Chapter 2: The Economy from a Gender-Aware Perspective

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First draft, June 2009: comments, criticisms and corrections welcome
Kabunwa village, rural Uganda

05.30 am Teddy Baiguta, married and mother of six children, wakes up and starts preparing breakfast. She boils the milk that was brought from the farm the previous day by her husband.

07.00 am: She wakes the children and instructs them to clean-up and help her with the household work like sweeping and washing utensils.

08.00 am: The husband wakes up. Teddy serves him breakfast and attends to other work like washing clothes, fleeing hens and taking the goats to the field.

08.30 am: The husband goes to the garden, then to the farm. The children also go to the garden. Only the young ones from six and below stay with the mother.

10.00 am: When finished with washing clothes, Teddy leaves for the garden.

02.00 pm: She returns from the garden with firewood and food stuffs.

2.30 pm: She goes to the kitchen and starts preparing lunch. In villages, having one warm meal a day is common.

04.00 pm: She serves lunch to the family after their return from the farm and garden. After lunch, the husband goes back to the farm immediately. The children stay at home with their mother.

04.30: Teddy goes to the farm to help out with milking cows, feeding pigs, tea plucking or adding manure to the garden. Meanwhile, the older children go to the well to fetch water.

06.00 pm: Teddy returns from the farm carrying a sack of plucked tea on her head followed by her husband carrying a can of milk on his head. When they reach home, after a small breath, the husband leaves for the market to supply milk and tea. He supplies tea to the factories via traders since he is an out grower, and milk to different shops.
07.00 pm: Teddy goes to the kitchen to boil milk in order to prevent it from going bad before being sold. She boils tea as well. Meanwhile, the children are instructed to collect all items and bring them and the livestock back to their respective places.

08.00 pm: Teddy serves her children a simple meal - hot tea without sugar and some leftovers from lunch, or cassava and sweet potatoes. After supper the children go to sleep. Teddy bathes and rests while waiting for the husband to return.

10.30 pm: The husband returns home. Teddy prepares him a basin with hot water and takes it to the bathroom, which is built 3 metres away from the main house. She waits for him to finish and together they return home.

11.00 pm: She serves the husband supper. After that they go to sleep.

**CHAPTER 2 OBJECTIVES**

- To gain a basic understanding of the concepts *gender, economy* and *economic agency* and how to consider them in their interrelationship
- To be aware of power differences characterizing gender relations
- To learn how gender identities and relations influence economic outcomes
- To be able to argue how gender relations may structure economic institutions
- To know how to specify gender-aware economic functions and models
2.1 INTRODUCTION

The purpose of this chapter is to learn how to study the economy from a gender-aware perspective and to understand the methodological implications of this for the feminist economics approach put forward in this textbook. In order to understand what role gender-relations play in the economy, we first need to clarify a number of key concepts, including: gender, the economy and economic agency. Second, we need to learn how to scrutinize the inter-play between these concepts. Third, by making use of mathematical set theory, we will learn how to set-up a robust gender-aware economic analysis. Fourth, we will see how to formalize various kinds of economic relationships into functions and models in a gender-aware manner. These form the pillars of a robust gender-aware methodology that will be applied in the exposition of a feminist economics theory in subsequent chapters.

The four steps together constitute the building blocks of a robust gender-aware economic methodological approach. Although, economic science is a social science and ‘gender’ refers to social constructs, this does not preclude our approach from complying with the rules of formal logic. As posited in Chapter 1, the overall objective of a gender-aware economics is, ultimately, to gain a deeper understanding of the role that gender relations play in the organization and functioning of the economy at large, and to recognize gender influences on the economy through power structures and in economic decision making processes in particular. The approach sensitizes us to be more aware of economic problems whereby gender-relations play a role in determining possible solutions and outcomes and policymaking.

The remainder of this chapter is organized as follows. In section 2.2, the principal concepts of gender, the economy and economic agency will be introduced and discussed. We will explain how a broader definition of the economy opens-up the door to bring in issues of social identity and power relations in the economics discipline. In section 2.3, we will learn how to look at economic
problems and gender in their inter-relationship in a formal manner. For this purpose, a relational scheme of the economy will be presented to map these inter-relationships. This forms the basis of an introductory discussion on economic functional relationships and models. In section 2.4, we will describe the use of mathematical sets in revealing gendered assumptions in economic theory, followed by section 5 in which a number of examples of integrating gender in economic functions and models will be elaborated. The chapter concludes by re-iterating the learning points and a number of classroom exercises.

2.2 GENDER, THE ECONOMY AND ECONOMIC AGENCY DEFINED

Gender refers to a set of socially constructed and assigned characteristics, qualities and behaviour of women or men. It defines to a large extent our social identity as human beings through our interactions with the people and world around us. The immediate frame of reference of our gender identity is the culture and society we are brought-up in and to which we feel belonging. Therefore, gender identities may be different across culture, time and place.

