

# Sustainable Development Goals ESE Research Projects Update 2021

June 30<sup>th</sup>, 2021



The Sustainable Development Goals is a 5 year program (2018-2022) that is intended to foster connections between ESE researchers and our society.

In the last 3 years ESE researchers have worked on several projects that will help society.

**This report captures the updates on these projects.**

The projects are arranged in three main topics:

- 1) SDG3 – Good Health and well-being
- 2) SDG5 – Gender Equality
- 3) SDG10 – Reduced Inequalities

## Introduction

After their initial meeting in 2019, ESE researchers involved in ESE's SDG projects met again on June 30, 2021, this time in an online event.

The event took place under the leadership of Prof. Enrico Pennings, ESE's Dean of Research, they presented their progress to an audience of more than 60 colleagues in two stages: first brief pitches of 5 minutes and then more extensive presentations in break-out sessions.

In between those two parts of the event, Jan-Peter Balkenende, professor at EUR, advisor at EY and former prime minister, gave a brief speech. He had also participated in the first meeting, and both then and now provided an outside-in perspective on the developments in our school. This time he emphasized the growing recognition of the SDGs around the world and their increased urgency. In particular, he wondered how exactly it will be assessed to what extent the SDGs will be met. Based on these questions he suggested two ways for economists to contribute to the SDGs: through measurement and (inspiration for) actions. He stressed how those two elements relate to values and to what we consider valuable. His speech provided an encouraging background to position the work of the other presenters.

Of course, economists are in a good position to **measure value**, especially those in a school which prides itself for its quantitative orientation. More precisely, economists are particularly well placed to appreciate how value depends on place and time. Adam Smith already did so in the fourth book of "The Wealth of Nations", by referring to the testimony of John Plano Carpini, a 13<sup>th</sup> century Franciscan monk. Carpini was sent on a mission by the pope to realize peace with Güyük Khan, grandson of Dzungis and the supreme leader of the Mongols. In his book about his mission, Carpini described that Güyük was not interested in the pope's peace offer at all, but used the meeting to pose a number of questions about the wealth of the country of residence of the pope, who lived in Lyon at the time. According to Smith, Güyük did so primarily to assess if France was "worth the conquering", but that was not why he mentioned it in the "Wealth of Nations". What mattered to Smith was that the Mongols' questions concerning the wealth of France reflected a perspective that differed significantly from the *communis opinio* in later centuries. According to Smith later interest in foreign lands concerned "any gold or silver to be found in the neighbourhood". Instead the Mongols (or the Tartars as Smith called them) at Güyük's court asked Carpini time and again how many cows lived in France and how many horses. "Wealth according to them consisted of cattle" concluded Smith and comparing that position to the later one he added: "Of the two the Tartar notion perhaps was the nearest to the truth". Clearly, Adam Smith was not in the "meat is murder" camp.

What questions should we ask ourselves (and others) nowadays to identify if countries are wealthy, or like Galbraith to determine if societies are "good"? How many cows live here? How many horses? How much gold and how much silver are available in the neighbourhood? Or how much clean water

and fresh air is available for everyone? How many women can be found in leadership roles? How sophisticated are the last mile logistics? How safe are members of the LGBTQ+ community? What is the unemployment rate among immigrants? How free is the freedom of religion? What is the drop-out rate in the secondary school system? How wide is the difference between the number of healthy life years enjoyed by the rich and the poor? The SDG projects at ESE suggest a range of relevant indicators to redefine “development”, including all of the above.

