need to provide the necessary incentives, while minimi-zing the in-formation needed to enforce them.

THE PRICE OF UNCERTAINTY

Economic models generally assume that investors are no more averse to immediate than to delayed risks, but a new working paper by Marianne, 'Horizon-Dependent Risk Aversion and the Timing and Pricing of Uncertainty', suggests that allowing for a decline in risk aversion at longer time horizons can be an invaluable new tool for future research in macro-finance.

INVESTING IN A BETTER WORLD

CHRISTIAN GOLLIER

By controlling the allocation of capital, financial markets hold the key to the great challenges of our time, such as the fight against poverty, climate change, and cancer. In his latest book, 'Ethical Asset Valuation and the Good Society', TSE co-founder Christian Gollier suggests that this power can only be harnessed if we can determine the financial prices that are compatible with the public good. In particular, he shows how the valuation of long-term risk and time, based on transparent moral principles, can help to guide our choices for the future.

Can financial markets decentralize an efficient allocation of scarce resources? There are strong arguments, well studied at TSE, for believing that markets are not good at eliciting our collective values or aligning private interests with the public good. Agency problems such as moral hazard and adverse selection inhibit market efficiency, and the inability to trade with future generations prevents markets from efficiently valuing assets and investments that benefit future generations. More importantly, corporate profits do not fully internalize the impacts from production on social welfare. For example, the emission of greenhouse gases remains mostly free of charge, despite their destructive impact.

If markets are unable to aggregate our collective values, how can we evaluate private and public acts? How should we, for example, compare environmental protection with job protection, lives in Bangladesh versus purchasing power in Europe, workplace safety against corporate profits, reduced inequality versus growth, or more consumption today or in 200 years? Debating social values should be at the root of our democracy. If these values are incompatible with observed market prices, then public authorities should implement corrective actions.

The price of time

Two prices drive most financial decisions: the price of time, which is the interest rate, and the price of risk. The choice of interest rate determines whether we do too much, or too little, for future generations. Too high an interest rate inhibits investment for the future. Too low an interest rate induces excessive investment, forcing people to sacrifice too much current well-being.

The level of our collective aversion to inequality is a key determinant of the socially desirable interest rate. In a growing economy, investing for the future increases intergenerational inequality. So the interest rate should be the minimal rate of return on a safe investment that compensates for this increased inequality. If Western consumption per capita continues to grow at 2 percent per year, people living two centuries from now will be more than 50 times wealthier. This context justifies a high discount rate of 4 per cent per year.

However, deep uncertainty engulfs the distant future. Just as households make sacrifices by saving more when their future income becomes more uncertain, we should collectively make more effort to improve a more uncertain future. To encourage investment, we need to lower the discount rate slightly below twice the anticipated growth rate of consumption for risk-free benefits materializing within the next two to three decades. For more distant time horizons, deep uncertainty justifies discount rates close to 0 per cent.

The price of risk

Many investments for the future increase collective risk, as their benefits are larger when consumption is greater. Penalizing risk-increasing actions therefore reduces investment, which inhibits innovation and growth. Has the tradeoff favored the maximization of growth, or the minimization of risk?

> As well as improving our decisions, cost-benefit analysis is an important tool in the fight against populism

It is socially desirable to adjust the discount rate to the risk profile of each investment project by adding an investment-specific risk premium. In keeping with the calibration of the interest rate, a risk premium of around 1 percent should be used at short maturities, for projects whose risk profile is similar to the macroeconomic risk. But because of the deep uncertainty surrounding the distant future, an aggregate risk premium of 2.5 percent should be used for very long maturities.

Financial markets penalize firms that increase the aggregate risk by raising their cost of capital. A 1-to-2.5 percent risk premium is in line with the equity premium imposed by markets on riskier firms. Much more worrying is the absence of any formal penalization of risk in the evaluation of public policies in most countries.

Cost-benefit analysis

Many countries have established implicit prices to evaluate the actions of public institutions. These include prices for human lives, time lost, natural assets, and carbon, in sectors as diverse as energy, transportation, health, science, and education. These prices are subject to much debate among experts; but these debates remain inaccessible to the public, and this is unacceptable.