Box 2.1 – Gender

*Gender refers to the socially constructed and assigned characteristics, qualities and behaviour of women and men.*

Sex and gender are two terms often confused. Whereas sex refers to biology and anatomy, gender refers to a socially ascribed identity. Where sex is a given, gender is subject to change. Gender identity is determined by cultural values, norms and practices, and as a result women and men play
different gender roles in the paid and unpaid economy. This implies that in a gender-aware economics we look beyond the sexual differentiation of women’s and men’s reproductive roles, and take into account the social construction of their gender roles. In doing so, gender roles are not taken as a constant, but something that can be contested and stand subject to (continuous) change. In societies with strong gender inequalities, female and male roles in the economy tend to be separated into typical ‘female’ and ‘male’ tasks. For example, if women are specialized in household work and child care and men are specialized in paid work. Gender tasks may also be defined within (sub)sectors of the economy. For example, in the agricultural sector of many sub-Saharan African economies women specialize in growing food crops, whereas men specialize in growing cash crops. In the example of Uganda, women are the principal food providers, caretakers and in charge of the household chorus. But even within a household (see Chapter 5) or a firm (see Chapter 6) there may be a gender division of tasks and jobs that is representative for a multitude of households or firms.

*Gender relations* are then defined as the socially constructed relationships between women and men. From feminist economics we learn that gender relations are often characterized by power inequities, whereby one gender dominates the other in different spheres of social, economic and/or political life. Barbara Bergman (1986) and Nancy Folbre (1998) state that women run the risk of becoming vulnerable to power inequities if they specialize in non-market work. Underlying these power inequities are often societal value judgements about gender identities and roles.

Julie Nelson (1992) designed the so-called ‘gender-value’ compass to point out how positive versus negative notions of subjects and methods are metaphorically associated with conceptions of masculinity and femininity (see Box 2.2 below). For example, a typical association of masculinity is “hardness” and includes characteristics such as strength, precision, etc.. Femininity in many cultures is typically associated with “softness” and includes characteristics such as weakness, vagueness,
etc. (Nelson 1992). These metaphorical associations influence what we assign value to in society at large, but also in the economy and in economic science, whereby the masculine associations are often thought to be superior to the feminine associations. On the basis the gender-value compass Nelson points out that “strength” can also mean “rigidity, whereas “weakness” can also mean “flexibility”. Nelson argues that both positive and negative associations of femininity and masculinity exist. One cannot exist without the other – they are complementary. In this way strength without flexibility leads to rigidity, and flexibility without strength leads to weakness.

According to Nelson such a complementary vision is required to arrive at a more ‘value-free’ (economics) science. In other words, the paid economy cannot exist and function adequately without the complementary functioning of the unpaid economy, and vice versa. Production taking place in the unpaid economy does have economic value because it can be substituted for market value. This is the reason why feminist economists in the past have argued for assigning monetary value to unpaid production (Folbre 1995, Bruyn-Hundt 1996). UNIFEM is investing since the 1990s in the development of a methodology to measure the value of unpaid work and apply these findings in their programmes for reducing poverty and gender inequality (UNIFEM 2009).
Box 2.2 – The Gender-value compass

Julie Nelson designed the value compass as a “tool” to overcome typical hierarchical associations of gender and value. In the example of a gender compass below, the vertical axis signals value and the horizontal axis signals gender (masculinity/femininity). The top half of the diagram contains the positive associations of masculinity and femininity and the bottom half the negative associations. Instead of focusing only on the common dichotomy along the diagonal of this diagram (strength versus weakness), Nelson argues to understand the complementary nature of these associations.

Because of gendered values and norms society and its institutions are intrinsically gendered. This applies to economic institutions as well – e.g. the household and the labour market. If power in the economy is unequally distributed in such a way that one (or more) group(s) is (are) excluded from economic decision making, this will often work to the disadvantage of the excluded group in terms of economic structures, decision making processes and outcomes – i.e. the allocation of economic resources. Diane Elson has developed the micro-meso-macro framework to explain how at different aggregate levels and in different spheres of the economy gender imbalances in economic structures, processes and policies tend to sustain or deepen existing inequities (see Elson 1994; Elson and Çagatay 1999).

The word ‘economy’ comes originally from the Greek words oikos for ‘house’ and nomos, which means ‘custom’ or ‘law’. Hence, this definition of the economy referred to the ‘rules of the house’, thus emphasizing the process of decision making through authority and power relations. The ‘house’ can be thought of in a smaller sense as the household, or in a larger sense as the country or nation state. This early definition of the economy reflects the integrated political-economy and moral-philosophy perspective of that time. Gradually, politics and economics have evolved into two distinct fields of science, whereby economics is defined as the science that occupies itself with the question how scarce resource are allocated within a society. Resources are inputs in the production process and may include goods and services, labour, time, and natural resources. A scarce resource is a resource for which the demand is greater than the supply at price zero. In other words, the availability of the resource does not meet its full demand. This means that when the (relative) price of resource $x$ goes up, a resource is becoming relatively more scarce. When the (relative) price falls, a resource is getting less scarce. The size of an economy, as well as its rate of growth are thus limited by its scarce resources and usage thereof. Because of relative scarcities, economic problems arise along with the need to solve them. By allocation is implied the production, consumption and distribution of resources.

In neoclasical economics the allocation of scarce resources is commonly not considered from a perspective of underlying power relations and inequities that influence decisionmaking, but form relative prices the guiding motive (Kuiper 2001, 2006; Van Staveren 2006). In normative and political economics statements are being made about the social desirability of economic outcomes, as well as about the power relations that lead up to this. In order to give power relations and possible inequities along gender lines, a role in economic decisionmaking we depart from a somewhat broader definition of the economy. The economy is defined as the system of human activities directed at the allocation of resources by economic agents over economic agents (see Box 2.3). This broader definition of economics allows us to pay explicit attention to both economic performance
and allocational outcomes and to the economic agents involved, including their role and social identity.

**Box 2.3 – The Economy**

The *economy* is the system of human activities directed at the allocation (production, distribution and exchange) of scarce resources by economic agents over economic agents.