Secondly, how should we contribute to **actions** and inspire them? Especially, what do we have to add based on our often mentioned but nonetheless still somewhat mythical “Erasmian values”? It may be clear enough to ourselves that “Economics is what economists do” but a large part of the world still has to come to appreciate that at ESE we do more than teaching people the difference between debit and credit and how to buy low and sell high. And how we do it and why. When the Nederlandse Handels-Hogeschool, the legal predecessor of ESE, celebrated the opening of its new building (for maximum 500 students) in 1916, queen Wilhelmina joined the event to cut the ribbon, courageously arriving in an open carriage even though it was early November. On the occasion she proclaimed the hope that the new facilities would help to produce men (!) of character like Jan Pieterszoon Coen (1587-1629). Coen, tellingly much more a businessman than a scholar, was a clear example of Dutch entrepreneurial effort in its Golden Age with all its rich pros and gruesome cons. The attending top-hatted gentlemen who had founded the school, several of them grown substantially richer than the queen herself by exploiting the Dutch position as a neutral trading partner between warring nations, probably could not agree more with her choice of a suitable historical example. But nowadays no one will use Coen as a source of inspiration for education and research anymore.

“If the facts change, I change my mind. What do you do sir?”, said Keynes. After studying a box of secret letters by Isaac Newton, Keynes himself exposed the greatest physicist of all times in 1942 as not “the first and greatest of the modern age of scientists, a rationalist” but instead as “the last wonder-child to whom the Magi could do sincere and appropriate homage”. Let that be a comfort to you whenever you feel you are struggling with the dark mysteries of differential calculus that is Newton’s brainchild. In any case, we find ourselves in good company if, with Wilhelmina’s words buried under more than a century of new facts, we will pick new role models and redefine our purpose in the world accordingly. Who inspires our actions? And how can we inspire others?

The SDG-event did not provide immediate answers to these questions, but the projects confirmed that many opportunities exists to trigger concrete improvements to make the world a better place based on original economics: in health care, in education, in marketing, in financial services, in logistics, in urban development and more. The projects share themes and are connected to other activities on campus, such as the Erasmus Initiatives. They inspire new education, such as the Master in Economics of Sustainability that will start in 2022. And they are focused on goals that are embraced around the world.

In ancient Greece, an *oikonomos* was someone who knew the rules (nomos) to keep the house (oikos) in order. “The house” concerned the immediate family only and Aristotle in particular stressed the importance of its self-sufficiency, which tends to lead to rather myopic economics. “The house” has become bigger over time, the family more and more extended, the *oikonomos* more and more a dynastic decision maker who needs to include the needs of future generations into the equation. During the event the SDG-projects at ESE once again confirmed that transition and the SDGs themselves emphasize its importance and its urgency.

The event showed the opportunities that exist for ESE along the SDG-journey that is currently taking place. In the words of Adam Smith, has it brought us closer to Truth? The second SDG-event certainly has brought us closer to each other in our journey. That is worth a cow or two and, especially in times of social distancing, maybe even an extra horse.

This report contains all the slides about the progress in the individual SDG-projects, that were presented during the event. They contain contact information per team. We hope the report will be informative and stimulating to you all and we thank everyone who contributed to this enjoyable meeting.

*The organizing team*

## SDG3 – Good Health and well-being

Erasmus School of Economics

**Efficient Resource Management to Scale-Up Family Planning Outreach Service Delivery**

Team members:  
Lisanne van Rijn (vanrijn@ese.eur.nl)  
Harwin de Vries (harwin.devries@rsm.nl)  
Albert Wagelmans (wagelmans@ese.eur.nl)  
Luk van Wassenhove (luk.van-wassenhove@insead.edu)  
Dominik Gutt (gutt@rsm.nl)

SDG 3.7  
3 GOOD HEALTH AND WELL-BEING

Erasmus University Rotterdam

### Goal(s) of the project

Scale-up access to family planning services, notably in rural areas.

#### How?

- Improve resource allocation of outreach teams.
- Identify drivers of outreach service utilization.
- Showcase opportunities for using data to inform operational decisions.

### So far, we conclude that:

#### Resource allocation

- Current resource allocation shows room for improvement.
- Coordination between outreach teams is important.
- Simple resource allocation strategies work.

