WORKING PAPER

Economics education in the 21st century: A comparative analysis of bachelor curricula in The Netherlands

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Abstract

The quality of Dutch economics education has become a subject of discussion in recent years. So far however, the various propositions in this debate have only been supported by anecdotal evidence. This research aims to go beyond anecdotes and looks at the composition of BSc programs in economics in the Netherlands. The research sets out a framework for the main components a proper economics education has to meet and compares the Dutch BSc programs to this standard. To do so, the research draws on course descriptions to create a detailed overview of the theoretical, methodological and didactic nature of every course in nine different Dutch programs. In aggregate, this provides an overview of the diversity and focus of the various Economics BSc programs in the Netherlands.

The research finds that the programs are highly monistic in nature. They have an almost exclusive focus on a subset of quantitative methods, which means students do not learn to carry out or evaluate research by other methods. There is little interdisciplinarity and little theoretical diversity within the economic theory taught, which leaves students with sizeable blind spots. Programs largely fail to properly introduce students to the real economy, providing very little knowledge of the actual economy. Finally, students are insufficiently educated as critical thinkers. In sum, this type of education creates a class of armchair economists, unaware of the limitations of their own paradigm. The conclusions necessitate an intensified dialogue about possible reforms.

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Introduction

Economists play a central role in contemporary society. They are found at key positions in politics, policymaking, journalism and the private sector. Their voice has a greater impact than the voice of any other group of people with a social science background (Smith, 2016). Some even argue that policy today is merely based on economic foundations, rather than normative or moral ones (Moran et al, 2016).

At the same time, the context in which economists are operating is subject to a rapid change. Climate change, rising economic inequality, financial stability, economic migration and ageing populations across advanced nations are pressing issues that all profoundly challenge the way people nowadays provide their means and needs. These issues all threaten our well-being as individuals and as a society, and they are often economic issues in the core.

For societies therefore, it is of vital importance to have economists that are well-trained and prepared to face a wide range of challenges. In recent years, an intensive debate has emerged about the extent to which economic curricula actually prepare future economists for this role. In the Netherlands too, the quality of economic curricula has been questioned[1]. Although it seems to be common sense that elements of the curricula need to be changed, the extent to which this has to happen is subject to contestation. Some have stated that mild reforms will do the job (cf. Gautier, 2016; Verbon, 2015), while others argue that only a fundamental change in the design of Dutch curricula will deliver the required economics education (cf. Van Staveren, 2016).

The debate on the economics education issue has so far mainly been grounded on the personal experiences of people involved (teachers, students) and anecdotal evidence based on these experiences. The main reason for this is that extensive research on the Dutch economics curricula is missing so far. This is hampering the quality of the debate, and it means that the quality of Dutch economics curricula is hard to improve, irrespective of how that quality is defined.

This paper aims to provide a structured and clearly defined quantitative basis for discussions about the contents of Dutch academic curricula in economics. Only by clarifying the subject of debate, the quality of the debate on Dutch economics education can be increased. In doing this, we at the same time hope that the research will inspire and facilitate substantive research on economics curricula in other countries.

In order to give a clear quantitative basis for discussion, we will first provide the reader with a theoretical argument of what we think are conditions upon which proper economics curricula should be built. We will argue that first, an economics curriculum must provide students with a broad set of methodological skills. Secondly, a proper curriculum must enable students to develop a diverse view on what the economy is. For

[1] See for the Dutch debate the written contributions of Keizer (2015), Hollanders (2015), Engelen, (2015), Tieleman and De Muijnck (2016) and Kavelaars and Fränkel (2016) and the debate between Tieleman, Fränkel and prof. Gautier in the tv programme *Buitenhof,* as well as the publications by Velthuis (2016), Mugge (2016), Onderstal & Hollanders (2016), Kavelaars (2016).

that, the student must be able to use different theoretical approaches to analyse the subject and must possess knowledge on history of economic thought. Thirdly, such a curriculum needs to bring students in touch with real world economic situations and history of the economy. Finally, by the time a student obtains his or her bachelor's degree in economics, he or she must be able to think critically and open-minded, in order to be reflective on his or her own arguments and those of others.

In the next section, we will discuss the four conditions for a proper curriculum substantively. Subsequently, the empirical data gathered on the economics curricula of all Dutch universities that teach economics will be contrasted with the conceptual framework. Even though there are some exceptions that will be addressed, we will argue that at this moment, the Dutch curricula do not properly prepare economics students for the challenges that face them. Moreover, we will emphasise that in order to realise such proper training, the changes needed at most cases have a profound character. We will end with some suggestions on possible reforms.

Theoretical framework

We believe that there is more than one way in which a proper curriculum can be designed. It is not our aim therefore to provide the reader with an exact conceptualisation of an optimal economics curriculum. However, the subjective character of economics curricula is not infinite; some curricula do better than others. To enable debate, a working definition of the basic tenets of a suitable economics curriculum is required. To deal with these seemingly paradoxical notions, we will discuss four general conditions we think an economics curriculum should meet in order to train economists properly. As a basis for this, we have taken the four pillars of a good economics education, as described in detail in Tieleman et al. (2016). For this paper, we turn those four pillars into four sub-questions. These are:

1. What research skills do students learn?
2. What different theoretical schools and other social sciences are taught, and in what proportions?
3. How much attention is spent on getting the focus outside the university walls, onto the real economy?
4. How do curricula enable students to develop and maintain a critical attitude?

A proper toolkit of research methods

Providing students with the necessary methodological skills is the basis for every economics curriculum. This provision starts with giving students a clear methodological framework of thinking. Which types of research methods are available? What are their strengths and weaknesses in what contexts? What hidden assumptions does one have in using certain quantitative or qualitative methods? Students should only further explore and apply research methods once they have answered these kinds of questions.

These questions are only the basis of the methodological part of a curriculum. The main part consists of obtaining specific methodological skills as well. For an economist, obtaining quantitative research skills is vital. No other social science has developed such advanced knowledge of model-wise quantitative analysis. The use of mathematical models is a powerful way to analyse policy measures and test hypotheses (Rodrik, 2015). Moreover, it can provide the reader with a very precise definition of assumptions and relationships.

Economic life however also consists of elements that can best be understood by a qualitative research design (Chang, 2013). For example, to understand the influence that dominating views on economic growth have on economic policies in developing countries, students must not only be able to investigate investment multipliers and growth numbers, but also be aware of practices of power and interests that may lie behind policy ideas.

That means that economics curricula should also enable students to obtain skills in interviewing, the design of qualitative surveys, the study of words and other ways of gathering data. Students should be provided with a mix of quantitative and qualitative research methods.

This is not to say that in a proper curriculum, students must become experts in both qualitative and quantitative methods. Specialisation must be supported. But because different methods have different (dis)advantages in different cases and topics, a proper curriculum facilitates diversity of method. It enables students to (1) not lose sight of the different methods available, (2) distinguish which methods work in which cases, and (3) choose if desired a specialisation for themselves from a pool of available methods.

To evaluate whether Dutch economics curricula enable students to do this, our first sub-question is: what research skills do students learn?

A diverse theoretical approach to the economy

The economy is a hugely complex system, consisting of many subsystems. Take for instance the market for smartphones. That market does not only consists of dynamics competing suppliers and consumer preferences, but also of issues regarding vertical integration, global value chains, technological innovation, legal structures and rules of the game, intersections with other markets, and the politics of international trade and competition.

Although an academic discussion might zoom in on one specific point of the smartphone market, the student is only able to place such focused analysis in the right context if he or she is able to see the bigger picture. This bigger picture has varying elements (competition, organisation, politics, legality, et cetera) and hence, the student must be provided with different theoretical ways to study economic phenomena.

The neoclassical economics school is based on the assumption of methodological individualism, and is about the way in which markets work and fail (Shaikh, 2016). This approach might be particularly strong in making the invisible hand visible, but there are at the same time other approaches that deal more effectively with other aspects of economic life. Institutional and political economists for instance study how economic actors influence the so-called *rules of the game*, and how these rules of the game in turn affect how and with what players the economic game is played. Austrian and Marxist economics give students insights on opposing views on the issue of *structure vs. agency* (Dopfer, 2004). Post-Keynesianists emphasise the uncertain nature of the economic activities, and relate this specifically with the endogeneity of money in the financial sector (Shaikh, 2016).