*Economic agents* are simply said the people studied by economists to solve an economic problem. For example, consumers and producers are two types of economic agents. Throughout this book we will argue that in order to solve gender-related economic problems it is important to take into account both the *identity* and *role* of economic agents. The reasons for this are two-fold. Firstly, the identity of economic agents matters as to how scarce resources are used and to whom they are allocated. Secondly, economic agents play different roles (economic division of tasks) and have different economic interests in mind. Both identity and role are influenced by power relations, which may result in inequities in economic decisionmaking and outcomes (Raewyn Connell 1987). Both identity and role influence what people assign value to. Do people want to maximize their consumption, enjoy their leisure time and/or do what is morally just? Irene van Staveren (2006) has argued that economic decisionmaking processes are co-determined by what is considered morally just behaviour in society. As a result, economic problems may have more than a single optimum solution – different individual and shared (social) optimum solutions may exist. Moreover, economic agents may be constrained by lack of information, power and resources in different phases of their lifes to solve an economic problem; in a certain phase of their life education may be preferred above earning an income, whereas a next phase this preference may be reversed.
Both women and men have economic agency. *Economic agency* refers to the capacity of an economic agent to solve an economic problem (see Box 2.4). Group interactions, legal rules and cultural norms and moral values may co-determine the preferences and decisions made by economic agents. Irene van Staveren (2006) has argued how economic decisions are influenced by moral practices in society. As a result, the outcome of an agent’s decision may be an individual or shared optimum. Moreover, economic agents face multiple constraints and trade-offs in different times of their lives; at some stage it may be more important to seek education than to earn an income, while this may be the reverse at a later stage. What is considered an economic optimum may thus change over time. Lastly, an economic agent may not be fully informed about ‘all feasible solutions’. The ‘optimal solution’ may therefore be only an optimum given a set of existing knowledge and access to information constraints. Multiple optima exist because of gender identity and roles co-determining knowledge and access to information. Both women and men have economic agency – that is the capacity to solve economic problems.

**Box 2.4 – Economic Agency**

*Economic agency* is the capacity of an economic agent to solve an economic problem. Economic agents choose an optimum solution given a set of multiple constraints (time, budget, knowledge). This optimum may be individual or shared; are subject to change over time; one or multiple optima exist.

Optimal solutions for economic problems are commonly found by minimizing or maximizing a real function of variables in order to find its optimum point. The variables in the function are to be selected from within the selected set; that is from within the specified constraints. For example, an employee tries to maximize her/his income given the legal constraint of a working week of 40 hours. Other examples include the following:
Economic Optimization Problems

To maximize the number of eggs bought, given a budget of Ugandan Shilling 500

To minimize the time to fetch water, given a certain amount of clean drinking water needed

To maximize the numbers of study hours, given the available time of 24 hours a day

To maximize family time, given the minimum number of hours work necessary to reach a certain level of income

In neoclassical economics it is assumed that economic agents make ‘rational’ decisions in solving their economic problems. Rational choice theory as a special case is explained in Box 2.5 below. In Chapter 4 of this book we will elaborate the discussion on rationality in relation to economic preferences and wants and choices within consumer theory of demand.

Box 2.5 – Rationality in neoclassical economics

Rational choice theory provides the underlying framework (and political science) to model and predict economic decision making by economic agents. This framework operates from the key assumptions that (i) economic agents choose the best action from a feasible set of actions – the ‘optimal solution’ to the individual agent according to her/his preferences, (ii) make a cost-benefit analysis, and (iii) get what they want through exchange. A preference is a real choice made between alternatives from which the economic agent expects to derive a certain level of satisfaction, or ‘utility’. Actions are chosen from within a set of constraints - e.g. a budget or time constraint. The feasibility of actions is determined by the agent’s preferences and constraints (e.g. how much income or time does she/he have?) and her/his knowledge of these constraints.
The assumption of rationality in economic behavior of economic agents has been criticized from various perspectives. From the perspective of financial behavior economists, for example, argue that financial decision making in the stock market are only partially ‘rational’ because full access to information is lacking and psychology and emotions also play a decisive role (Prast 2006). From a gender-aware approach to economics we equally do not assume perfect rationality on the side of economic agents. However, we do acknowledge that economic agents strive for rationality in economic decision making. Apart from that, from a gender perspective the emphasis is put on the (im)possibility of certain choices (and knowledge there off) in making individual economic decisions – for example the (m)possibility of a future professional career. In that sense role models play an important role in choosing a future career. Moreover, women and men develop different capacities in the course of their private and professional life and face different gendered constraints to exercise their economic agency. Women and men may also choose different optimal solutions with regard to similar economic problems depending on what they strive for: an individual or shared optimum. In terms of capacity, women and men may have acquired different education, training, skills, human capital, assets and social capital, which affect their economic agency. For example, men may have developed more managerial training skills to occupy positions at higher management levels. In the example of Uganda, men may lack the knowledge and experience of how to manure the garden since this is a women’s task. In terms of constraints, women and men may face different time, budget, costs, resources, knowledge and access to information that limit their feasibility of actions. For example, in some patrilineal and patriarchal societies we find that women lack access to the formal credit market because of their lack of collateral. In the case of Uganda, this is a common problem given that women own only 7 percent of the land and need the consent of their husband or male relative to obtain a land title. This can hamper female farmers and entrepreneurs to make rational economic decisions with regard to capital investment and future
development of economic activities. Another example from Uganda would be the general time constraint of women, due to their paid and unpaid workload, to attend evening school or agricultural extension programmes to further develop their knowledge and skills. Finally, in terms of different optimum solutions, women may decide to go to work provided that her children are looked after (e.g. by an elder sibling or relative) and thus strive for a shared optimum, whereas men may decide to go to work anyhow expecting their wives to care for the children.