#### Drivers

- Frequency of outreach visits.
- Poverty levels.
- Word of mouth referrals.

#### Use of data

- There is increasing awareness of the benefit of using data.
- Data literacy in development.

# Multilevel dynamics in time series

Which SDGs are tackled in this project:

3. Health and 7. Energy

Team members (including email):

Maria Grith (grith@ese.eur.nl)

Karel de Wit (dewit@ese.eur.nl)

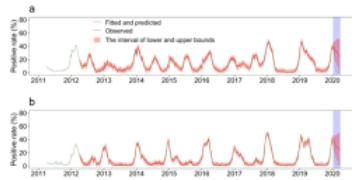
Dick van Dijk (djvandijk@ese.eur.nl)

## Goals of the project

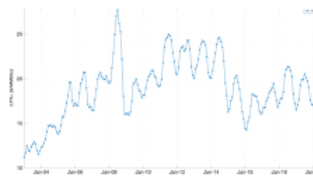
Develop a set of econometrics models that

1. unveil temporal dependence features that are *obscured in time-domain*
2. allow a *parsimonious representations* of time series dynamics
3. do not require pre-filtering of the data to remove trends, cycles, periodicities

Idea: Decomposition in components corresponding to *different aggregation of the data and express dynamics in the transformed space*



Influenza rate. Source: Feng et al (2021)



Energy prices. Source: Baratsas et al (2021)

## So far, we conclude that:

Work in progress

- Dick van Dijk, Maria Grith, Karel de Wit (2021) "The Block-Autoregressive Model in Non-Standard Bases"
- Dick van Dijk, Maria Grith, Karel de Wit (2021) "A Persistence-Based Decomposition of Time Series: A Tale of Two Spectra"
- Unifying framework for modelling *apparent and latent periodicity*
- Estimation and inference using a fast 3 step estimation procedure
- *Multi-resolution decomposition* under *restrictions* on the Wold decomposition
- Better predictive performance relative to the benchmark models

## Inequalities and Consumer Behavior: Measurement, Understanding and Welfare

Which SDGs are tackled in this project: *Zero hunger (2), Good health and wellbeing (3), Gender equality (5), Reducing inequalities (10), Responsible production and consumption (12)*

Team members (including email):  
*Clement Bellet (bellet@ese.eur.nl)*

### Goal(s) of the project

- Rising levels of inequalities worldwide (e.g. income inequalities) but also closing gaps (e.g. gender inequalities)
- The project tackles how various forms of inequalities, both within groups (e.g. income inequalities) but also between groups (e.g. gender inequalities) affect the way we spend
  - Corollary: what consumption inequalities reveal about our social behavior (e.g. our identities, to whom we compare ourselves to, etc.)
- Two of my most advanced projects have looked in particular at:
  - Consequences of income inequality on consumption utility and the perception of needs
  - The gender consumption gap and what it says about the evolution of gender discrimination / gender norms



### So far, we conclude that:

- Exposure to income inequality changes what is considered necessary to purchase, even among the very poor
- We find that (1) inequality makes luxury goods more necessary to the poor (their income elasticity decreases) and (2) this preference shift generates significant expenditure reallocation at the expense of calorie intakes
- Ongoing: explore the link between attitudes to inequality and conspicuous consumption
- Gender-equal social movements can shift consumer preferences away from goods typically associated with a particular gender (cf. stereotypes)
- The #MeToo movement led to a drop in the consumption of gendered product attributes in fashion
- Ongoing: role of gender norms/inequalities in explaining meat (over)-consumption





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## Capturing and realizing the benefits of diversity

Which SDGs are tackled in this project:  
SDG 10 – Reduction of inequalities      SDG 5 – Gender equality  
SDG 4 – Quality education

Team members (including email):  
Max Coveney      coveney@ese.eur.nl  
Teresa Bago d'Uva      marreirosbagoduva@ese.eur.nl  
Pilar García García-Gómez      garciagomez@ese.eur.nl