Ultimately, collective decisions should be made by comparing costs and benefits, using a coherent system of values. This includes a value for delaying consumption (an interest rate), a value for risk acceptance (a risk premium), and values for all the non-monetary impacts of our actions.

As well as improving our decisions, cost-benefit analysis is an important tool in the fight against populism. Lack of evaluation reinforces the impression that policies are driven by ideology rather than the common good. Instead, democracy can be strengthened by forcing politicians to make explicit the values on which their decisions are made.

How can we encourage investors to be more socially responsible?

IN CONVERSATION WITH CHRISTIAN GOLLIER

"In my book, I try to combine the basic principles leading to a transparent methodology for evaluating investment choices with a socially responsible approach. I propose identifying the different sources of non-financial performance, such as safety at work or the reduction of inequalities, as well as the various emissions of pollutants. In addressing socially responsible investment (SRI) funds, my aim is to make them aware of the importance of including carbon prices and negative externalities into their investment valuations and portfolio allocations, as well as simply maximizing returns.

"For example, companies are currently obliged to publish their carbon emissions in their annual reports. SRI funds should therefore look at corporate emissions and multiply them by the price of carbon, and then re-incorporate this cost in their valuations. They should also adopt the same method for other negative externalities, and even for positive externalities such as well-being within the company and wage increases for the lowest paid employees (possibly because of relocation), which helps reduce global inequality."

"In general, SRI funds adopt a 'best-in-class' view, but without really quantifying emissions. Instead they make relative comparisons between companies according to their degree of social responsibility. My approach goes much further. I propose using quantitative finance techniques, particularly the Markowitz model, on dividend-per-share profitability data, which includes non-financial performance ethically evaluated under an SRI filter. It doesn't matter that SRI funds post different values for positive and negative externalities. What is important is that investors can choose in accordance with their own ethical preferences. This would also make SRI funds more transparent, and therefore more attractive."

FURTHER READING: Christian refers quantitatively frustrated readers of *"Ethical Asset Valuation"* (2017) to his other recent book, *"Pricing the Planet's Future"* (2012), which provides more extensive technical details.

WHAT'S THE BEST STRATEGY?

SÉBASTIEN POUGET ON RESPONSIBLE INVESTMENTS

What returns can socially responsible (SR) investors expect? TSE's Sébastien Pouget is Director of the 'Sustainable Finance and Responsible Investment' (FDIR) research chair. Here he discusses various conceptual frameworks to analyze the risk-adjusted performance of SR investment, offering valuable insights on the ways it can outperform traditional strategies.

SR investors complement financial analysis with extra-financial research which aims to understand corporations' performance in terms of environmental, social, and governance (ESG) issues. Extra-financial elements can be viewed as a constraint on feasible portfolio allocations. But they can also constitute an opportunity for asset managers to be more discerning and creative.

SR investors implement three main types of strategies. In the negative screening strategy, investors refrain from investing in certain sectors or in firms that engage in activities viewed as inconsistent with sustainable development or moral values (for instance, the production of unconventional weapons). The best-in-class strategy selects, in each sector, the companies that are the most socially responsible. Finally, engagement strategies aim to improve the SR behavior of companies by actively discussing with executives, voting at shareholder meetings, and participating on boards of directors.

Efficient markets

The classic theory of finance teaches that, if markets are informationally efficient, the best strategy is to perfectly diversify across all available assets. In this scenario, investors' common beliefs, as well as any new information, are instantaneously incorporated in asset prices. SR investment strategies thus have no reason to outperform conventional ones. This is not because SR companies are not good investments but because, if they are, they trade at high prices. In addition, negative screening strategies suffer because they exclude certain sectors or firms, so that the resulting portfolios are less than optimally balanced.

Best-in-class and negative screening strategies may also induce a higher valuation for SR firms. Investors who follow SR strategies tend to concentrate on the same assets and thus bid up their valuation. Consequently, the expected return on SR companies may be lower than on standard companies. But as discussed by Benabou and Tirole (2010), some investors, driven by altruism or self-image concerns, may derive utility from knowing that SR companies enjoy a lower cost of capital or from not endorsing inappropriate activities.