2.3 A RELATIONAL SCHEME OF THE ECONOMY

From the previous section we have learned that a gender-aware approach in economics requires us to take into account (i) the social identity of economic agents, and (ii) the role economic agents play in the economy and vis à vis each other – their gender specific roles. We will now proceed by looking at how such a perspective translates into a gender-aware analysis of the economy. Mathematics will guide us to determine the appropriate form in which to conduct gender-aware economic analysis. By making use of mathematical principles and logical reasoning the objectivity of gender analysis can be enhanced. However, this requires us to know how economic functions and models are constructed and what choices will have to be made to integrate a gender-aware perspective. Although, mathematical science has been critisized also from a feminist perspective for not being ‘value-free’ (Harding 1986; Damarin 1990; Fennema 1990), we consider the principles and methods used in this chapter part of meta-mathematics and value-free from a gender perspective.

Economic functions and models are always constructed around an agreed set of concepts and relationships. Economic functions and models constitute the toolkit of economists to analyze economic problems and make predictions on the basis of some observed pattern in behaviour.
Before putting economic functions and models to use in economic analysis it is always useful to consider more closely the key concepts and relationships, as they involve three important decisions.

1) The first is to decide which concepts to include in the model, and which ones to leave out. This determines the purpose and scope of the economic analysis. In other words, what economic problems are important to investigate and what questions are relevant to ask. Feminist economists have argued that certain problems, e.g. about the division of labour between women and men, are not adequately addressed by mainstream economists and, as a result, the issue has been largely overlooked and misunderstood. According to Diana Strassmann (1999) and Kuiper (2001) economics should be a science that is relevant to all human kind and therefore cover women’s and men’s issues alike.

2) The second is to decide on the definition of the concepts used. This determines the depth of the analysis. For example, does the definition of ‘labour’ include paid labour only or also unpaid labour? Is the household defined as an economic unit in which both consumption and production take place, or is it only considered as a consumption unit?

3) The third is to decide which relationships to look at (between which concepts), and which to leave out for the purpose of the research? This is the problem of defining the research objectives and setting its boundaries. For example, we want to find out what the relationship is between job level, gender and income in a certain sector of the economy. In Box 2.6 below an example is given from a study by Van Staveren (2007), who investigated the gender wage gap across job level in the public sector in Uganda and looks beyond the relationship between gender and income, but also looks at the relationship between gender and job level.
In a study on gender inequality in managerial positions in the public sector of Uganda, Van Staveren uses a small sample of 753 employees at the four top positions in ten out of the twenty three central ministries of Uganda. The following ministries were included: Agriculture, Defence, Education, Energy, Finance, Gender/Labour/Development, Internal Affairs, Local Government, Public Service, and Tourism. The four top positions covered are junior officer, senior officer, manager, and director. For all positions at least a BA degree is required. The number of women is 191 and men 562, which implies an overall female share of 25 percent. From Table 3 below it can be concluded that the gender wage gap is 5% on average wages. Whereas the female/male wage ratio is 0.95 for the four levels together, the ratios appear to differ substantially per function level. At the junior level, the female/male wage ratio is 1.14, implying that women earn more than men at the entry level. At the senior and manager levels, the ratios are 0.95 and 0.97, respectively. At the director level, however, the gender wage gap is much larger, with a ratio of female to male wages of 0.77. On the gender differences in the spread of wages, we find that only at the junior level, the spread is higher for women, with a female/male ratio of the standard deviation of 2.64. At the level of senior, the ratio drops dramatically to 0.43, at manager level it is 0.51, while at director level the spread ratio is as low as 0.28.

**Table 3. Gender wage differences**

<table>
<thead>
<tr>
<th></th>
<th>Female/male wage ratio</th>
<th>Female/male wage standard deviation ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior officer</td>
<td>1.14</td>
<td>2.64</td>
</tr>
<tr>
<td>Senior officer</td>
<td>0.95</td>
<td>0.43</td>
</tr>
<tr>
<td>Manager</td>
<td>0.97</td>
<td>0.51</td>
</tr>
<tr>
<td>Director</td>
<td>0.77</td>
<td>0.28</td>
</tr>
<tr>
<td>Total public service</td>
<td>0.95</td>
<td>0.85</td>
</tr>
</tbody>
</table>

*Source: Van Staveren (2007), pp. 7-8.*

An insightful tool and great learning exercise is to think of the key concepts in a research project and their possible inter-relationships by means of a relational scheme. A relational scheme lists the key concepts (issues at stake) and maps out their inter-relationships (scope of the research). Moreover, it reveals opinions and social norms that are embedded in economic relationships and models. A relational scheme helps thus to shed light on the nature, direction and form of the
relationship. The nature of a relationship indicates which elements are considered in the analysis. The direction indicates which element affects the other and the sign whether the relationship is a positive or negative one. Figure 2.1 below presents a relational scheme of the economy departing from the broader definition of the economy and we assume that both identity and role of economic agents play a role in the allocation of scarce resources. Along the vertical and horizontal axis are listed the economic agents (individuals within households, private businesses, communities and government) and scarce resources (labour, goods and services, time and natural resources including space). A relational scheme can be drawn at various levels of aggregation within the economy depending on how much detail we want to explore. From a gender perspective it is important to distinguish between individual members of households. Likewise, we can distinguish between individuals within firms, communities and governments if that would meet the purpose of our inquiry. There is thus always the possibility to zoom in a specific relationship within the relational scheme and construct a new scheme at a lower level of aggregation (e.g. intra-household level).

