

Postcapitalist Retail and Accounting: Personal Consumption Planning in the Participatory Economy

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Abstract

The participatory economy (parecon) is a well-known model of democratic socialism. The categorisation of goods and services is critical to a comprehensively coordinated socialist economy, and bears crucially on product pricing in parecon. This paper explores effective categorisation and pricing and its political economic ramifications, focusing particularly on the planning of personal consumption. We integrate shops and a public distribution system into annual planning for the first time, and reassess individual consumption plans from two opposing perspectives (one proposing to refine them and the other to replace them).

Introduction

The focus of this paper is the planning of personal consumption in a Participatory Economy (or Parecon) and especially its role and design in the model's planning process. Participatory planning is an alternative to both markets and central planning. In the first section we give a brief overview and summary of the model and its participatory planning process.

We then discuss the requirements and challenges that a decentralised planning model will introduce regarding the accounting and categorisation of the huge number of different goods and services handled by a modern economy.

In the third section we introduce shops and distribution plans as crucial parts of the planning model. We argue that shops will play an important role not only in the distribution of goods but also by facilitating planning of personal consumption. In presentations of parecon hitherto, neither shops nor the issue of distribution of goods have been considered.

In the fourth and last section we present two different models of personal consumption planning. The main difference between the two models is the role of the individual. The presentation is structured as a dialogue between the two models and does not favour either but tries to highlight arguments for and against each.

1. Overview of a Participatory Economy

The participatory economy model is one of the best-known systemic visions for a postcapitalist society. Originated by Michael Albert and Robin Hahnel over three decades ago the model has continued to be developed and expounded (Albert & Hahnel, 1991a; Albert & Hahnel, 1991b).

To prepare for our analysis of personal consumption planning, we will briefly outline the main features of the participatory economy, especially the annual planning process (for more detail, see Albert, 2022; Hahnel et al., 2021; Sandström, 2021).

For brevity, in this paper we say ‘goods’ or ‘products’ to mean ‘goods and services’ unless otherwise indicated.

Brief Summary of Participatory Economy

The canonical features of the participatory economy are: (1) social ownership; (2) equitable income; (3) participatory planning; (4) balanced jobs; and (5) self-managed worker and consumer councils and federations.

Each enterprise is governed by a worker council. Workplaces associate through worker federations on a geographical and/or sectoral basis. Each person is a member of a local community council as a citizen and consumer. Each local community council regionally federates local councils, and so on. For clarity we will henceforth refer to these as ‘consumer councils’.

The means of production and natural world are socially owned, in distinction to private and statist ownership.

People receive income from their work, not from the ownership of capital. The aspiration is for income to reflect effort and/or sacrifice. At a first approximation, this can be understood as a universal wage per hour. Wages are paid by the community, and income differentials within a workplace, if any, are decided by the workers themselves. Wages do not appear as entries in the books of workplaces as a cost. Rather, the workplace pays a different labour cost which is determined through the annual planning process.

The corporate division of labour is to be eroded by balancing jobs for empowerment, health, and enjoyment. In the most minimal formulation, this is done independently by each workplace.

Participatory Planning

Different aspects of economic activity are planned over longer time horizons, such as investment, labour, and ecology. Of particular interest to this paper is the annual planning process, the purpose of which is to coordinate projected production, distribution, and consumption for the coming year. The minimal goal of this process is to arrive at a ‘feasible plan’, meaning that supply for each product category exceeds demand within some tolerance (such as 5%).

Producers and consumers coordinate via a unique democratic planning procedure, whereby worker and consumer councils and federations propose and revise their own production and consumption plans, over a number of iterations which gradually leads to a viable, efficient, and equitable plan. Annual planning – shown in Figure 1 – happens in the context of long-term development plans and an investment plan already approved. Thus, the supply of various categories of production inputs that are available, and the amount of capital goods that will be produced in a given year, are specified when annual planning begins.