It is certainly possible to study a wide range of economic phenomena with one basic set of assumptions or one theoretical approach. This however does not foster a student's understanding of these economic phenomena. Different theoretical approaches each have their strong suits and weaknesses, and it is a big handicap to be bound to a single paradigm. In a proper curriculum, students should therefore be enabled to make use of different approaches in their analysis. As with the methodological part, this does not imply that students should specialise and know every little detail of approaches available, nor does this imply that students should study dozens of approaches.

It does imply that (1) students should know that different approaches are available, and that (2) proper curricula teach students to see what approach to use in what cases. For a

more structural understanding of different approaches available, curricula should to a reasonable extent make students familiar with the history of economic thought.

To analyse the extent to which Dutch curricula meet this requirement, our second sub-question is: what different theoretical schools and other social sciences are taught, and in what proportions?

Knowledge of the real economy and its history

The primary goal of the academic curriculum is to teach students to think sharply and critically, and the main focus of a curriculum should be methodologically and theoretically. A proper curriculum however also challenges students to leave the ivory tower and look into the real world.

If there is a lack of attention for real world economics and the history of the economy, the risk increases that students will confuse theory and methodology for the real world itself. Moreover, taking the real world into account urges students to become critical towards own methodological assumptions or those of others. We therefore believe it to be important that courses or parts of courses are devoted to aspects of the actual economic system. This can be achieved in a variety of ways, for instance via guest lectures, excursions, analyses of sectors, detailed empirical discussions in papers, et cetera.

Moreover, properly trained economics students should possess some knowledge of the history of the economy. Not only knowledge of economic thought, but of economic history itself. Rather than discussing different theoretical approaches that have emerged in history, history of the economy deals with the empirical economic history. For example, late 19th century globalisation, the Great Depression, the Bretton Woods monetary system. Attention for this is important because, as history has taught us, economic phenomena tend to repeat or re-emerge over time. Stock bubble speculation is a classic example of this. These phenomena can therefore be more properly understood by students when put in a historical perspective (Hodgson, 2001).

In line with this argument, our third sub-question is: how much attention is spent on getting the focus outside the university walls, onto the real economy?

Critical, open and reflective thinking

The task of an economics degree at a university is to not only train methodological professionals, but to also shape critical and independent minds. In line with Foucault (1980), we mean the following when talking about 'critical' and 'independent':
"It suggests [...] a readiness to find our surroundings strange and singular; a certain relentlessness in ridding ourselves of our familiarities and looking at things otherwise; a passion for seizing what is happening now and what is passing away; a lack of respect for traditional hierarchies of the important and the essential" (Foucault, 1980).

We believe that courses on 'critical thinking' generally do not suffice to train students to be critical. Rather, teachers can set an example for the students when it comes to developing a critical mind-set, independent on whether they are professors, readers or

junior lecturers. They have to show what it means to approach a topic critically; they have to confront students with their own arguments, they have to reveal assumptions that are made, they have to give an alternative or speak in the name of the devil when the livelihood of discussions can be increased. They have to show that studying and researching is a highly reflective activity. It is then up to the students to follow the example that is set.

This is also reflected in the didactic methods that are used in a program. Didactic methods are generally not seen as something relevant to the knowledge that is taken in. But an academic education is not just about learning by heart, it is about learning to think, to argue and to reflect. In fact, it matters very much whether students have write essays or have to answer multiple-choice questions. It makes a large difference whether students have to successfully reproduce mathematical equations, or have to defend the position they take through a debate. Therefore, we also take didactic methods into account in this sub-question.

That said, we also do believe that for developing a critical mind-set, it will help to make students familiar with tools to engage in debates in a critical way. Since the critical attitude is about questioning the assumptions of oneself and the other, paying attention to courses that specifically provide students with tools to reveal assumptions might be helpful. Ontological and epistemological as well as other philosophy of science insights therefore should encourage critical thinking in an economics degree.

Our fourth and final sub-question therefore is: how do curricula enable students to develop and maintain a critical attitude?

In this section, we have argued that a proper economics curriculum should at least meet four conditions, and discussed the importance of each condition. We have ended our discussion of each condition with posing the sub-questions of this research. In the next section, we will elaborate on the methodological considerations that underlie the quantitative part of this research.

Methodology and data

In this chapter, we explain the methods used to gather and analyse data on the bachelor programs we discuss in this research. We will start with briefly identifying which curricula are subject to this study. After that, we will discuss the operationalisation of the four sub-questions we have formulated in the theoretical section. From there, we explain how we collected the data, provide some descriptives on the programs we looked into and the courses within them. Subsequently, we discuss the variables we created and the various scales used in distinguishing between the level of detail in which courses treat certain topics.

Approach & Descriptives

Since this research is a first in its genre both in the Netherlands as well as on an international level, we have constructed a data gathering methodology from the ground up. We decided to focus on the main nine economics bachelor programs taught in the Netherlands: University of Groningen, Maastricht University, Tilburg University, University of Amsterdam, VU University Amsterdam, Utrecht University, Wageningen University of Research, Erasmus University Rotterdam and Radboud University Nijmegen.

We decided to go beyond observing course names only (cf. Overstal and Hollanders, 2016), since courses with the same name can be substantially different in content. Therefore, we decided to analyse the *content* of each course within the nine programs. We have gathered more specific information about the content of the various courses via the online course descriptions, which are available on the various university websites. Appendix 2 will provide for a full list of the programs analyzed and the exact data sources used.

Course weighting

Comparability between courses and programmes is a key part of this analysis. Therefore we collected basic information about course names, year of instruction, number of ECTS and whether a course is obligatory or optional. In particular, we use weighted ECTS in order to capture the importance of each course in the entire programme, rather than only the number of courses. Each course *i* gets a weight, equal to 1 if the course is obligatory or equal to the number of ECTS divided by the total number of optional ECTS (ij) in the specific time period. In mathematical terms:

1. $w_i = ECTS_i$

for obligatory courses, and:

2. $w_i \frac{\sum_{i=1}^{n} ECTS_i}{\sum_{i=1}^{N} ECTS_i}$

for optional courses, with N the amount of electives available in that specific timeslot and n the amount of electives a student is obliged to choose.

To clarify the way we have weighted the courses, we will now give an example of how applied weighting looks like. In the second semester of the third year at Tilburg University, students are allowed to choose 3 courses out of a total of 5 courses (each equalling 6 ECTS). Therefore, to determine the weighted number of ECTS for each course, we divide the sum of ECTS required (3*6=18) by the total sum of ECTS of all possible choices (5*6=30). With this weight (18/30 = ⅗) and the number of ECTS (6) the relative importance of each course is 18/5 = 3.6, referred to as the weighted number of ECTS.

It is important to note here that this method leaves out an important aspect of the degree of pluralism: the *amount* of choices. This measurement only shows how many ECTS are, in an average economics degree of 180 ECTS, devoted to a certain school/methodology/etc. That means that if a certain program has 20 highly diverse electives, of which students can choose 2, will get the same score as a university that has only 5 electives, of which students can choose 2. We are still looking for a method that includes the amount of choice in the pluralism score.

Table 1 provides an overview of the data collected. On average each programme has 38 courses, leading to a grand total of 338 courses over the nine bachelor programmes. Each course has an average weighted number of 4.8 ECTS and around 75 per cent of the courses students follow in an average 180 ECTS programme are obligatory.

Table 1: Average ECTSs and number of courses in economics programmes in the Netherlands

University	Average ECTS	Number Courses	Total ECTS
Groningen	3.75	48	180
Maastricht	4.74	38	180
Nijmegen	6.43	28	180
Rotterdam	4.29	42	180
Tilburg	5.45	33	180
Utrecht	3.75	48	180
UvA	5.45	33	180
VU Ams	4.74	38	180
Wageningen	6.00	30	180
Overall	4.79	38	180

Notes: Total number of 338 courses.

Course types

A major methodological challenge has been to categorise each course under a broader umbrella of course categories. We will now discuss how we have made these categorisations.

The first distinguishing variable is *course type.* This enabled us to separate the courses into several categories, of which only some were relevant for our research. Courses were split into Theory, Methodology & Technique, Thesis, and Free Electives with the additional distinction for theory courses between Business theory, Economic theory and Other theory (see figure 1). This was done to focus specifically on the economics related courses offered during the bachelor programmes.

'Theory'

Generally, 'theory' courses are the most wide-ranging category in our research, running the gamut from *Micro 101* and *Port Economics* to *History of Economics.* It should be noted here that we have decided to categorise theoretical and applied courses under one umbrella, since we believe theoretical and applied courses are in content inseparable from each other. A theory is an abstraction of reality and both are in that sense two sides of the same coin. We have not looked into Business Theory courses.