The units of analysis in the relational scheme are mutually exclusive. Each of them forms a separate entry into the scheme. The cells in the scheme specify the nature and form of the relationship between the row entries on the left and the column entries at the top of the scheme. For example, ‘households’ relate to ‘labour’ in two ways: i) by sustaining and regenerating the labour force through providing unpaid household work and care and real labour supply; and, ii) by demanding labour themselves. The cells on the diagonal of the scheme specify the optimization problems that need to be solved in the economy: the optimization of allocating goods and services, labour, time and natural resources by economic agents over economic agents. Individuals, households, firms and communities make economic decisions at the micro level of the economy. In addition, the government is included as an economic agent that operates at the macroeconomic level. The government has a special role in facilitating and guiding the (re)distribution of scarce resources in the economy, for example by legislature and formalizing market operations and procedures.
Although, government policies and regulation are implicitly reflected in the economic decisions of households, firms and communities, the government is given a separate entry as the ‘closure’ of the scheme.
Figure 2.1 – A Relational Scheme of the Economy

<table>
<thead>
<tr>
<th>ECONOMY</th>
<th>ECONOMIC AGENTS</th>
<th>LABOUR</th>
<th>GOODS AND SERVICES</th>
<th>TIME</th>
<th>NATURAL RESOURCES</th>
<th>GOVERNMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECONOMIC AGENTS</td>
<td>Allocation of scarce resources by economic agents over economic agents</td>
<td>Allocation of labour by economic agents over economic agents</td>
<td>Allocation of goods and services by economic agents over economic agents</td>
<td>Allocation of time by economic agents over economic agents</td>
<td>Allocation of space and natural resources by economic agents over economic agents</td>
<td>Economic agents demand framework of economic rules and regulation to enable them to solve economic problems</td>
</tr>
</tbody>
</table>

1) Individuals in households
- Exchange goods and services
- Compete for scarce resources
- Form culture of economic behaviour and social norms
- Determine value
- Develop human resources, invest in human capital
- Exchange goods and services
- Provide labour
- Influence firm behaviour (through interest groups, consumer unions, etc.)
- Provide labour
- Provide social capital
- Demand community facilities and services
- Sustain and regenerate labour
- Demand labour (surplus labour: unemployment; shortage of labour: attract from elsewhere)
- Consume goods and services
- Produce goods and services
- Influence quality and quantity
- Spend on paid labour
- Time spent on unpaid labour
- Time spent on leisure
- Occupy space
- Consumer natural resources
- Influence distribution, quality and use
- Occupy space
- Pay taxes
- Demand social services
- Apply rules and regulations
- Consent with economic authority

2) Firms
- Provide a workplace and income
- Supply of goods and services
- Invest in human capital
- Exchange goods and services
- Provide labour
- Compete for markets
- Compete for scarce resources
- Provide economic activity
- Supply goods and services
- Demand labour
- Train and develop labour
- Influence type and size of labour
- Use goods and services
- Produce goods and services
- Management of time economy
- Rules about working time
- Influence other forms of time use
- Occupy space
- Consumer natural resources
- Influence distribution, quality and use
- Pay taxes
- Demand social services
- Apply rules and regulations
- Consent with economic authority

3) Communities
- Provide social capital
- Provide facilities and services
- Exchange goods and services
- Provide social capital
- Provide facilities and services
- Influence economic behaviour
- Exchange facilities and services
- Enhance social capital
- Demand labour
- Influence type and size of labour
- Form networks of labourers
- Demand goods and services
- Influence quality and quantity (through cultural demands)
- Defend interests in time economy
- Influence other forms of time use via cultural norms and activities
- Occupy space
- Consumer natural resources
- Influence distribution, quality and use
- Pay taxes
- Demand social services
- Apply rules and regulations
- Consent with economic authority
- Are partners in negotiations