Erasmus University Rotterdam



### Goal(s) of the project

- Introduce a diversity-focused educational intervention for first year ESE bachelor students
- Students randomly allocated to working groups of 2-4 students during first year "Skills" course
- Aimed at avoiding self-segregation and ensuring that students are exposed to a diverse range of peers
  - Specifically along dimensions of gender, ethnicity and nationality
- Leverage random groups to examine effect of diverse group exposure on:
  - Group performance
  - Diversity-related views of group members
  - Future choices when selecting group members



### So far, we conclude that:

- Diversity in composition of group impacts group performance
  - Evidence that gender composition matters
    - Teams with at least 1 woman do significantly better than all male teams across a range of different group tasks
  - Implications for group/team work in other domains & for classrooms
  - Diversity across other dimensions seemingly not important for performance
- Group work effective at forming lasting bonds between students
  - Students randomly allocated to the same group more likely to voluntarily chose each other as team members a year later
- Now collecting and analysing further information on effect of diversity on views and diversity of future group choices



## Migration and Gender

Which SDGs are tackled in this project:  
SDG 8 "Decent work and economic growth", SDG 10  
"Reduced inequalities", SDG 5 "Gender equality"

Team members (including email):  
Anna Baiardi (baiardi@ese.eur.nl)  
Andrea Naghi (naghi@ese.eur.nl)

### Goal(s) of the project

- Address two related research questions:
  1. The long-term effect of immigration on economic assimilation of immigrants (relates to SDGs 8 "Decent work and economic growth" and 10 "Reduced inequalities")
  2. The long-term effect of immigration on cultural assimilation and gender norms (relates to SDGs 5 "Gender equality" and 10 "Reduced inequalities").
- So far, focus on the first research question
- **Setting:** effect of historical immigration during the Age of Mass Migration in the United States on economic outcomes for recent immigrants
- **Methodology:** instrumental variables and causal random forest to assess heterogeneous effects



### So far, we conclude that:

#### Average effects:

- On average, positive effect of historical immigration on economic assimilation when considering unemployment (reduced unemployment gap) when using 2SLS
- Average effects not significant when using causal forest → importance of nonlinearities

#### Heterogeneity:

- Positive effect of historical immigration on economic assimilation of immigrants for some subgroups in the sample, when considering both wages and unemployment, using causal forest
- Factors determining heterogeneity are both current (average education ...) and historical (presence of railway...) county characteristics
- Highlights importance of studying heterogeneous effects



# The reality of materiality

Which SDGs are tackled in this project: all 17

Team members (including email):  
 Dr Jilde Garst ([garst@ese.eur.nl](mailto:garst@ese.eur.nl))  
 Prof Jeroen Suijs ([suijs@ese.eur.nl](mailto:suijs@ese.eur.nl))  
 Prof Karen Maas ([maas@ese.eur.nl](mailto:maas@ese.eur.nl))

## Goal(s) of the project "The reality of materiality"

**RQ:** How do companies select which SDGs are material for their business?

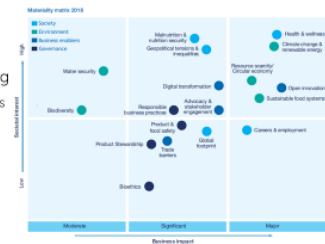
1. How do companies determine which sustainability topics are material?
2. How do companies handle the tensions inherent to sustainability in their materiality assessments?