Various empirical studies suggest that more responsible companies deliver a lower risk-adjusted return than others. This result has been shown to hold both in stock and bond markets, and for issues such as employee relations and environmental performance. Moreover, Andries (2008) suggests that this result is particularly strong after the year 2000, corresponding to a turning point at which sustainable development issues became more prevalent in financial markets.

Inefficient markets

Critics of the efficient market hypothesis point out that it often takes time for information to be reflected in market prices. SR strategies may then outperform if they enable investors to take positions before markets completely incorporate their information. The success of SR strategies thus relies heavily on anticipations and the ability to rapidly take positions.

Investors may have various trading motives, including liquidity or informational reasons. This multiplicity of motives introduces noise in the price formation process and reduces market efficiency. Upon observing an investor selling an asset, it is difficult to know whether the sale is due to liquidity needs or to bad news. So market participants react less to the trade than if its motivation was clear. The market thus does not fully incorporate private information and it becomes interesting to collect such information.

In this context, SR investment strategies based on ESG research insights may outperform less informed standard strategies. ESG research analysts may be more receptive to signals that ESG factors might be responsible for future liabilities (such as polluting technologies) and/or future profitability improvements (such as waste reduction). Such signals might then enable investors to better predict future returns.

ESG research analysts could also be better at identifying upcoming issues in the sustainable development area (for example, job satisfaction as a driver of performance). This might enable them to better predict changes in institutional investors' preferences and anticipate future trends in corporations' market valuations. For example, Edmans (2011) indicates that the "100 Best Companies to Work for America" have delivered positive abnormal returns over the past 20 years, and have attracted more and more responsible investors.

> **Extra-financial elements can be viewed as a constraint, but can also constitute an opportunity to be more discerning and creative.**

Various empirical studies have focused on SR mutual funds. Renneboog, Horst, and Zhang (2008) find that, in general, there is no difference in the performance of SR and traditional funds. Their data goes up to 2003: it would be interesting to see results from a more recent sample, now that SRI methodologies are more refined, SRI managers have more experience and ESG analysis is more mainstream.

Engagement strategies

Engagement strategies reflect SR investors' willingness to improve corporations' behavior. Such willingness is a sign of the existence of conflicts among shareholders for control over firms' strategic decisions. If markets are complete, shareholders are unanimous in desiring that the firm maximize stock price value. When markets are incomplete, the situation is very different.

As an extreme example, consider that some investors would like to enjoy clean air over any other consumption of goods whereas others do not care much. Assume that a company has only two possible strategies: an irreversible polluting strategy that generates a lot of cash, and a clean strategy that generates less cash. If the polluting strategy is chosen, investors who want clean air can no longer find this service: markets are not complete. A conflict of interest emerges between shareholders. Such conflicts are likely to arise for firms that have potentially large impacts on goods, environmental or social, are not exchanged on markets or are not subject to Pigouvian taxes, and thus generate externalities.

Another potential source of shareholder conflict may emerge due to investors' differences of opinion regarding firms' adequate business strategies. In the sustainable development area, strategies based on environmental or social factors might be controversial among shareholders due to the question of future cashflows.

Shareholder conflicts may be settled through takeover activities, votes during shareholder meetings, and more generally, governance arrangements. The idea of engagement strategies is to acquire enough influence over firms to induce them to choose a SR investor's preferred business strategy, which best balances ESG and profitability aspects. Engagement is thus best suited to complement best-in-class or indexing-like strategies.

Absent shareholders' unanimity over strategic decisions, an investor might use an engagement strategy to boost corporate economic performance and market valuation. Such engagement strategies appear best suited for long-term investors.

Washing machines

However, as argued by Gollier and Pouget (2013), there is a possibility for engagement strategies to outperform standard strategies even in the short run. In a "washing machine" strategy, SR investors can invest in a so-called "dirty" business, then transform it so that it strictly adheres to SR standards. This strategy has a financial advantage if the company is more valued by the market when "cleaned" and included in SR portfolios.