'Methodology & Technique'

There is a clear line between courses that fall under the umbrella of Methodology and Technique and courses that do not. The courses that fall under this category run the spectrum from qualitative methods to mathematics. As it turns out, there are no methodological courses including explicit theory, which greatly simplified the categorisation.

'Business', 'Thesis' and 'Open Minor'

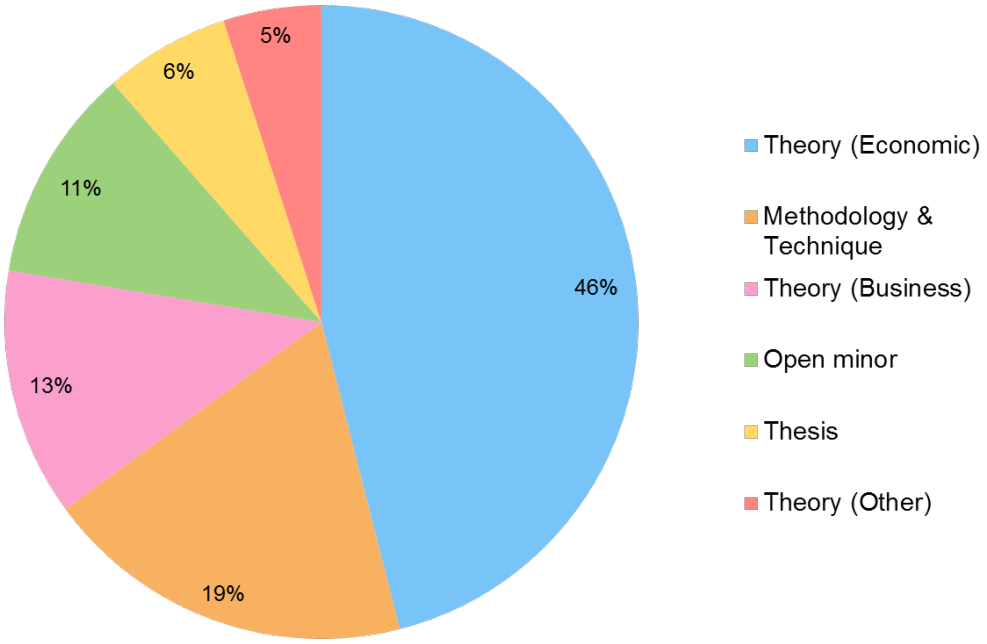
We have not looked into courses with the label *Business*, *Thesis* and *Open Minor*. Business courses are not the subject of our study, since they are not directly related to the study field of economics. As for the thesis, we acknowledge that it is of vital importance in an economics degree, but we also believe that the thesis is about students doing research themselves, while we are primarily interested in what education students get taught before they can do projects as a thesis or internship themselves. Finally, most programs also have some free space in which students can do a minor, internship, exchange or further elective courses. We have excluded all these options except for economic elective courses from our research, for two reasons. First, because we want focus on what students learn when studying economics, not on what they learn from other disciplines. Second, because it is impossible to observe what exactly students use this space for.

We do of course count the number of ECTS devoted to such options, since this is an important indicator of the potential pluralism of a program. Students differ in their preference for such choices, so we have attempted to construct an aggregate value. To this end, we have allocated ⅔ of the ECTS in such space to "Open Minor". This is based on the estimate that students will on average choose one of the options minor/internship/exchange ⅔ of the time, and choose further elective courses in economics ⅓ of the time. That estimate was made based solely on our own studying experience, since we have found no reliable information on the actual percentage of

what people choose. Information that could help us to improve that estimate would be highly appreciated.

That provides us with the average composition of a BSc in Economics at a Dutch university (see Figure 1), measured in ECTS.

Figure 1: Average distribution of course types in Dutch economics curricula.



Research (sub-) questions

As set out in the theoretical framework, this research builds on four identified requirements for a proper economics education. In this section, we will operationalise the four sub-questions, and will methodologically explain how we have tried to answer each of the four sub-questions.

We then operationalized these main questions into several sub-questions and analysed the programs course by course, categorizing each course on a number of variables related to the 4 pillars of interest. The following list provides a brief overview of the topics within the four pillars, which are explained in more detail below.

1.1 Types of methodology and technique treated in the course
2.1 History of economic thought treated in the course
2.2 Economic theoretical schools treated in the course
2.3 Other social scientific theoretical schools treated in the course
3.1 Amount of real world economics in the course
4.1 Philosophy of science treated in the course
4.2 Didactic methods used in the course
For the full questionnaire used, see Appendix 2.

Furthermore, each category is again classified into easily answered questions, for example: "does this course include regression analysis". From preliminary analysis we found that courses vary greatly in the extent to which concepts are explained. To stay

within the example, some courses spend only a little bit of time on regression analysis, while other courses are completely devoted to the topic. So for questions where the intensity of application varies, we decided to use a 4 point likert scale to capture this heterogeneity. This scale is further explained below, in the section *course content weighting procedure*.

Sub-question 1: what research skills do students learn?

To understand what research methods students are taught, we separate four broad categories; quantitative methods, qualitative methods, mathematical techniques and research design.

In each of these categories, we used a sample of course descriptions to identify the most common subcategories. For example, under quantitative research, we looked for material on regression analysis, factor analysis, descriptive statistics, survey and questionnaire design, data selection and evaluation, experimental economics, and applied econometrics.

For the categories quantitative methods, qualitative methods and mathematical techniques we used a 4-point likert scale. For the questions on research design, we simply asked whether students are required to design their own research in this course, and if so, what stages of research design and execution were included in the course.

This sub-question was probably the one easiest to answer, because the terminology on research methods in course descriptions is generally quite unambiguous.

Sub-question 2: what different theoretical schools and other social sciences are taught, and in what proportions?

A second aspect of pluralism is the diversity in theoretical schools that is taught in a single program. To answer this question, we have scanned the course descriptions for keywords and concepts signalling what theoretical schools are taught in the course. In general, this method enabled a surprisingly clear categorisation of courses. We also considered other social sciences, both in separate courses and in combination, making courses interdisciplinary.

As a basic categorization, we used the categories history of economic thought (Q2.1), classical economics, twelve different neoclassical economic schools, nine other economic schools (Q2.2) and several forms of interdisciplinarity with other social sciences (Q2.3). If a certain school of thought was treated in a course, we further categorized the extent to which it was treated, using a 4-point likert scale. This enabled us to capture both the diversity and mix of theory, and the theoretical centre of gravity. In other words, it provides a complete picture of the schools of thought treated in a certain course or program, and it provides a %-wise breakdown of the time spent on each school of thought.

Unfortunately, it is not always possible to distinguish between the theoretical schools. The clearness of course descriptions on theoretical schools and concepts varies quite a lot between universities and between individual courses. We recognize that this means

comparability is hampered and imperfect. However, we feel that this method is a step up from the approach taken by Onderstal and Hollanders (2016).

Sub-question 3: how much attention is spent on getting the focus outside the university walls, onto the real economy?

The third sub-question deals with getting the focus outside of theory, onto the real economy.

It concerns three topics. First, economic societal problems, such as the economic workings of climate change or inequality, extreme hunger, lack of education, gender inequality or diseases and health problems. Second, economic sectors or topics, such as the company structure of specific sectors, the housing market, the financial sector, labour relations, energy economics, the informal economy, the sharing economy, international organizations. Third, economic history, such as late 19th century globalisation, the Great Depression, the Bretton Woods monetary system.

Almost every economic textbook has some examples in it, illustrating the theory at hand. But that is not what we measured in this sub-question. The question we asked is: how many courses *start* from the real economy, casting theory in a supportive role, as a tool to further understand things? How many courses are not centred on a specific theory, but on a specific economic sector? How many courses include some serious discussion of economic history? Again, we used a 4-point likert scale to differentiate between courses that include a little of a real sector, problem or piece of economic history, courses that deal extensively with it, and courses that are exclusively focused on such a topic.

Of course, this can be hard to observe from the used data sometimes. One example are the Seminar courses in the Erasmus University BSc program, which have quite limited course descriptions, but which are often very much focused on real world economic topics, elevating them above a single theoretical framework and studying them as topics in their own right. On the whole, though, we are confident that we have been able to observe the amount of real-world economics to high level of precision.

Sub-question 4: how do curricula enable students to develop and maintain a critical attitude?