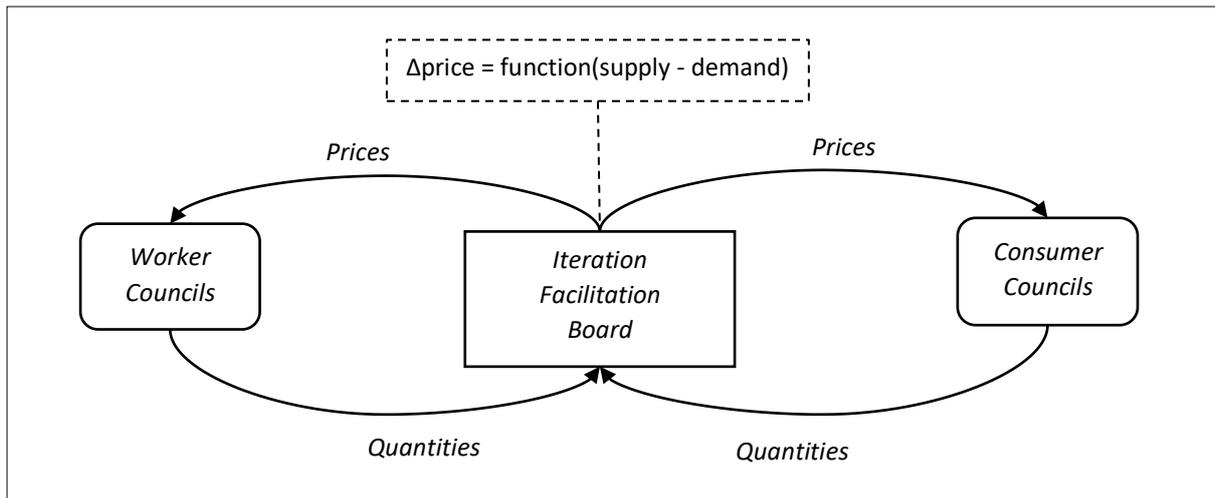


Figure 1- Simple schematic of annual planning topology.

The main participants in the planning procedures are the worker councils and their federations, the consumer councils and their federations, and an iteration facilitation board.

Enterprises formulate and adjust their production proposals for the coming year in much the same way as today's companies prepare budgets. They also select representatives for industry federations.

Members of the neighbourhood consumer councils prepare and adjust their household (henceforth called 'individual') consumption proposals and submit these to their neighbourhood council, where they also participate in discussions about what local public goods they want, and where office holders are selected – by election or lottery – for higher level consumer federations. A consumer does not pre-pay during annual planning; rather, when a consumer makes a purchase during the year, they are charged the actual cost then and there.

The iteration facilitation board (IFB) facilitates the flow of information in annual planning. It is not a central planning bureaucracy which tells councils what to produce and consume. Instead, the IFB's main task is to adjust prices – 'estimates' of opportunity costs of using different kinds of productive capital, natural resources and labour, and the costs of producing intermediate and final goods - to reduce excess supplies and demands before every new planning iteration until a feasible plan is reached.

Proposals are approved or rejected by the other councils and federations. On the consumer side, the total cost of proposed consumption is compared with consumers' income. On the production side, enterprises' proposals are evaluated by comparing the proposed revenues and costs of their outputs and inputs.

Enterprises cannot access the price lists that are announced by the IFB in a capacity that would allow them to change prices. From the perspective of an individual producer the price of each product category, both in annual planning and during the year, is externally fixed. The enterprise can only affect the *quantities* and *categories* of goods that they deliver and order. The revenue and cost which is registered for an enterprise during a year is always based on reported *quantities* of delivered and received *categories* of goods, which are always valued at prices set in the annual planning.

2. Participatory Accounting

We will now discuss accounting in the context of a participatory economy, particularly the categorisation of goods and its relationship to pricing.

The main objectives for accounting in a participatory economy is to enable:

- Planning of future economic activity in several separate planning procedures with different time horizons - long term development planning, investment planning, and annual planning
- Recording of economic transactions during the current year.
- Continuous monitoring and evaluation of outcomes in relation to plans, and possible adjustments of current and future plans.

The design of an accounting system must permit economic actors to ‘correctly’ record and evaluate: (i) the opportunity costs of using various categories of labour, natural resources, and produced capital assets, (ii) the social costs of producing and consuming various goods, (iii) the social cost of ecological damage such as pollutant emissions and (iv) the social rate of return on investment in expanding different aspects of productive capacity over many years.

One crucial issue is how all the different varieties of goods, services, capital assets, resources, and ecological damages, should be categorised and quantified so that a viable, fair and efficient annual plan will be reached.

With these goals in mind, the question becomes: how should the catalogue of goods – which consumers and producers use during annual planning – best be compiled and expressed before the start of every annual planning period?

Product Categorisation and Costing

The Political Economy of Categories and Prices

The categorisation of goods is central to any comprehensively coordinated socialist economy.