Gollier and Pouget (2013) identify three conditions for a successful "washing machine" strategy:

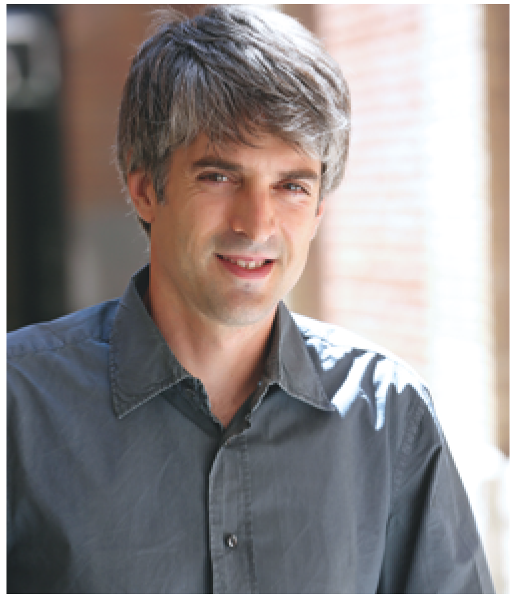
1. Investors implementing this strategy must be able to acquire enough influence over target companies to impose the necessary changes.
2. Only investors with a long-term outlook can implement this strategy. They must be able to credibly commit to remain involved in the business long enough for its SR standards to improve.
3. The fund must be able to provide guarantees of credibility with regard to SR. Otherwise, it will fail to convince the market, which will continue to value the company as dirty.

As already mentioned, several empirical studies reveal that firms with a higher level of SR trade at a premium on financial markets. Krüger (2013) finds that SR improvements, when not due to poor governance, positively affect stock prices. This suggests that the "washing machine" strategy may outperform standard ones.

Finally, several studies that evaluated the performance of engagement funds suggest that these funds earned abnormal returns when engaging on governance issues and, to a lesser extent, on environmental and social issues.

SUMMING UP

When markets are fully efficient, SR investors are not expected to outperform standard investors. However, driven by altruism or self-image concerns, SR investors may be ready to accept lower performance. There is thus a business case for SR investments, even in this classic view. In inefficient markets, SR investors can outperform standard investors if SR managers are able to acquire informational advantages regarding ESG issues. Engagement strategies might generate abnormal performance by investing in non-responsible firms and making them responsible. However, the profitability of SR investing also depends on important investments in extra-financial research and engagement capabilities.



FINANCIAL LITERACY AND INVESTMENT

MILO BIANCHI ON LESSONS FROM FRENCH HOUSEHOLDS

As ordinary citizens attempt to manage their domestic budgets and resolve complex financial problems, many find themselves poorly equipped to make efficient investment decisions. Combining administrative panel data with detailed survey data on French households, TSE researcher Milo Bianchi has shed new light on the impact of financial sophistication on household portfolio choices.

It is now established that a significant fraction of households exhibit low performance in their investment decisions as well as a poor understanding of basic principles governing financial markets. These behaviors can have important aggregate consequences in terms of investors' welfare, market efficiency and stability, and at a broader level on economic growth and inequality.

The mechanisms behind the relationship between lack of financial sophistication and investment performance are much less understood. This is key not only to assess the determinants and the consequences of financial vulnerability but also for any policy aimed at improving the households' ability to make the best use of financial services.

Part of the challenge is empirical. It is difficult to find data that combine detailed information on household portfolios with measures of household sophistication. Administrative data typically lack direct measures of financial sophistication. Survey data typically lack the details and the panel structure necessary to explore portfolio dynamics. An important dimension of heterogeneity may arise from how households rebalance their portfolios over time in response to market conditions or to their own returns.

New mechanisms

Milo's May 2017 paper, 'Financial Literacy and Portfolio Dynamics', due to be published in Journal of Finance, provides the first analysis of how financial literacy relates to rebalancing behaviors and uncovers new mechanisms connecting financial literacy and portfolio returns.

In this study, Milo combines portfolio data from a large French financial institution with survey responses to obtain a broader picture of clients' financial behavior. He focuses on a popular investment product called assurance vie, in which households decide to allocate their wealth between relatively safe assets and relatively risky assets – pre-defined bundles of bonds or stocks – and are free to change their portfolios over time. This data records the clients' portfolio at a monthly frequency for about nine years. In addition, Milo was able to construct the returns of each portfolio and various counterfactual returns.