The final question we ask is whether the education we receive is an academic one, developing us into critical and creative thinkers, able to look at problems with a fresh and open view, receptive to various points of view. This one is the hardest to answer through the selected method of reviewing course outlines, because it depends most strongly on the attitude of the lecturer, and on other yet unobservable issues like class size and exam requirements.

Fortunately, not everything in this regard is unobservable. We have been able to capture information on the following topics: philosophy of science, ethics, and discussion of methodological choices. As an additional proxy, we have gathered information on the didactic methods used. The exclusive use of textbooks is generally an indication that students do not learn to compare ideas and authors, whereas the use of original materials and recent research indicates a more mixed course. The use of

multiple-choice questions with a single correct answer does not align well with the idea of forming individual thought and critical reflection. On the other hand, assignments like essays or presentations force the student to formulate his ideas more clearly and to learn to effectively communicate them to others, receiving feedback and engaging in discussion.

Through such proxy data on the didactic methods used, we have been able to get a more detailed picture of the degree of critical thinking that is taught in a course. We are aware that these are quite crude proxies, but they are the best we could get from the data available. Any suggestions on better measurement techniques for this topic will be highly appreciated.

Course content weighting procedure

Again, since course and program comparability is a big goal of this research, it was not sufficient to establish what *elements* every course contains. We also attempted to weigh the *degree* to which those elements were treated in the entire program.

In terms of answer categories, we used the following categories: *binary* (yes/no), *scale* (0-3) and *open*. The binary and open categories speak for themselves, but the scale from 0 to 3 may require some explanation.

Questions in the sections Q1 (research methods), Q3.4 (other social sciences), and Q5 (theoretical schools) ask what theory or methods are taught in the course. However, it is not only important to know what theoretical or methodological elements a course contains. Even more important are the proportions. To differentiate, we used the following three categories.

1. Briefly treated. If the theoretical school or research method was mentioned only once, and was not described as constituting a major part of the course, we marked it as "1".
2. Extensively treated. If the theoretical school or research method was mentioned more than once and appeared to play a major role in the course, we marked it as "2".
3. Entire course. If the theoretical school or research method was described as the main topic of the course, possible with a few other side elements (which we then marked "1"), we marked it as "3".

Some courses are more differentiated than others, combining several schools of thought or research methods within one course. To accommodate this, we used a weighing system to distribute the ECTS of the course over the various schools of thought present. Schools of thought (or research methods) which were briefly treated (score 1) were assigned a weight of 0.1. Schools of thought (or research methods) which were extensively treated (score 2) were assigned a weight of 0.5. Schools of thought (or research methods) which occupied (almost) the entire course (score 3) were assigned a weight of 1. We then divided the ECTS assigned to the entire course over the various schools of thought treated within the course.

Example

The course *Statistics introduction* is 6 ECTS. Analysis of the course description shows that the course briefly treats regression analysis, extensively deals with factor analysis, briefly goes over descriptive statistics and briefly touches on survey design. So, three topics are treated 'briefly' and one topic is treated 'extensively'. That is 0.1+0.1+0.1+0.5, a total weight of 0.8. Which gives us 6 ECTS0.8=7.5ECTS per 1 weight.

So the total content of this course is:

Regression analysis:	7.5*0.1 = 0.75 ECTS
Descriptive statistics:	7.5*0.1 = 0.75 ECTS
Survey design:	7.5*0.1 = 0.75 ECTS
Factor analysis:	7.5*0.5 = 3.75 ECTS
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Total:	6 ECTS

From these numbers, we are able to estimate with relative precision the amount of time/ECTS spent on individual theoretical schools, research methods and the amount of courses in which specific didactic methods are being used. In the next chapter, *Results*, we show estimates of the proportions of these various ingredients of economic curricula.

Closing remarks

In this chapter, we have set out our methods in gathering and evaluating course descriptions, on creating a weighted composite of an entire program and on comparing the different programs with one another. The next chapter will show our main findings.

Note: this research is a first attempt to systematically map the contents of the academic programs in economics in the Netherlands. We have no doubt about the fact that the research design could be much improved. Hence, we strongly welcome feedback on our methodology. One point which we hope to improve on for next year is to directly gather feedback from the course professor on our estimates of the proportions of the various schools of thought that are treated in their course. That should notably improve data quality.

Results

This section will provide with an overview of the results that can be derived from the statistical analyses obtained in this research.

A proper toolkit of research methods

The first part of reviewing Dutch economics curricula consists of evaluating what sort of research and methodological skills students obtain in Dutch economics curricula.

Of the total obtainment of research and methodological skills, Dutch curricula on average devote 52 per cent of the ECTS (weighted) to quantitative data analysis. When focussing on quantitative data analysis, most attention is paid to regression analysis (to which 14 per cent of the total research and methodological skills is devoted), followed by descriptive statistics (12 per cent of the total) and applied econometrics (9 per cent of the total). 42 Per cent of the total ECTS invested in obtaining research and methodological skills is dedicated to mathematics. In the category of mathematics, most attention is paid to the subcategory linear algebra (19 per cent of total research skills) and calculus (16 per cent). To research design 3 per cent of the total ECTS of research and methodological skills is dedicated. For the full results, see table 2.

Table 2: Research methods and techniques in the investigated programs.

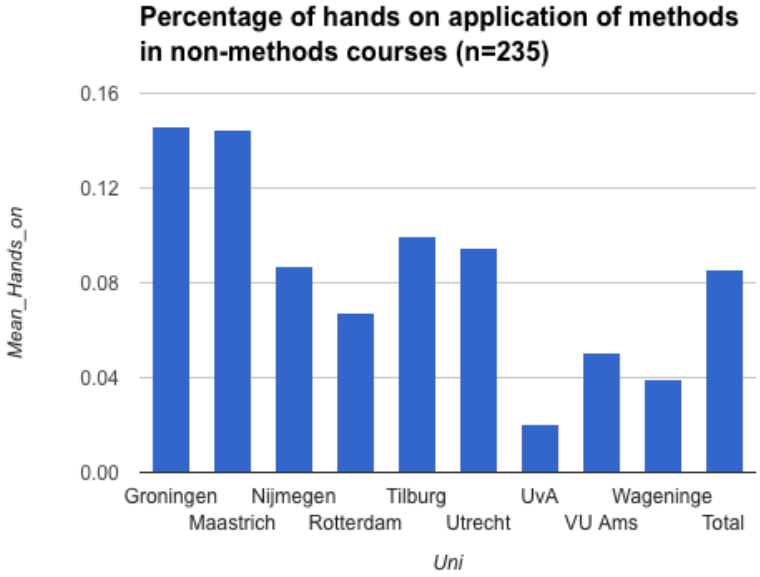
Variable	P_ECTS_methods
Regression analysis	0.14
Factor analysis	0.01
Descriptive statistics	0.12
Survey and questionnaire design, ethical concerns	0.01
Experimental economics (how to set up and evaluate an experiment)	0.00
Data selection and evaluation	0.00
Applied econometrics (how to work with data/software, i.e. Matlab, R, Stata, SPSS)	0.09
Other	0.16
Total quantitative analysis	**0.52**
Interview design and techniques	0.02
Ethnographic fieldwork (i.e. Fool's Gold, Gillian Tett, 2010)	0.01
Other	0.00
Total qualitative analysis	**0.03**
Linear algebra	0.19
Calculus	0.16
Logic	0.00
Basic Econometrics (non-applied)	0.07
Other	0.00
Total mathematics	**0.42**
Research design	**0.03**
Sum	**1.00**

Note: 5 methods courses have no distinguishable methods (usually "skills" courses)

In the Dutch curricula, a total of 4 courses (3 per cent of all research and methodology courses) is dedicated to obtaining qualitative research skills. At the Radboud University Nijmegen, 'Research and Intervention methodology A' is an obligatory course in the first year. At Utrecht University, 'Qualitative Research Methods' is an optional course (second year). At the VU Amsterdam, students are invited to use qualitative data in their 'Research Paper' course and at the Wageningen University of Research, the course 'Research Methods in Social Sciences' is obligatory in the first year.

For evaluating the extent to which students obtain a proper toolkit of methodological skills, we have focussed on the extent to which non-method courses pay attention to the application of certain research methods to themes discussed in that course (see table Q2). We found that at the University of Groningen and Maastricht University, 15 and 14 per cent of the non-methods courses have such hands on application of methodology. In Nijmegen, Rotterdam, Tilburg and Utrecht, 7 to 10 per cent of the non-method courses have such hands on application. For the UvA, VU and Wageningen University, this percentage is lower.