The participatory economy model seeks to achieve certain outcomes. Among postcapitalist models, it poses as an alternative to both quantity central planning and market coordination. The goal is democratic comprehensive coordination (Laibman, 2001, p. 90(n13)) of production, distribution, and consumption, along with substantive subunit autonomy. It is largely for the first reason that ‘market socialism’ is rejected, and the second reason that central planning is rejected.

On the one hand, substantive subunit autonomy requires coordination by price rather than quantity (one *possible* exception being the Neurath-Beer inspired *in natura* system proposed in Vettese & Pendergrass, 2022). In quantity central planning, the centre specifies the

subunit's inputs, outputs, and even production techniques (Cockshott & Cottrell, 1993; Dapprich, 2022; Hardin, 2021), leaving few important local decisions to be made.

On the other hand, comprehensive coordination requires that prices are determined in some aggregate, global, process. This contrasts with price formation in the spontaneous market, which is determined by buyer-seller pairs in a highly disaggregated and local process (e.g. Elson, 1988; Nove, 1983; Roemer, 1994; Schweickart, 2011; Varoufakis, 2020; and to a much lesser extent Devine, 1988).

In a participatory economy's annual planning procedure, the centre (IFB) imposes price constraints on subunits according to expected excess supply or demand. Subunits in turn reformulate production, distribution, and consumption plans. The centre summates the plans and redefines price constraints. This process continues until specified balance between supply and demand is reached, and allows substantive subunit autonomy within a context of comprehensive coordination.

Comprehensive coordination requires a systematic and consistent categorisation of goods which is not required for the piecemeal and *ad hoc* pricing of the spontaneous market, and will only be consistent to the degree these lists are consistent. There must be a unique list of goods and a corresponding list of prices and quantities.

In capitalist systems, firms – especially large ones – typically do produce such categorisations for internal and external use. Sometimes category structures are harmonised across several firms for the shared benefits of standardisation (TL9000, 2020). But there isn't a structural need for a unique, comprehensive, catalogue at the level of the economy.

In capitalist economies today, there are already codes classifying economic activities such as the North American Industry Classification System (NAICS), the Standard Industry Classification (SIC), and the European Union's Statistical Classification of Economic Activities (NACE) (U.S. Census Bureau, 2022; Office for National Statistics, 2009; Eurostat, 2008). There are also codes classifying economic products such as the UN's Central Product Classification (CPC), the European Union's Combined Nomenclature (CN) and Statistical Classification of Products by Activity (CPA) (United Nations Statistics Division, 2015; European Commission, 2022; Eurostat, 2014).

A set can be categorised a practically infinite number of ways, hence there is no natural category structure of goods. The category structure should be designed to facilitate the desired outcomes of the system.

Aggregation and Disaggregation

The most basic consideration is the level of aggregation and disaggregation in product categories. This bears especially on parecon's proposal of individual personal consumption planning, perhaps the feature which has drawn the most criticism from other socialists (e.g., Ackerman, 2012; Grünberg, 2022; Hahnel & Olin Wright, 2016; Schweickart, 2006; Wetzell, 2022) criticisms which would apply *a fortiori* to Dan Saros' proposal of a 'Needs Profile' where the individual consumer lists and ranks all their desired use values drawn from a 'General Catalogue' (Saros, 2014). For discussion of Saros' model see (Groos, 2021; Hahnel, et al., 2021, 332-341; Morozov, 2019; Sorg, 2022).

At the extreme of disaggregation, every unique product would constitute its own category and there would be no higher categories. We estimate that an advanced capitalist economy in 2023 uses on the order of 10^8 to 10^9 unique products, which one can picture as distinct barcodes. For example, estimates of the number of distinct products offered for sale on Amazon.com tend to fluctuate around 10^8 (ScrapeHero, 2021). For this paper, we will assume that the number of distinct products is on the order of 10^9 .

Thus, at the extreme of disaggregation, there would be 10^9 product categories. At the extreme of aggregation, there would be only one category (namely, 'goods'), or perhaps ten categories such as 'health', 'transport', etc. Intuition tells us that the best solutions are intermediate, but we must substantiate and quantify that.

We can take 10^9 as the default number of categories. The question then becomes (i) to what extent we should group these distinct products into more abstract categories, and (ii) how this grouping should be done.