Depending on their answers to survey questions related to basic principles of household finance, Milo classifies each household on a 1-7 scale that serves as his main measure of financial literacy. Financial literacy correlates, as expected, with demographic variables (in particular, education and wealth) and with financial behaviors elicited in the survey (in particular, stock market participation and holdings of financial products).

Literacy pays

He finds that more financially literate households experience higher portfolio returns. Controlling for various measures of portfolio risk, the most financially literate households experience approximately 0:4% higher yearly returns than the least literate households, relative to an average return of 4.3%. These magnitudes are in line with those estimated by Von Gaudecker (2015) for Dutch households.

Milo's results also show that more financially sophisticated households do not always take more risk. Instead, their risk exposure varies systematically with market conditions. More sophisticated households hold a larger fraction of risky funds in their portfolio when risky funds are expected to offer higher returns. According to Milo's estimates, a 1% increase in the expected excess return of risky funds is linked to an increase in the risky share by 2% for each unit of financial literacy. This result is distinct from the more common observation that stock market participation increases with financial literacy, and it suggests a specific mechanism whereby financially literate households obtain higher returns.

> Less sophisticated investors have poorer investment performance, partly as they naively try to time the market

Portfolio inertia

Inertia in household portfolios is often attributed to low financial sophistication. Milo's data allows a direct test of this claim. He breaks down the observed changes in the risky share over time into active changes due to portfolio rebalancing and passive changes induced by differential returns of risky vs riskless funds. He shows that passive changes are relatively more important for less sophisticated households. For the least sophisticated households, the passive change accounts for 64% of the total change in the risky share over 12 months. For the most sophisticated households, the passive change accounts for 30%. These estimates provide the first direct evidence that households with lower financial literacy display greater portfolio inertia.

Trend chasing

Trend-chasers, who move their wealth from funds that have experienced relatively lower returns to funds which have experienced relatively higher returns in the recent past, have been often associated with a lack of financial sophistication. Milo is able to directly test this by examining how households move their wealth between safe and risky funds. He shows that more literate households are more likely to act as contrarians: they tend to move their wealth toward funds that have experienced relatively lower returns in the past. This allows them to hold their risky share relatively constant over time. By contrast, less sophisticated investors appear to naively try to time the market.

Rebalancing rewards

Finally, Milo shows that rebalancing behaviors are an important determinant of portfolio returns: the returns experienced by more financially sophisticated households tend to exceed those that they would have earned without rebalancing their portfolios. More financially sophisticated households are more likely to buy funds that provide higher returns than the funds that they sell.

Policy implications

Can we think of policies to improve financial literacy, or to reduce the negative impact of illiteracy on households' choices? At the same time, what are the implications for financial institutions? Should financial literacy be elicited by financial institutions when advising individual investors (together, say, with their investment objectives and risk appetite)? How can this information be used to help investors make better choices?

Milo's results can help to guide the way individuals' sophistication is assessed by financial institutions. At the European level for instance, regulation requires financial institutions to gather information about clients' objectives and preferences before selling them financial products. Milo's results suggest that financial literacy should be carefully considered when advising investors. His discovery of new mechanisms relating financial literacy to financial outcomes can also inform the substantial policy debate on the effects of financial education.

Milo views his research as only a first step towards an empirical understanding of the relationship of financial literacy with financial choices. Getting richer investment data and finer survey measures is an obvious direction of improvement, for which close collaboration with financial institutions is vital.