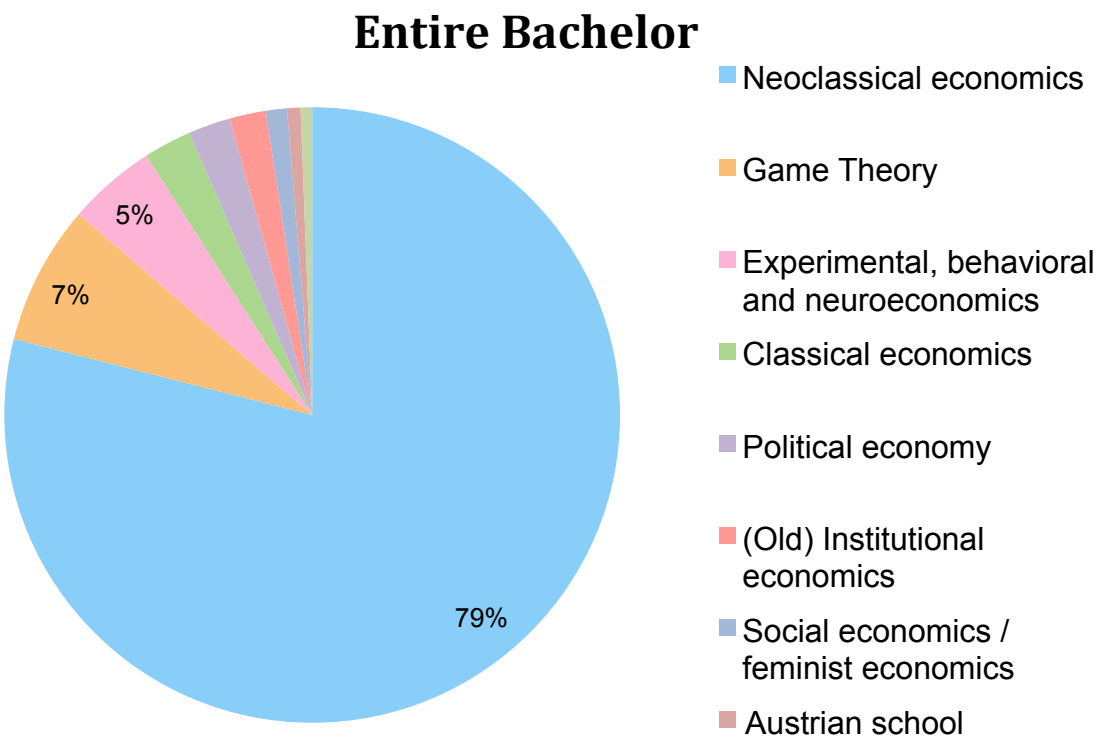
Figure 2: percentage of hands-on application of methods in non-methods courses.



A diverse theoretical approach to the economy

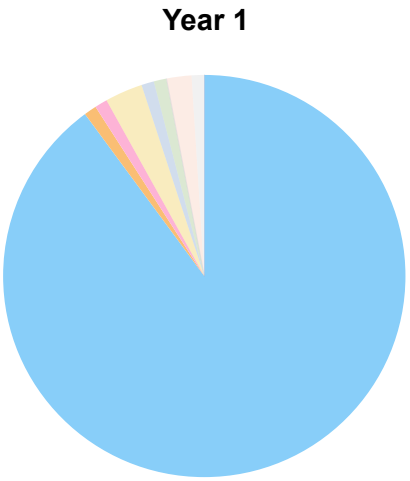
As set out in the methodological section, we have researched the extent to which students gain familiarity with different schools of economic thought in their bachelor's curricula. Seen over the period of the entire bachelor's degree, our results show that an average of 78.5 per cent of the total weighted ECTS (research skill courses, theoretical courses and thematic courses) is devoted to teaching neoclassical economic theory (see table Q1). On average, 7.3 per cent of the total weighted ECTS is spend on teaching game theory and 4.6 per cent on experimental, behavioral and neuroeconomics. To each of the other schools of thought 1 or 2 per cent of the total weighted ECTS is dedicated on average with 9.6 per cent in total.

Figure 3: Percentage of schools of economic thought in theory courses of the entire bachelor



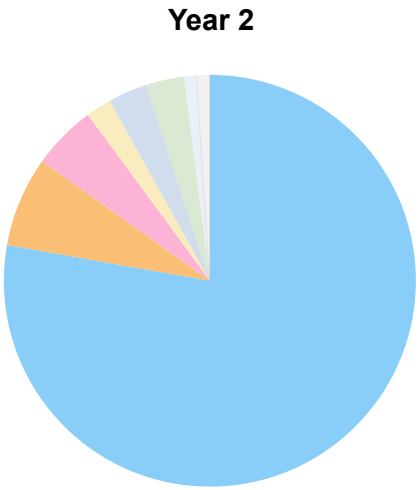
We will now look at the variety of use of different schools of thought at different stages in the bachelor's. Dutch curricula in their first year spent on average 89,5 per cent of the weighted ECTS to teaching neoclassical economics and 10.5 per cent to numerous other schools of economic thought.

Figure 4: Percentage of schools of economic thought in theory courses of the first year



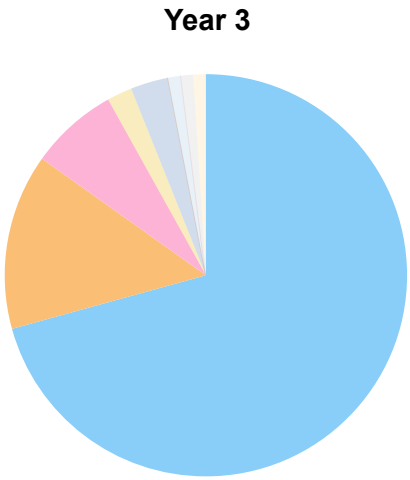
In the bachelor's second year, 76.9 per cent is dedicated to neoclassical economics. 7.3 per cent of the total weighted ECTS is devoted to teaching game theory, and 5 per cent is spent on teaching experimental economics.

Figure 5: Percentage of schools of economic thought in theory courses of the second year



In the third year of the bachelor, 70.2 per cent of the weighted ECTS is spent on teaching neoclassical economics, while almost 13.7 per cent of teaching is dedicated to game theory and 7.4 per cent to experimental economics. On other schools of thought and economic perspectives, 8.7 per cent of the weighted ECTS is spend.

Figure 6: Percentage of schools of economic thought in theory courses of the third year



Although the extent to which teaching builds on neoclassical economics on average decreases as students progress in their bachelor's, neoclassical economics remains dominant in each year.

As justified in the methodological section, the category of neoclassical economics consists of a variety of sub-schools or sub-domains of economic thought. Table Q1 shows that 14 per cent of (weighted ECTS of) teaching consists of teaching marginalist microeconomics. 11 per cent of the weighted ECTS of the total schools of thought taught is devoted to Public economics/welfare economics, and 9 Per cent to teaching Neo-Keynesian economics. Table Q1 provides for the full results of the different (sub-) schools of thought taught in Dutch bachelor's curricula.

Table 3: the proportions of various neoclassical subschools in the investigated programs

Neoclassical economics	
Marginalist micro-economics	0.14
Public economics/Welfare economics	0.11
Neo-Keynesian	0.09
New Institutional economics	0.07
Neoclassical competition theory	0.06
Marshallian neoclassical economics	0.05
Ricardian international economics	0.05
Monetarism	0.05
Solow growth model	0.04
New classical macroeconomics	0.04
New Keynesian economics	0.04
Environmental economics	0.03
General equilibrium theory	0.01

Table 4: the proportions of various economic theoretical schools in the investigated programs