### Why materiality?

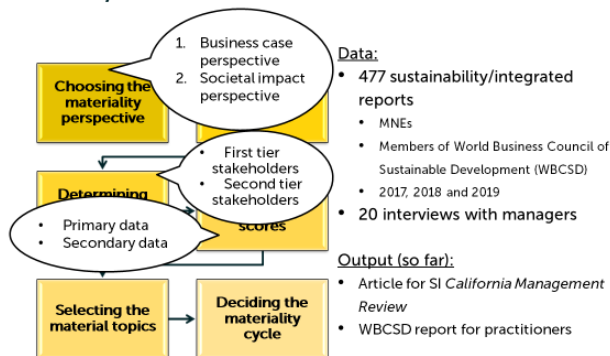
- EU directive on Non-Financial Reporting
  - Transparency on business impact on SDGs
- More than 1400 ESG indicators
- Avoiding reports of 500+ pages

### But sustainability issues are:

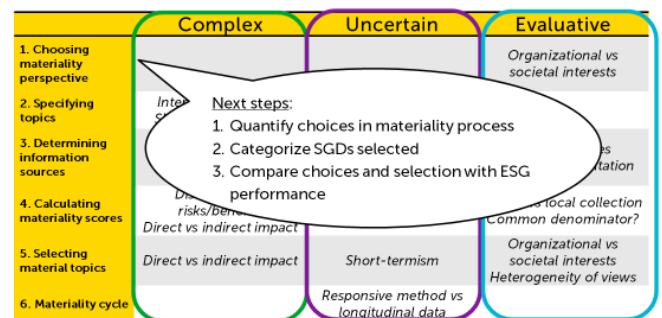
1. Complex > shared responsibility
2. Uncertain > long-term, dynamic
3. Evaluative in nature > transdisciplinary & international



## So far, we conclude that:



## So far, we conclude that:



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## Structural Change as Driver of Urban Economic Growth

Which SDGs are tackled in this project:  
Sustainable Cities and Communities (SDG11)  
Reduced Inequalities (SDG10)  
Decent Work and Economic Growth (SDG8)  
Industry & Innovation (SDG9)

Team members:  
Zhiling Wang ([z.wang@ese.eur.nl](mailto:z.wang@ese.eur.nl))  
Frank van Oort ([vanoort@ese.eur.nl](mailto:vanoort@ese.eur.nl))  
Bas Karreman  
([karreman@ese.eur.nl](mailto:karreman@ese.eur.nl))  
Michiel Gerritse  
([gerritse@ese.eur.nl](mailto:gerritse@ese.eur.nl))

Erasmus University Rotterdam



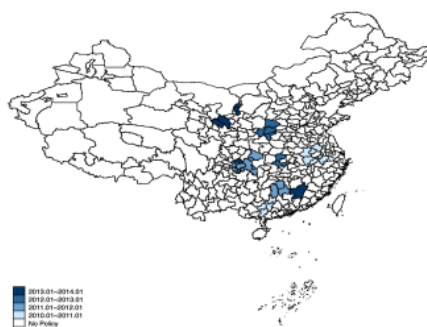
### Goal(s) of the project

- **Structural change** (new specializations and diversification) in urban and regional economies poses opportunities and threats in terms of economic growth.
- Taking **labour mobility** as mediating factors, we analyse whether place-based policies are effective for structural change, growth and income inequality.
- We look at sorting, ripple and welfare effects, wages and growth.
- Simultaneous research on this in China, Europe and the Netherlands in our research programme will show how economically and socially sustainable (resilient) cities and regions are, and how varying institutions and policies impact on growth and inequalities.



### So far, we conclude that:

- In China, industrial transfer policies have moved millions of people to other cities than their originally preferred city.
- There is only modest evidence of structural upgrading in the ITP cities. The composition of migrants changes and more migrants work in the manufacturing sector.
- We find no evidence of changes in wages for locals, changes to local production in firm-level data, or changes in urban development in city-level data.