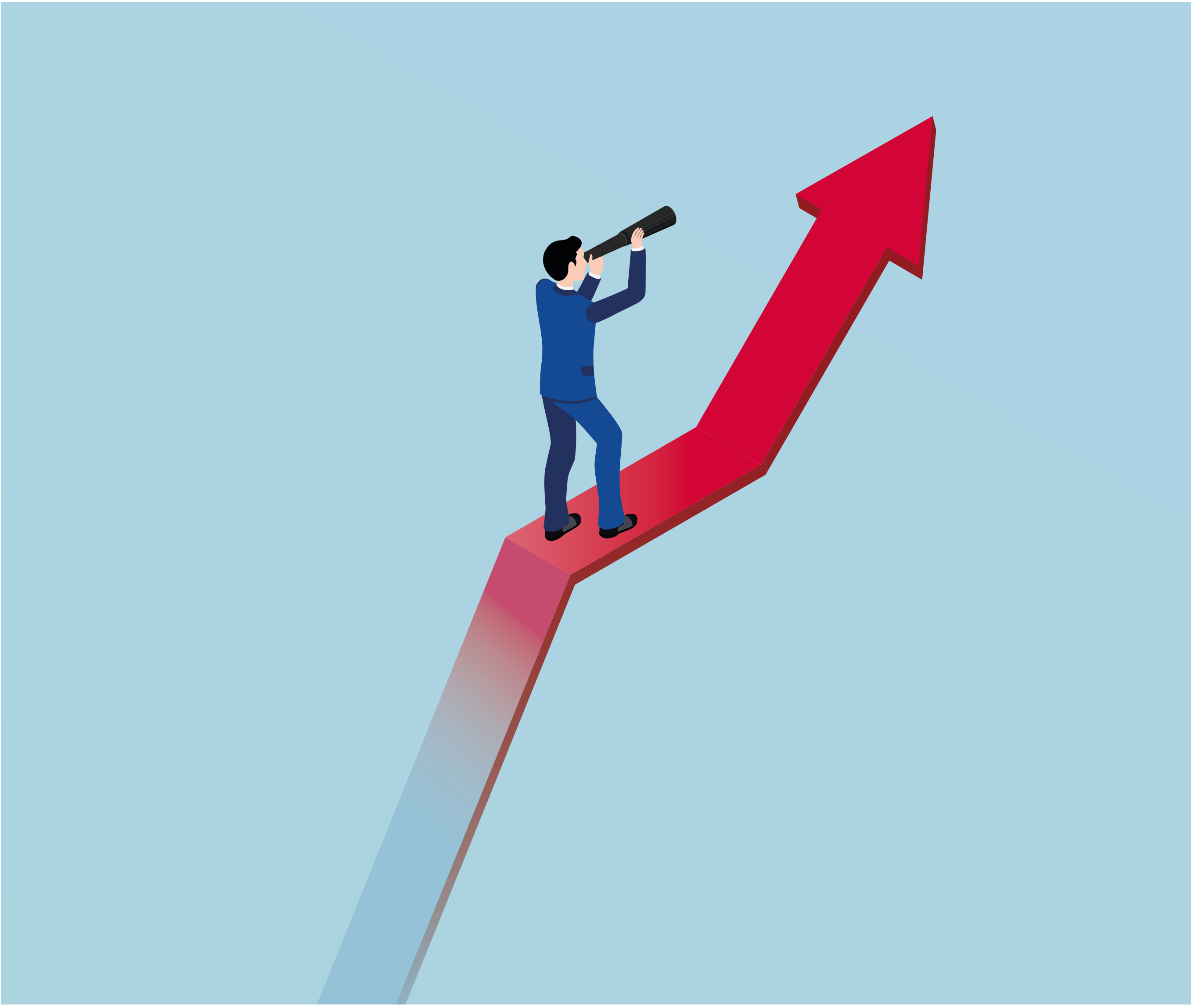
SUMMING UP

Milo's research provides new insights into the relationship of financial literacy and household investment choices. He finds that more financially literate households experience higher returns, holding riskier positions when expected returns are higher. They are more likely to buy assets that provide higher returns than the assets they sell. Financially literate investors more actively rebalance portfolios, keeping their risk exposure relatively constant.

AMBIGUITY AVERSION

Milo's November 2017 paper, 'Ambiguity Preferences and Portfolio Choices: Evidence from the Field', co-authored with Jean-Marc Tallonz (Paris School of Economics, CNRS) and due to be published in Management Science, is the first to provide evidence on the effect of ambiguity aversion on financial outcomes observed in administrative data.

Field evidence of how ambiguity affects households is still very scarce. Milo's paper attempts to fill this gap, combining data on portfolio choices with survey responses on ambiguity preferences. He finds that ambiguity-averse investors bear more risk, due to a lack of diversification. Their home bias leads to higher exposure to the domestic stock market. While more sensitive to market factors, the returns of ambiguity-averse investors are higher. They more actively rebalance portfolios, keeping their risk exposure relatively constant.



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