LABOUR
- Production of household goods and services
- Personal fulfillment and
- Production of goods and services
- Modes of production
- Input into the production of community facilities and services
- Amount of labour
- Optimization of labour of economic agents and economy as a whole
- Facilitates production process of goods and services
- Labour requires time
- Labour requires space and natural resources
- Input into the production of government goods and services
<table>
<thead>
<tr>
<th><strong>realization</strong></th>
<th>▪ Enhancement of human capital</th>
<th>▪ Right to existence</th>
<th>▪ Influences community well-being</th>
<th>▪ Influences type and quality of goods and services</th>
<th>▪ Agreement about timing and time allocation</th>
<th>▪ Labour requires organization and regulation</th>
<th>▪ Requires social services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GOODS AND SERVICES</strong></td>
<td>▪ Provide in household needs for goods and services</td>
<td>▪ Input into firm production</td>
<td>▪ Influences community production</td>
<td>▪ Preservation and enhancement of community resources</td>
<td>▪ Influence opportunity costs of unpaid labour</td>
<td>▪ Goods and services of economic agents and economy as a whole</td>
<td>▪ Goods and services use natural resources as input into their production</td>
</tr>
<tr>
<td><strong>TIME</strong></td>
<td>▪ Time influences household economic behaviour</td>
<td>▪ Scarce opportunity influences household well-being</td>
<td>▪ Time influences organization and functioning of the community</td>
<td>▪ Time is necessary to carry out labour</td>
<td>▪ Time changes the value of goods and services</td>
<td>▪ Optimization of time of economic agents and economy as a whole</td>
<td>▪ Time changes the value of natural resources</td>
</tr>
<tr>
<td><strong>NATURAL RESOURCES</strong></td>
<td>▪ Scarce opportunity of space and natural resources influences household well-being</td>
<td>▪ Scarcity of space and natural resources influences firm settlement and activities</td>
<td>▪ Scarcity of space and natural resources influences community settlement and activities</td>
<td>▪ Scarcity of space and natural resources influences quality of labour</td>
<td>▪ Natural resources are inputs into the production of goods and services</td>
<td>▪ Optimization of natural resources and space of economic agents and economy as a whole</td>
<td>▪ Use of space and natural resources</td>
</tr>
<tr>
<td><strong>GOVERNMENT</strong></td>
<td>▪ Organizes and regulates people’s economic rights and duties</td>
<td>▪ Organizes and regulates economic rights and duties of firms</td>
<td>▪ Organizes and regulates economic rights and duties of communities</td>
<td>▪ Organizes and regulates the allocation of labour</td>
<td>▪ Influences type and quality of labour</td>
<td>▪ Optimization of economic agents and economy as a whole</td>
<td>▪ To enhance economic equality and efficiency in order to achieve economic stability and growth</td>
</tr>
</tbody>
</table>
2.4 TOWARDS GENDER-AWARE ECONOMIC FUNCTIONS AND MODELS

2.4.1 The use of set theory in gender-aware economics

After having constructed a relational scheme, the next step is to scrutinize the relationship(s) of our study by zooming in on one/more cell(s) in the relational scheme. In this way we can perform a gender analysis of economic processes, structures and policies at the meso- or micro level of the economy. As explained in the previous section, and illustrated by Figure 2.1, a relational scheme provides insight into the nature, direction and sign of any particular relationship between economic variables. The nature of the relationship determines which variables are considered (e.g. variables $a$ and $b$). The direction of the relationship indicates whether $a$ affects $b$, or the other way around. Finally, the sign of the relationship indicates whether it concerns a positive or negative relationship (e.g. $a$ is positively related to $b$).

But which economic relationships matter to explore? For this reason we need to reveal all possible economic relationships we could formulate. This is where we turn to mathematical set theory and use a Venn diagram to visualize all possible logical relationships between sets. A set is defined as a group of things that is considered a whole. By formulating a logical or functional relationship different elements out of a set are brought together in a new sub-set. In the relational scheme of the economy in Figure 2.1, households, firms, communities and the government can all be considered as sets of economic agents. Goods and services, labour, time and natural resources are all sets of scarce resources. Individuals within households are then the elements of the set ‘households’. Individuals within households can be categorized in multiple ways; according to age, gender, status, etc. A categorization can be objective (age, income) or subjective (status, development). A set is thus always a representation of reality, but never proof of it.
In Figure 2.2 we have drawn a relational scheme of the production taking place within households. The principal feature of production taking place in the household economy is that it is not paid for as long as it is not mediated through the market. The household economy is therefore also referred to as the ‘unpaid economy’. Margaret Reid, back in the 1920s, recognized ‘home economics’ to be part of the economics science, because the allocation of scarce resources in the unpaid economy constitutes an economic problem as much as it does in the paid economy. The paid and unpaid economy together form the total economy. Gross Domestic Production is the common indicator to measure aggregate production in an economy. We will discuss how to value and measure unpaid the production in the household economy in Chapter 8. Reid’s work (1934) on *Economics of Household Production* remains a basic reading in the field of gender and economics.

From a gender perspective we categorize the members of the household into ‘female members’ and ‘male members’ (Figure 2.2). The set of scarce resources considered in inter-relationship contains both the elements ‘time’ and intermediate goods and services’. Furthermore, it is assumed that female and male household members carry out a number of shared tasks as well as a number of gender specific tasks within the household. Culture and societal norms and values influence the gender specificity of household tasks. In our example at the beginning of this chapter of Teddy and her husband we can identify the processing of food and cooking of meals and the care for children, as gendered tasks, solely carried out by the female members in the household. On the other hand, ‘shopping’ including going to the market and bringing home milk from the farm, are shared tasks between Teddy and her husband.
By means of a Venn diagram all possible logical relationships can now be formulated between the selected elements from the sets ‘households’ (A) and ‘scarce resources’ (B). The elements from these two sets are brought together by means of the formal relationship \( aRb \) in the new sub-set \((AxB)\) – see Figure 2.3. In the figure six possible logical relationships are depicted.² The relationship \( a_{f}Rb_{t} \) formulates the relationship between the time that is used by female household members to carry out a certain household task (e.g. care for children, sick and elderly) without using any intermediate goods and services for this. The relationship \( a_{f}Rb_{tx} \) formulates the relationship between the time and intermediate goods and services that are used to carry out a certain household task (e.g. food processing and cooking of meals). The female household members may not perform all household tasks (e.g. house maintenance and repair); in that case we say that the relationship \((a_{f}R)\) in the sub-set is empty. The relationship \( a_{m}Rb_{t} \) formulates the relationship between the time that is used by male household members to carry out a certain task (e.g. household finances) without using intermediate goods and services. The relationship \( a_{m}Rb_{tx} \) formulates the relationship between the time and intermediate goods and services that are used to carry out a certain household task (e.g.