In parecon, price formation during annual planning requires some category aggregation. For example, if every distinct type of fork – i.e. fork barcode – constituted its own category, price formation would be dysfunctional. We could expect prices of different forks to differ in unhelpful ways, stymying convergence. Rather, we would prefer a situation where proposals addressing the category 'stainless steel fork' would include several fork barcodes (e.g. fork 97, fork 12, fork 301, etc) based on resources used in production. This would allow economic coordination of stainless steel forks, which is more practical.

Similarly, if the finest category was 'kitchenware', this would not provide a useful basis on which to make decisions. For example, a request for 600 'kitchenware' does not tell a producer to produce forks, bowls, or tea towels. And a price for 'kitchenware' does not much help a producer to set a subcategory price for 'fork 97'.

It is helpful to understand what orders of magnitude of aggregation (e.g. 10^9) mean in terms of the categorisation of real goods. For example, the UK Office for National Statistics (2021) uses 13 main categories for its studies of household consumption: (1) Food & Non-Alcoholic Drinks; (2) Alcoholic Drink, Tobacco, Narcotics; (3) Clothing & Footwear; (4) Housing, Fuel, Power; (5) Household Goods & Services; (6) Health; (7) Transport; (8) Communication; (9) Recreation & Culture; (10) Education; (11) Restaurants & Hotels; (12) Miscellaneous Goods & Services; (13) Other Expenditure Items. This comprises the first order of magnitude, i.e. 10^1 categories.

To understand the next orders of magnitude, consider the categorisation of clothing – category (3) above – on Amazon.com. *Clothing* is divided into: (3.1) Man; (3.2) Woman; (3.3) Boy; (3.4) Girl; (3.5) Baby. That comprises the second order of magnitude, or 10^2 categories.

Under *Woman* (3.2) is: (3.2.1) Dresses; (3.2.2) Tops, Tees, Blouses; (3.2.3) Sweaters; (3.2.4) Fashion Hoodies & Sweatshirts; (3.2.5) Jeans; ... (3.2.15) Socks & Hosiery; (3.2.16) Bodysuits. That makes 10^3 categories.

Under *Dresses* (3.2.1) is: (3.2.1.1) Casual; (3.2.1.2) Club & Night Out; (3.2.1.3) Cocktail; (3.2.1.4) Formal; (3.2.1.5) Work; (3.2.1.6) Wedding Dresses. That makes 10^4 categories.

The upshot is that a consumer or producer will move quickly through the orders of magnitude in order to handle the problem in concrete terms. The category structure must not exceed the information processing constraints of the society or its subunits. This topic will be analysed in detail later. For now, we note that the potential computational bottleneck in parecon is not the enterprises, nor the IFB's computers, but the consumer.

Producers and consumers have different needs of the category structure. On the one hand, if consumers are to be able to influence what is produced in the economy by submitting consumption proposals during annual planning, they must be able to do so in a reasonable time. Among other things, this means that the categories of goods used for their consumption planning should be few and 'coarse' with as few details as practical. On the other hand, when preparing their proposals producers will use more detailed categories of goods indicating differences in potential resource use and technology.

Categorisation and Costing

One important aspect of categorising an economy's goods is how it will affect product costing, the purpose of which is to allocate the costs of produced goods in order to facilitate decision making. In today's economy, managers and accountants use product costing for price setting, inventory valuation, and income determination. Producers in parecon will also need to value their inventories and plan and record their revenue and costs – and assets and liabilities – and they will need to decide which products are most socially valuable to produce. Internal product costing will still play an important role when prices for more detailed subcategories of goods are derived, as we will see in the next section.

A category should include products with characteristics that similarly affect cost aggregation. Thus, a main challenge when categorising goods is to identify generic and quantifiable characteristics that reflect similarities in production technology and resource use during production. Bespoke and unique products are especially challenging here.

An economy produces, distributes, and consumes a huge variety of products, resources and activities and the control of product development, categorisation, design, and production are of crucial importance and go directly to the question of self-management.

Derived Prices for Subcategories of Consumer Products

The producers plan and propose what they want to produce and how, based on the prices announced by the IFB before each iteration. Enterprises will want to plan for the production of *subcategories* of goods. There must be a way to derive prices for finer subcategories of products from prices for coarser categories, for which the planning process aims to balance supply and demand. For example, a way to derive prices for subcategory Casual Dresses (3.2.1.1) from main category Dresses (3.2.1).