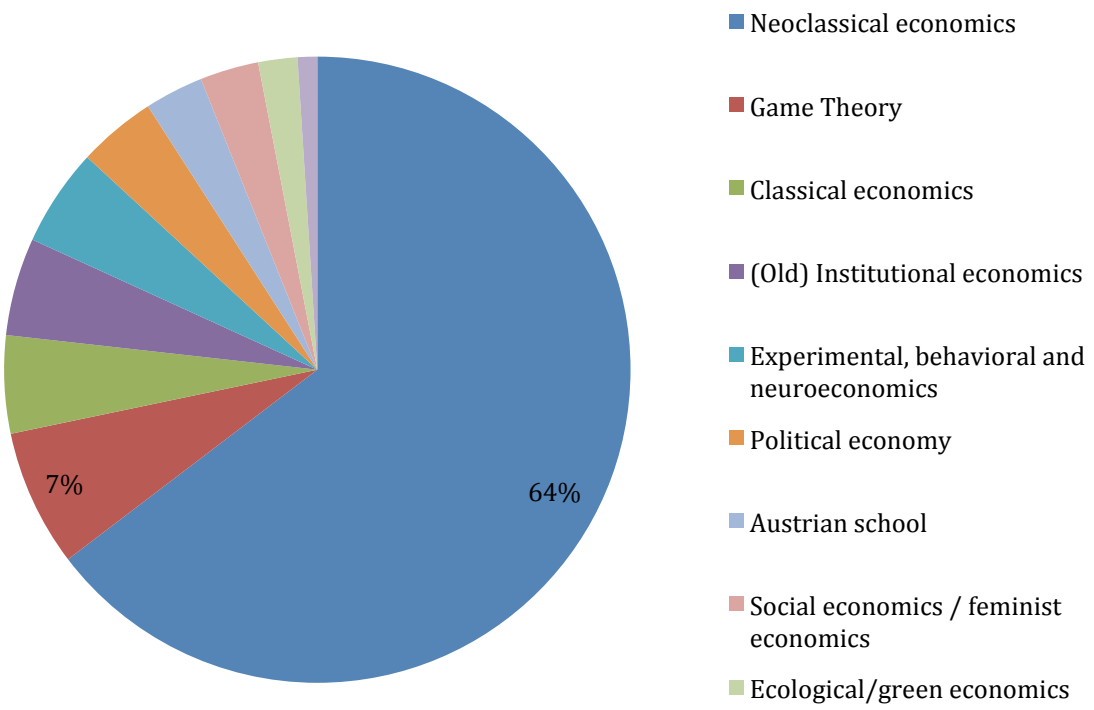
School of thought	P_W_ECTS
Neoclassical economics	0.785
Game Theory	0.073
Experimental, behavioral and neuroeconomics	0.046
Classical economics	0.025
Political economy	0.022
(Old) Institutional economics	0.019
Social economics / feminist economics	0.011
Austrian school	0.007
Post-Keynesian economics	0.006
Ecological/green economics	0.005
Complexity economics	0.000
Other schools	0.000

We have also taken into consideration the percentage of courses on average that have little or more than little pluralism in schools of thought taught. Looking at table Q4, we can observe that on average, half of the courses (measured in terms of ECTSs) have a

form of pluralism. When game theory however is counted within the neoclassical mainstream (as is often claimed, i.e. Gautier (2016)), we see the average of courses that have some form of pluralism is lower (36 per cent). Our results moreover show that Radboud University has the highest percentage of courses with some form of pluralism, followed by Tilburg and Utrecht.

Relevant at this stage is to take a closer look at the outlook of these pluralistic courses: to what degree are pluralistic courses pluralistic? As can be seen in figure Q4.1, we found that in pluralistic courses on average, 64.1 per cent of the weighted ECTS is devoted to neoclassical economics, 6,9 per cent to game theory and 29 per cent to a various extent to various schools of thought. When game theory is not seen as school of thought contributing to pluralism, the percentage of neoclassical economics taught in pluralist courses is 68.

Figure 7: Proportion of economic schools of thought in pluralistic courses



In short, there is on average a significant amount of courses with some degree of pluralism. Neoclassical economics however still has a large dominance in these pluralistic courses.

A total of 10 courses in Dutch economics curricula is entirely (or, if stated, for a large part) devoted to discussing the history of economic thought. At the University of Groningen, the Radboud University and Erasmus University History of Economic Thought is an obligatory course in the second year. At Maastricht University, this course is optional for students in the third year. For students in Tilburg, History of Economic Thought is optional in the third year. Students in Tilburg are moreover obliged to follow

'Philosophy of Science and Free Markets', a course that for a large part focuses on history of thought. At Utrecht University, students follow the obligatory course 'Multidisciplinary Economics' (a large part of this course is devoted to history of economic thought) and have an option to follow 'Contemporary Economics in Historical Perspective, both in their first year. At the VU, students are obliged to follow 'Economic Challenges' in their first year of study, which for a large part discusses history of thought. At Wageningen University, second-year students are obliged to follow 'Theorists of Economic Growth', which also contains significant portion of history of economic thought.

We have moreover looked at the extent to which courses both use economic theory and theories from other social sciences. To what extent are curricula interdisciplinary? We have observed that on average, 16 per cent of the ECTSs is devoted to studying in which one makes use of both economic and other social science theories. Half of these ECTSs (7 per cent) are substantially dedicated to gaining theoretical insights of different social science disciplines, together with economic theories. There is considerable variety between different universities on this point. Radboud University for instance dedicates 39 per cent of its ECTSs to making use of interdisciplinary insights, Utrecht even 41 per cent. The UvA in contrast has no ECTSs dedicated to interdisciplinary knowledge at all in its regular program.

Table 5: the distribution of interdisciplinary courses in Dutch bachelor curricula.

University	Inderdisciplinary_light	Inderdisciplinary_heavy
Groningen	0.03	0.01
Maastrich	0.05	0.03
Nijmegen	0.39	0.17
Rotterdam	0.19	0.00
Tilburg	0.02	0.02
Utrecht	0.41	0.23
UvA	0.00	0.00
VU Ams	0.09	0.01
Wageninge	0.18	0.12
Total	0.16	0.07

The real economy

The third part of reviewing the Dutch economics curricula consists of observing the extent to which curricula make use of real world knowledge.

We start with discussing the percentage of courses that is devoted to economic history (empirically speaking). Looking at table Q2, one can observe that on average, 6 per cent of the courses (in terms of weighted ECTSs) has some degree of dedication to economic history. When taking a closer look at the intensity of the attention to economic history in these ECTSs, we observe that one percent of the courses (in ECTS terms) heavily relies on insights from economic history. There is some cross-university variation at this point. The UvA for instance has 12 per cent of its ECTSs dedicated to some attention for economic history, while an intense focus on history is nowhere to be found in terms of ECTSs.

Table 6: the distribution of economic history in courses in Dutch bachelor curricula.

University	W_Hist_Light	W_Hist_Heavy
Groningen	0.12	0.00
Maastrich	0.06	0.06
Nijmegen	0.04	0.00
Rotterdam	0.00	0.00
Tilburg	0.03	0.00
Utrecht	0.10	0.02
UvA	0.16	0.00
VU Ams	0.09	0.00
Wageninge	0.07	0.05
Total	0.07	0.01

We moreover have researched the amount of courses that have real world problems as their starting points. Here, we found that on average, 11 per cent of the courses (again, in weighted ECTS terms) have to a variety of degrees a real world problem as their starting point. 4 per cent of the total courses intensively put a real world issue central to the start of the course. There is some variation on this point over different universities. Wageningen rises above the crowd in this respect: roughly one-third of the courses starts with addressing to some degree a real world problem.

Table 7: the amount of courses that start from a real world economics problem.

University	W_Start_Light	W_Start_Heavy
Groningen	0.01	0.01
Maastrich	0.09	0.03
Nijmegen	0.09	0.00
Rotterdam	0.00	0.00
Tilburg	0.20	0.09
Utrecht	0.10	0.06
UvA	0.07	0.00
VU Ams	0.14	0.05
Wageninge	0.42	0.20
Total	0.13	0.05

We have also taken into account the weighted ECTSs that are dedicated to courses that to some degree pay attention to real world economic sectors. We found that on average, 13 per cent of the courses pays some degree of attention to real world economic sectors. In 6 per cent of the courses, real world sectors played an major or central role. As can be observed in table Q3, at most of the universities, the percentage of courses that to some extent pay attention to real economic sectors is between 10 and 20.

Table 8: the amount of courses that start from a real world economics sector

University	W_Sector_Light	W_Sector_Heavy
Groningen	0.14	0.10
Maastrich	0.04	0.00
Nijmegen	0.22	0.09
Rotterdam	0.12	0.04
Tilburg	0.15	0.03
Utrecht	0.13	0.01
UvA	0.20	0.11
VU Ams	0.14	0.00
Wageninge	0.24	0.24
Total	0.16	0.07

Finally, we have looked at the percentage of courses that have neither attention to economic history, nor put real world problems central to the start of the course, nor pay attention to economic sectors. Table Q4 shows that on average, 82 per cent of the courses (in terms of ECTSs) do not pay any significant attention to economic history, do not put a real world issue central to the course, and does not pay any significant attention to real world economic sectors. Moreover, we found that 91 per cent of the courses on average doesn't attribute a major role to the three factors mentioned in the course. Only Wageningen is an outlier at this point, with 61 per cent of the courses not having some attention to the factors mentioned, and 71 per cent of the courses not having major attention for the three factors.