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1 In mathematics, a set is always indicated in capitals and a sub-set as the product of two or more sets.
2 In total there exist eight possible logical relationships between the 2x2 elements distinguished within these sets. However, considering the fact that everything takes time, in this example it is no use to formulate the relationship between the elements ‘individuals’ and ‘intermediate goods and services’.

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Figure 2.2 – Relational scheme of household production

<table>
<thead>
<tr>
<th>HOUSEHOLD SCARE RESOURCES</th>
<th>Individuals within households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female members</td>
</tr>
<tr>
<td></td>
<td>Male members</td>
</tr>
<tr>
<td><strong>Time &amp; Intermediate goods and services</strong></td>
<td></td>
</tr>
<tr>
<td>Food processing and cooking meals</td>
<td>House maintenance and repair</td>
</tr>
<tr>
<td>Household finances</td>
<td>Household finances</td>
</tr>
<tr>
<td>Shopping</td>
<td>Shopping</td>
</tr>
<tr>
<td>Cleaning</td>
<td>Cleaning</td>
</tr>
<tr>
<td>Care for children, sick and elderly</td>
<td>Etc.</td>
</tr>
<tr>
<td>Etc.</td>
<td>Etc.</td>
</tr>
</tbody>
</table>
house maintenance and repair). The male household members may not perform all household tasks (e.g. care for children, sick and elderly), which implies that the relationship \((a_mR)\) in the sub-set is empty. By adding-up all goods and services produced by female and male household members and consider the time invested, we can formally test the hypothesis that women produce a larger share of household production than men, \(\Sigma(a_fRb_{1..n}) > \Sigma(a_mRb_{1..n})\).

**Figure 2.3 – Venn diagram of household production**

The choice to formulate a relationship around a particular set of variables is usually motivated from theory, but may also reflect cultural practices and norms. It is good to be aware of the choices that economic researchers make in the construction of functional relationships and models. Economics can thus be influenced by the position taken by the observer of economic relationships. That is why Nobel Prize winner Amartya Sen has labeled the objectivity in economics as ‘positional objectivity’ (Sen 1993).
2.4.2. The integration of gender in economic models

Once we have decided on the nature and direction of the relationship between economic variables, an economic function can be specified to determine the sign (and weight) of the relationship and formally test its significance. Economic functions serve to find out about level of association between economic variables. This enables economists to make inferences to economic processes at large and to make predictions about the possible outcomes of economic processes and policies, based on prior results. A set of economic functions together forms an economic model. For example, the macroeconomic model of the national economy \( Y = C + I + G + E - M \) models national income \( Y \) as a function of consumption \( C \), investment \( I \), government expenditures \( G \), exports \( E \) and imports \( M \), and in itself is constructed from a series of functions, e.g. \( C = cY \). The construction of an economic model can be the outcome of economic research, or its starting point. Economic theory informs the construction and use of such models. Economic models are thus theoretical constructs. They are designed to represent particular economic processes, but they do so in a highly simplified and abstract manner. Real-life economic processes are much more complex and subject to continuous change. It is difficult to capture those processes by just a set of functions. Economic models are an attempt to do this in a logical manner. The advantage of using models is to have a formal tool to explore (inter)relationships between economic variables in more detail. The limitations of abstracting from reality in this way should always be recognized though. In abstracting from reality certain assumptions are being made. These assumptions form the restrictions of the model. From a gender perspective it is argued that not always the same assumption apply to women and men alike. This depends on specific social-cultural factors tat may translate into gender specific references and constraints. For example, the preference of women, expressed in their choices, to spend a relatively larger share of their income on their children (food, education) compared to men – this is the so-called ‘double dividend’ of gender equality (UNICEF 2006). When such gender inequalities prevail within a society women and men will respond
differently to economic stimuli and arrive at different economic outcomes. There are different ways to acknowledge this in economic analysis and the construction of economic models. What follows below is a short description of five less or more encompassing approaches to realize this.

(1) **Distinction between gender in units of analysis.**

The first approach is to distinguish between (groups of) women and (groups of) men in the units of analysis in a standard economic model. For example, we want to look at wage differentials between female and male workers in the garment industry and therefore specify economic functions for each group separately. The garment industry in developing countries is known for its stark gender differentials in wages; e.g. see the 2000 World Bank report on gender wage differentials in the export garment industry in Bangladesh.

(2) **Gender specific constraints.**

Building further on (1), a second approach is to define gender specific constraints to solve the economic model. For example, both women and men may want to maximize consumption, i.e. there is one ‘common preference’ model, but each of them does so subject to different constraints; e.g. see the work done on modelling household behaviour by means of an economic model using a common preference function, but recognizing the different constraints (e.g. budget and time) of the female and male members of the household. See the works by Nobel prize winner Gary Becker (1976, 1991) who argued that it is efficient when women specialize in household production because of motherhood. This argument has been criticized by feminist economics pointing out that motherhood does not imply a life-long constraint on women’s participation in the labour market.
(3) Gender specific preferences.

Building further on (1), but instead of (2) assuming a common preference function for the entire household, it is assumed that women and men have different preferences and face different constraints at the same time. These individual preferences and constraints are brought together in a ‘collective’ model. Various studies have questioned and tested the common preference model to see whether or not husband and wives make similar household resource allocation decisions (e.g. Chiappori 1996). Others have found that the gender allocation of tasks within farming households tend to lead to inefficient outcomes – household members tend to cooperate as well as compete for scarce resources (see Lampietti 1999).