Every *subcategory* will belong to a coarser *main category* and be categorised based on a) consumers' preferences for product variations and b) differences in resource use in production. Every product will thus belong to both a coarser main category *and* a finer subcategory.

For every subcategory of good they plan to produce, enterprises specify both the number of units and production cost. In other words, an enterprise's total production cost will be allocated to subcategories of goods which they propose to produce. Most companies do such cost accounting today to put a price tag on their different products and to value their inventory. Normally, a company allocates all their costs to their products and knows the cost of producing produce each of them. Product costing is a prominent part of every manufacturing company's accounting system and discussions about how to best allocate overhead and indirect costs to products, and other cost objectives, is at the very core of modern management accounting theory (Horngren, et al., 1999).

When all consumption and production proposals in an iteration are submitted, there is information about a) excess demand or supply for each coarse main category, which is the information that the IFB uses when adjusting prices for the next round of proposals, and b) the enterprises' total *average production cost* for every main category *and* for each subcategory. Based on this information, a unit price for each subcategory can be derived and announced by the IFB *after* all proposals are submitted and the iteration is closed.

The ratio between the *Subcategory Average Production Cost* (APC_{sub}) and the *Main Category Average Production Cost* (APC_{main}) can be assumed to apply generally to all relevant subcategories. This means that the *Subcategory Price* (P_{sub}) derived for a product in a subcategory can be calculated by multiplying the ratio APC_{sub} / APC_{main} by the *current Main Price* (P_{main}), as summarised in eqns. (1) and (2):

$$\frac{P_{sub}}{P_{main}} = \frac{APC_{sub}}{APC_{main}} \quad (1)$$

$$P_{sub} = P_{main} \times \frac{APC_{sub}}{APC_{main}} \quad (2)$$

Consider an example (Table 1). Main product Chair has a *Main Price* P_{chair} of 5.00 €. The quantity of Chair is 100 units, with a *total* Main Category Production Cost of 460 €. This means the *Main Category Average Production Cost* APC_{main} is 460 € ÷ 100 units = 4.60 € / unit. There are three subcategories of Chair, namely Deck Chair, Desk Chair, and Dining Chair, with varying quantities and total production costs.

Category Type	Category Name	Quantity (units)	Total Production Cost (€)	Average Production Cost (€ / unit)	Price (€)
Main	Chair	100	460	4.60	5.00
Subcategory	Deck Chair	50	150	3.00	3.26
Subcategory	Desk Chair	20	100	5.00	5.45
Subcategory	Dining Chair	30	210	7.00	7.61

Table 1 – Product costing for Main Category Chair, and Subcategories Deck Chair, Desk Chair, and Dining Chair.

The prices of the subcategories are derived using eqn. (2). For example, for the subcategory Deck Chair:

$$P_{deck\ chair} = (P_{chair}) \times \left(\frac{APC_{deck\ chair}}{APC_{chair}} \right) \quad (3)$$

$$P_{deck\ chair} = (5.00\ \text{€}) \times \left(\frac{3.00\ \text{€/unit}}{4.60\ \text{€/unit}} \right) = 3.26\ \text{€} \quad (4)$$

However, note that calculations of prices for subcategories must use the last announced *main category* average prices for *input costs*, since the input prices cannot be dependent on the same calculations of prices for which they are a determinant factor. The announced prices for *subcategories* are used and recorded in the books of enterprises and consumers. Subcategory prices normally stay fixed during the year which means that average prices for main categories will change when the mix of subcategories change.

Derived prices for subcategories enable enterprises to plan and assess production proposals, and real output during a year, more efficiently and fairly because these prices incorporate different quantities and categories of inputs and therefore different production costs.

When enterprises plan their production, they are foremost guided by prices and demand for main category goods. They then need to decide how to allocate their production among different subcategories. During annual planning, if the announced *price* for a certain main category is much higher than the average production *cost* for the same category, depending on their assessments producers can choose to increase their revenue by increasing the produced quantity *or* quality of the good.

Subcategorisation

In a market economy, product diversification, branding, copyrights, and patents are important tools for producers to increase profits. Thus, there are often many brands or versions of a product, each with a unique price, even though the production cost may be the same. So, for example, there are many different brands of rather standardised products such as cornflakes, toothpaste, and shampoo. And the vast number of different versions or brands of durable goods, i.e., trainers, mobile phones, computers, etc., does not necessarily correspond to significant differences in quality or production costs. Sometimes even identical products are marketed as different products with different prices aimed at different customers or markets.