Table 9: the amount of courses with no real world economics

University	W_noRW_Light	W_noRW_Heavy
Groningen	0.85	0.89
Maastrich	0.87	0.97
Nijmegen	0.74	0.91
Rotterdam	0.88	0.96
Tilburg	0.76	0.89
Utrecht	0.80	0.93
UvA	0.80	0.89
VU Ams	0.81	0.95
Wageninge	0.49	0.62
Total	0.77	0.89

Developing a critical mind-set

We have some quantified indicators for the extent to which economics students develop a critical mind-set in their program.

We first evaluated the weighted ECTSs that inherit elements of ethical philosophy. On average, 7 per cent of the weighted ECTS inherit a discussion of ethics. At this point, variety over universities exist, with Radboud and Tilburg University having ethical

elements discussed in 17 per cent of their weighted ECTS, while Groningen and the University of Amsterdam do not do this at all.

Table 10: the amount of ethics courses

University	W_ethics
Groningen	0.00
Maastrich	0.06
Nijmegen	0.17
Rotterdam	0.03
Tilburg	0.17
Utrecht	0.04
UvA	0.00
VU Ams	0.07
Wageninge	0.04
Total	0.07

Second, we have evaluated the extent to which courses teach students elements of philosophy of science. Our research shows that on average, 8 per cent of the weighted ECTS is dedicated to courses that incorporate to some degree a discussion on philosophy of science. The differences between universities are again considerable, with Nijmegen inheriting 22 per cent of their courses with elements of philosophy of science, and the WUR zero.

Table 11: the amount of philosophy of science courses

University	W_Philosophy
Groningen	0.05
Maastrich	0.03
Nijmegen	0.22
Rotterdam	0.03
Tilburg	0.11
Utrecht	0.10
UvA	0.05
VU Ams	0.07
Wageninge	0.00
Total	0.08

We thirdly evaluated the extent to which courses include a wide discussion of methodological choices, the underpinnings and assumptions of economic theories and research. Our results show that on average, in 10 per cent of the weighted ECTSs such discussion is present. Nijmegen has the highest amount of weighted ECTSs at this point, with 26 per cent, while Maastricht, VU and WUR, and some others score considerably lower.

Table 12: the amount of economic methodology courses

University	W_Methods&Assumps
Groningen	0.05
Maastrich	0.03
Nijmegen	0.26
Rotterdam	0.07
Tilburg	0.16
Utrecht	0.10
UvA	0.07
VU Ams	0.04
Wageninge	0.04
Total	0.10

We fourthly evaluated which study materials are used in courses. In 21 per cent of the cases, the information on material was not available. Besides this non-information, universities on average use textbooks for 55 per cent of the weighted ECTSs, recent literature for 26 per cent, online material for 18 per cent and original works for 2 per cent.

Table 13: the proportion of teaching materials in the curricula

Literature used (% known)	W_teaching materials
Textbooks (of info available)	0.55
Original works	0.02
More recent literature	0.26
Online material	0.18
Information on material not available	0.21

We fifthly looked at the way in which courses test the knowledge of students. For 14 per cent of the weighted ECTSs, the information was not available. For the rest, we on average see that students are mostly tested by open or essay questions, followed by reports or essays.

Table 14: the proportion of testing materials in the curricula

Material used (% of known)	W_testing materials
Open/essay questions	0.37
Multiple-choice questions	0.13
Reports/essays	0.22
Verbal examination	0.02
Contribution during tutorials	0.11
Homework grades	0.15
	1.00
No information on testing methods available / unclear	0.14

Finally, we have taken into account the extent to which courses practice certain skills (see table here below). Although it was not mentioned in 69 per cent of the time which skills were exactly trained in the course, we found that on average, in 19 per cent of the weighted ECTS courses, students have to speak and explain something informative. Other results are shown below.

Table 15: the proportion of public expression in the curricula

Public expression	W_Pub expr
Public speaking – informative/explanatory	0.19
Public speaking – persuasive	0.02
Argumentation in essay format	0.06
Debating	0.05
Assignment with other forms which train skills	0.01
None mentioned	0.67

Discussion

In general, the results obtained in this research provide us with the ability to contrast the nine Dutch economics curricula with our theoretical framework of the basic tenets of an economics education.

First, our results show that there is a clear lack of diversity in the methodological skills Dutch economics students obtain. Although students in general acquire a diverse toolkit of quantitative skills, the fact that *only four bachelor's courses* throughout the Netherlands are devoted to obtaining qualitative research skills, is exemplary for the general lack of attention to qualitative research skills in Dutch economics education.

On average, economics students are methodologically trained and intellectually triggered within a framework that sees the object of study, the economy, and the way in which this should be studied, to be about numbers only. This is profoundly problematic, since it risks institutional, social, and cultural dimensions that deeply shape economic processes too to be structurally overlooked since these cannot be captured in a quantitative framework.

The blind spot created in students for qualitative aspects of the economy is part of a greater lack of diversity. A lack of diversity that is largely inflicted by a general lack of attention to different theoretical and disciplinary approaches to the economy. On average, over the different programs and years, a student is forced to devote almost 80% of his or her time and energy to the neoclassical school of thought. Admittedly, the neoclassical school is not simply one general and inflexible theory, it accommodates a large variety of ideas and points of view. On the other hand however, it does contain certain axiomatic assumptions about human behaviour, the relationship between markets and governments, and the establishment of the rules of the economic game that provide students with fundamental ideas about how society functions.

We must at this point note that the general level of theoretical diversity varies over university. In that light, different pluralistic courses are obligatory or electable for students over different programs. Our results however also show that this does not challenge a general dominance of neoclassical thought. Even courses labelled as pluralistic, are on average firmly dominated by a neoclassical framework. Because students generally only gain thorough familiarity with one set of assumptions, they after graduation risk lacking an ability of looking at societal phenomena in fundamentally different ways.

Moreover, the Dutch economics curricula generally teach students in a way that risks causing students to see the theory *as* the real world, rather than an *abstraction* of it. The main driver behind this misinterpretation is the general lack of attention Dutch curricula have to the real economy, both in its present and historical forms. This is deeply problematic. Academic theories ought to serve students to be able to better understand what is going on in the real world, rather than to stand as an island on their own.

That means there are two problems caused by this general lack of attention to real world economics. Not only does it risk to leave students with an inaccurate picture of the complexity and multiplicity of economic processes. It also tends to miss the point of why one should develop and study economic theories in the first place. Roughly 97% of

the graduated economists will play a key societal role outside of academia, and as a journalist, policy maker, politician, or corporate manager, economists are expected to use a theory in order to better understand reality. The current curriculum can easily lead students to see theory as a prescriptive model for reality, rather than a descriptive one.

When it comes to the extent to which students develop a critical mind, we have to be aware of not making conclusions that cannot be derived from the data. Generally however, the aggregate picture gives us a somewhat more positive image than the first three elements discussed. Students on average pay considerable attention to topics as ethics and philosophy of science, tools that help them to develop a critical mind-set. This should be positively valued. As said, the limitations of this part of the research are however severe, and therefore we suggest this section to be a topic of further research, for instance via the use of surveys.

This research has provided a far more detailed comparative picture of the economics education programs available in the Netherlands than has existed before. However, this new data still has severe limitations. Many aspects of teaching, in terms of theoretical and methodological content, style and didactics, cannot be observed from the course descriptions. Moreover, the extent, quality and accuracy of the course descriptions varies strongly between universities, which complicates comparison of programs. We will be grateful for suggestions to improve the data and methodology.

Conclusion

Although we have to pay attention to the differences that exist over programmes and universities, we generally can conclude that Dutch economics curricula do not prepare students well for taking up a leading role in coping with the fundamental challenges today's society faces.

Therefore, we collectively have to rethink how we train the economist of today and tomorrow. Rethinking economics education is a process, a collective dialogue between students, teachers and professors, curriculum designers, and the stakeholders throughout society. Two things have to be addressed more in specific in this dialogue.

First, how can we reform or even redesign economics curricula in a way that they will meet the four requirements set out in this research? This discussion goes beyond a plea for more diversity and real world attention only, and is rather about the structure one wants to implement in curricula and outlook of specific courses. A main challenges at this point will be to increase the diversity in curricula, while at the same time not make curricula a pool of 'a little bit about everything'.