(4) Gender-specific enforcement rules

In addition to (1), (2) and (3) a fourth approach is to identify gender-specific enforcement rules. This is a more indirect manner to integrate gender in economic modelling, as it allows for differences in power and control to enter a model. In bargaining theory, which proclaims that women and men ‘bargain’ about the allocation of scarce resources in the household, this notion has been used to identify gender-specific fall-back positions outside a marriage, so that women have more to lose when the household breaks-up for example; e.g. see the work done on bargaining models of the household that builds in the assumption that a change in women’s (or men’s) position outside the household influences her (or his) bargaining position within the household (e.g. McElroy and Horney 1981; Lundberg and Pollak 1996).
Gendered institutions

Finally, underlying the analysis of (1), (2), (3) and (4) a fifth approach is to recognize that social norms and values affect every aspect of economic behaviour, and doing so differently for women and men and translate into gendered institutions. This is where we are back to where we started, namely the gender-value compass of Julie Nelson. Gendered institutions affect preferences, constraints, prices, supply, demand and alternative options. For example, macroeconomic models of gender discrimination in wages can be taken into account to predict female and male participation in the labour market and the cost to national output, such as those produced by Cavalcanti and Tavares (2007).

Gender-aware economic models have been designed to analyse a great variety of issues at different levels of aggregation - from micro to macro and international level (in trade). Throughout this book we will present and discuss the above mentioned approaches and methods in more detail.

2.5 Conclusion

In this chapter we have applied basic principles of mathematical set theory to facilitate the integrating of a gender-aware perspective into economic theory. The objectivity of the analysis is enhanced by exemplify the underlying choices being made. By starting out from a broader definition of the economy, social identity and gender roles can be incorporated in economic analysis. Power relations between economic agents are in this manner translated in a robust economic methodology that enables us to approach economic problems from a gender aware perspective in a meaningful and formal manner.
1. Gender refers to the socially constructed relationship between women and men.

2. Social identities are co-determined by gender and thus influence the roles women and men play in the economy.

3. The economy is a system of human activities directed at the allocation (production, distribution and exchange) of scarce resources by economic agents over economic agents.

4. Power inequities characterize gender relations, which tend to reproduce existing inequities through gendered economic institutions.

5. Economic agency is the capacity of an economic agent to solve an economic problem. Economic agents choose the optimum solution given a set of multiple constraints (time, budget, knowledge). This optimum may be individual or shared, changes over time and may be gender specific.

6. Women and men may differ in terms of their capacity and constraints to solve an economic problem and to strive for an individual or shared optimum solution.

7. A relational scheme is a helpful tool to map out the key concepts in a research and shed light on the nature, direction and form of the relationship between them. Moreover, it reveals opinions and social norms that are embedded in economic relationships and models.

8. A Venn diagram brings different elements of sets together, which as an ordered pair, form a new sub-set. A set is thus a representation of reality, but never proof of it. A Venn diagram helps us to map out all possible logical relationships between sets.

9. Economic functions serve to find out about cause and effect between economic variables. A set of economic functions together forms an economic model.

10. Once it has been agreed upon that gender issues are important to consider in economic research, there are five different approaches to integrate gender in economic analysis and into economic functions and models, including gender units of analysis, gender specific constraints, preference functions, enforcement rules and gendered institutions.
2.7 **CLASSROOM EXERCISES**

2.7.1: GENDER ROLES

Students discuss in pairs the different gender roles you can distinguish in the society that you come from/live in. After five minutes, choose a country that you both know off, or take the example of Uganda at the beginning of the chapter, and discuss typical gender roles of that particular society. After another five minutes, the lecturer collects different examples and writes them on a flip-over and discusses the most important differences in gender roles across different societies with the group, for example in terms of paid and unpaid work, income, etc.

2.7.2: POWER RELATIONS

The lecturer organizes an open discussion around the notion of power relations characterizing gender relations. Opening questions could include for example: Have you ever felt disempowered in a certain relationship? Was this power inequity due to gender or other things? To what extent do you observe differences in power relations between women and men in the society around you? Would you say that these relationships differ across different cultural, ethnic, religious or age groups? Do you also perceive change over time in existing gendered power structures within society? On the basis of the example on Uganda at the beginning of this chapter, can you indicate in which activities and tasks the husband and wife cooperate and/or compete with each other for scarce resources? Can you describe how gender identity and power relations have an effect on economic variables in the household, such as preferences, bargaining power, constraints, alternatives and income?
2.7.3: RELATIONAL SCHEME

Students discuss for 10 minutes in small groups on the basis of the relational scheme presented in Figure 2.2 the cells on \textit{Goods and services} for women and men members of households in either a rural or urban setting in their own country. Can they think of a number of gender specific tasks within these households? Do women and men spend an equal amount of time on paid and unpaid work? Do women and men specialize in either one?

2.7.4: FORMULATE A RELATIONSHIP

This exercise requires students first to do exercise 2.6.3. Choose one of the household production tasks discussed in the previous exercise. Draw a Venn diagram that brings the elements of time and household production together into a new sub-set. Distinguish between female and male members of households performing this particular task. Formulate the relationships in a formal manner and indicate how you would want to compare them. After 10 minutes the lecturer asks each group to write their formulas on the board.
SUGGESTIONS FOR FURTHER READING:

Nijmegen: Radboud University.