# Matching in Labor Markets

SDG 9: Decent work and Economic Growth  
SDG 10: Reducing Inequalities

Ana Figueiredo  
figueiredo@ese.eur.nl

## Goal(s) of the project

1. How do recessions affect the allocation of workers to jobs?
  - Skill Mismatch = individuals' skills different than skills required by jobs
  - Cyclical of skill mismatch: cleansing or sullyng effect?
2. Are the consequences of job loss equal for all?
  - Job loss = highly persistent negative shock to earnings (on average)
  - Does individual wealth affect the magnitude + persistence of job loss?
3. Do labour market beliefs contribute to the gender wage gap?
  - Beliefs= expected # of offers and offered wages
  - How do expectations during the search process affect labor market outcomes?



## So far, we conclude that:

1. How do recessions affect the allocation of workers to jobs?
  - *Cleansing effect*: under-qualified workers are fired, stayers better matched
  - *Sullyng effect*: new hires are both over and under-qualified
    - Why? *Switching effect*: fired workers switch careers to try other abilities
2. Are the consequences of job loss equal for all?
  - *Earnings losses*: Persistent and larger for individuals with low liquid wealth
  - *Temporary contract trap*: Poorer workers seem more likely to have temporary contract after job loss
3. Do labour market beliefs contribute to the gender wage gap?
  - *Expectations gender gap*: females expect to receive lower salaries and to be offered lower wages.
  - *Reservation wage gap* driven by differences in expectations



# Real-time Sychromodal Transport Planning

Goal 9: Industry, Innovation and Infrastructure  
Goal 11: Sustainable cities and communities

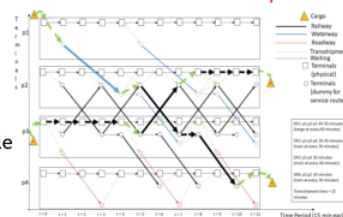
Prof. dr. Rommert Dekker (rdekker@ese.eur.nl)  
dr. Shadi Sharif Azadeh (sharifazadeh@ese.eur.nl)  
dr. Mehmet Hakan Akyüz (akyuz@ese.eur.nl)

## Goal(s) of the project

- Develop a real-time synchronodal planning algorithm capable of solving real case problems in a short amount of time
- Integrate an AI based self-learning mechanism to generate recovery strategies in case of small scale disturbances.
- The project is also accompanied with some side projects concerning Sustainable Development Goals (SDGs) such as
  - i) reducing transports for supplying warehouses,
  - ii) assessing sustainability performance at subcontractors and
  - iii) evaluating alternative fuels for ship engines.

## So far, we conclude that:

- Different network representations (see below) have a lot of impact.
- Result: **fast solutions** for real-time re-planning after a disruption in the network.
- Alternative re-planning approaches are tested. **Partial vs Complete** re-planning.
- Partial re-planning yields close to optimal (e.g. complete re-planning) solutions when the disruption is small scale



- Partial re-planning is **more robust** in the sense that disturbances are not delegated throughout the entire network.
- Complete re-planning can be necessary when the disruption is major and the network is severely affected.
- This motivates that partial re-planning can be embedded within an **AI** framework for small disturbances and the **system can produce recovery plans automatically.**

## The Effects of Household

### Leverage Caps

Which SDGs are tackled in this project:  
Income inequality

Team members (including email):  
Sjoerd van Bekkum  
vanbekkum@ese.eur.nl

### Goal(s) of the project

- Examine the impact of recent changes in macroprudential regulation on households
  - 2012 introduction of an LTV cap at 106%: Home buyers cannot borrow more than 106% of the value of their home
- Examine the impact of this rule
  - Household leverage (intended consequence)
  - Liquidity position
  - Home ownership



### So far, we conclude that:

Macroprudential regulation matters: LTV ratios drop

- decline is most pronounced among liquidity-constrained (i.e., poor) households

Solvency position improves:

- Household leverage / debt servicing costs decrease (as intended by the rule change)

At the same time, liquidity position deteriorates

- Households decumulate savings to buy a house
- Needs about 3 years to recover
- In the presence of a negative shock (>50% income loss), poor households need to use less savings after the rule became effective
- However, we also observe less transitions into home ownership