Second, how can we collectively overcome the institutional constraints that we face in the realisation of such reforms or redesigns? In order to overcome such more practical barriers, we first collectively have to identify which barriers hinder what kind of reforms and changes in which way. Subsequently, a policy-oriented approach is required to overcome the barriers and realise the urgently needed reforms in Dutch economics education.

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Appendix 1: Data sources

Program	University	Data source	Link
BSc Economics & Business	University of Amsterdam	Online Course Catalogue	http://studiegids.uva.nl/
BSc Economics & Business Economics	University of Maastricht	Courses and Curriculum	https://www.maastrichtuniversity.nl/education/bachelor/bachelor-economics-and-business-economics/courses-curriculum
BSc Economie& Bedrijfseconomie	Vrije Universiteit Amsterdam	Studiegids	http://www.feweb.vu.nl/nl/studiegids/index.aspx
BSc Economics	Radboud University	Online Prospectus	http://www.studiegids.science.ru.nl/2015/en/management/prospectus/economie/
BSc Economics & Business Economics	Utrecht University	OSIRIS Course Catalogue	https://www.osiris.universiteitutrecht.nl/
BSc Economics & Business Economics	Groningen University	Ocasys Course Catalogue	http://www.rug.nl/ocasys/feb/
BSc Economics	Tilburg University	Electronic Guide	https://mystudy.uvt.nl/
BSc Economics & Business Economics	Erasmus University Rotterdam	Course guide	https://courses.eur.nl/#/
BSc Economics & Governance	Wageningen University	Handbook	https://ssc.wur.nl/Handbook/Bachelor

Appendix 2: Full Questionnaire

This Appendix contains the full questionnaire we used, including answer categories.

Section Q1: Research skills

1) Quantitative. Are students educated in…[answer options: Not treated / Briefly treated / Extensively treated / Entire course]
   a) Regression analysis
   b) Factor analysis
   c) Descriptive statistics
   d) Survey and questionnaire design, ethical concerns
   e) Experimental economics (how to set up and evaluate an experiment)
   f) Data selection and evaluation
   g) Applied econometrics (how to work with data/software, i.e. Matlab, R, Stata, SPSS)
   h) ….(other)
2) Qualitative. Are students educated in… [answer options: Not treated / Briefly treated / Extensively treated / Entire course]
   a) Interview design and techniques
   b) Qualitative field research (i.e. Fool's Gold, Gillian Tett, 2010)
   c) …..(other)
3) Mathematical skills. Are students educated in…[answer options: Not treated / Briefly treated / Extensively treated / Entire course]
   a) Linear algebra
   b) Calculus
   c) Game theory, decision theory
   d) Logic
   e) Basic Econometrics (non-applied)
   f) …(other) [open textbox]
4) Research design.
   a) Do students have to design their own research in this course? *[yes/no/irrelevant, with open textbox for elaboration]*
   b) If yes, which phases of research design are included in the process? *[open textbox]*
   c) If yes, do students get (semi-)binding options for topic selection? *[yes/no/irrelevant, with optional textbox for elaboration]*
5) Does this course work on research skills in any other way? *[open textbox]*

Section Q2.1: Theory of economics

1) History of economic thought

Does this course teach the history of economic thought? If yes, some, a lot or the entire course? *[open textbox]*

Section Q2.2: Theory of economics

1) Diversity in current theory. Which theoretical schools are taught in this course, and how much of the course is spent on them? [answer options: Not treated / Briefly treated / Extensively treated / Entire course]
   a) Classical economics (i.e. Adam Smith, David Ricardo, John Stuart Mill)
   b) Neoclassical economics (i.e. Alfred Marshall, Paul Samuelson)
      i) Marginalist micro-economics (Leon Walras, Jevons)
      ii) Neoclassical competition theory (Vilfredo Pareto
      iii) Solow growth model (Robert Solow)
      iv) Public economics/Welfare economics (Gareth Myles)
      v) Ricardian international economics (Paul Krugman)
      vi) General equilibrium theory (Kenneth Arrow, Gérard Debreu, Lionel McKenzie)
      vii) Monetarism (Milton Friedman, Clark Warburton, David Laidler)
      viii) Neo-Keynesian(Neoclassical synthesis, i.e. John Hicks, Paul Samuelson, Franco Modigliani) (IS/LM, Phillips curve, AS/AD)
      ix) New classical macroeconomics (Robert Lucas, Edward Prescott, Finn E. Kydland)
      x) New Keynesian economics (Mark Gertler, Guillermo Calvo, Jordi Galí, John B. Taylor,)
      xi) New Institutional economics (i.e. Ronald Coase, Oliver Williamson, Daron Acemoglu, Douglas North)
      xii) Environmental economics
   c) Game Theory
   d) Political economy (i.e. Karl Marx, Henry George, Paul Sweezy, Richard D. Wolff)
   e) Austrian school (i.e. Hayek, Von Mises)
   f) Ecological/green economics (i.e. Robert Constanza, Herman Daly)
   g) Post-Keynesian economics (i.e. Joan Robinson, Pierro Sraffa, Hyman Minsky)
   h) (Old) Institutional economics (i.e. Thorstein Veblen, Wesley Mitchell, John R. Commons, John Kenneth Galbraith, Geoffrey Hodgson)
   i) Social economics / feminist economics (i.e. Amartya Sen, Marilyn Waring)
   j) Experimental, behavioral and neuroeconomics (Daniel Kahneman, Esther Duflo)
   k) Complexity economics (Benoit Mandelbrot, J. Barkley Rosser)
   l) [*other,* open textbox for name of theoretical school, plus Likert scale]

Section Q2.3: Interdisciplinarity

1) Are lecturers from other disciplines invited to teach guest lectures? *[yes/no, with text box for elaboration]*
2) Does this course involve literature from other academic disciplines? *[yes/no, with text box for elaboration]*
3) Does this course work on interdisciplinarity in any other ways? *[yes/no, with text box for elaboration]*
4) Which other disciplines are taught? [answer options: Not treated / Briefly treated / Extensively treated / Entire course]
   a) Human Geography
   b) Political Science
   c) Psychology
   d) Sociology

e) Anthropology
f) Culture Studies
g) Business Studies
h) other... [open textbox]

Section Q3: Real world economics

1) Are the problems of the real economy taken as starting points, rather than illustrations of theoretical ideas, in this course? (Examples (Millennium Development Goals): extreme poverty and hunger, climate change, financial crises, social-economic inequality, gender inequality, diseases and health problems, lack of education ...) *[answer options: Not treated / Briefly treated / Extensively treated / Entire course]*
2) Are sectors of the real economy described in this course, without directly being related to only a single theory? (Examples: company structure of specific sectors, housing market, labour relations, energy economics, informal economy, sharing economy, international organizations...) *[answer options: Not treated / Briefly treated / Extensively treated / Entire course]*
3) Does this course include economic history? [answer options: Not treated / Briefly treated / Extensively treated / Entire course, with textbox for elaboration]

Section Q4.1: Philosophy of science / ethics

1) Does this course teach elements of the philosophy of science?
   a) No
   b) Yes, discusssion of ontology
   c) Yes, discusssion of epistemology
   d) Yes, other... *[open textbox]*
2) Does this course teach elements of ethical philosophy? *[yes/no]*
3) Does this course include a wide discussion of methodological choices, the underpinnings and assumptions of economic theories and research? *[yes/no, with possible elaboration]*

Section Q4.2: Didactic methods

1) *Study material.* Which of the following kinds of study materials are used for this course? [yes/no]
   a) Textbooks [if yes, which one(s)?]
   b) Original works [yes/no]
   c) More recent literature [yes/no]
   d) Online material [yes/no]
   e) Information not available [yes/no]
2) *Testing.* Which of the following methods are used in the testing for this course? *[yes/no]*
   a) No information available / unclear [yes/no]
   b) Open/Essay questions [yes/no]
   c) Multiple-choice questions [yes/no]
   d) Reports/essays [yes/no]

e) Verbal examination [yes/no]
f) Contribution during tutorials [yes/no]
g) Homework grades [yes/no]
h) Other methods of examination [yes/no]

3) *Skills of expression*. Does this course contain practice in the following skills? *[tick one or more boxes]*
   a) Speaking/presenting [yes/no]
   b) Argumentation in essay format [yes/no]
   c) Debating [yes/no]
   d) Assignment with other forms which train skills of (public) expression [yes/no]
4) Creative skills
   a) Does this course contain open assignments, which can be completed in different ways according to the interests of the students? *[yes/no, if yes, open textbox]*