In parecon, the primary responsibility for defining the criteria for different subcategories of personal consumer goods will rest with the consumers and the National Federation of Consumer Councils, in collaboration with the National Federation of Worker Councils. They may start by considering the previous year's product range and what new designs producers plan to offer. The subcategories may be more or less detailed, more or less numerous. The criteria for subcategories will be a) consumers' preferences for different versions of products and b) differences in production and set-up cost for versions. If consumers want different quality versions of a good, they need to define and identify the criteria for separate

subcategories, i.e., varying amount or quality of material or a different production process. This task could be facilitated by R&D units on both the consumer and producer side.

The categorisation of goods in parecon is not about the proliferation of ‘brands’ for marketing purposes. Normally, there are no patents or copyrights. Instead, categorisation is about creating the best conditions for the fulfilment of consumers’ preferences, the efficient and fair planning of production, and a pricing that adequately measures the social costs of production.

3. Shop Plans

For brevity we refer to consumer-facing enterprises as ‘shops’. Shops can be either shop-distributors or shop-producers. A supermarket is an example of a shop-distributor because it stocks products made elsewhere. A restaurant is a shop-producer because it both produces meals onsite and interfaces with customers. Those nuances are beyond the scope of this paper and so we will speak only of ‘shops’.

Hitherto, shops *qua* shops have not been integrated into parecon’s annual planning. Rather, the actors in the process have been specified as - on the consumption side - consumers and consumer councils and - on the production side - non-shop enterprises.

We propose to integrate shops into annual planning because (a) shops must be included in the planning system somehow, but also because (b) it is important for personal consumption planning.

We note that Tom Wetzel has independently developed a somewhat similar idea, where – in effect – the consumer council makes the consumption plan rather than individuals, a proposal particularly congruent with this paper’s Model B (Wetzel, 2022, pp. 364-365).

Shops have peculiar characteristics which must be treated with appropriate distinction. Firstly, in parecon shops are effectively franchises or departments of the consumer councils. This does not apply to non-shop enterprises (e.g., a steel plant). Shops are part of a public distribution system, and the product which shops sell is the service of distribution itself. The main customer is the consumer council or federation and not individual consumers of the products. Secondly, shops use different prices than non-shops (see ‘Shop Prices’ below). Thirdly, apart from work being ‘life’s prime want’, production is ultimately for final consumers whose demand drives the system. Shops are located at the end of the supply chain and thus interface with final consumers rather than only other enterprises.

Shops and Information

Integrating shops into annual planning presents the opportunity to harness both local and tacit information relative to higher level planners and global information relative to individual consumers.

The shop plans harness the local and tacit information of the shop operators, who have an ‘on the ground’ sense of demand changes and supply conditions. This local and tacit information

includes things which a planning specialist cannot glean from the computer analysis of a huge data set, say, covering a region.

Moreover, outcomes which are opaque to the individual are obvious to the shop for statistical reasons. For example, the individual can't predict that their runners will be eaten by their dog in 6 months. However, the shop knows that it sold 200 pairs of runners last year.

It must be noted that informational *capacity* alone never suffices. Rather, we must analyse the information capacity-motivation pair. A shop can be more or less well *motivated* to provide accurate information depending on its institutional context, and that context could lead shop operators to provide inaccurate information to promote their sectional gain.

Integrating Shop Plans

We will provide a sketch here, to be elaborated in the coming sections. A shop will make and submit a distribution plan for the next year. This plan will specify their inputs and outputs, as well as projected total cost and revenue. The shop faces some budget constraint as determined by a democratic process in the consumer councils. Whether shops will seek to break even or to achieve a positive net revenue is an important question of policy and institutional design.

Importantly, the plan will render explicit the goods the shop intends to stock and sell to consumers. Since shops are where consumers will purchase personal goods, the summation of all shop plans is a projection of *total personal consumption* for the territory. The accuracy of the total projection is a function of the accuracy of the individual projections.

Each shop has free access to a data commons including all recorded sales of goods across the territory and the data *analysis* by planners. This is very different to a capitalist system where such information is proprietary and guarded. The data commons provides conditions for more accurate shop projections and cooperation between shops.

Total demand cannot be higher than income without inflation. Consumer councils must at the least check the aggregated shop plans for this condition.

Shop Prices

There is a critical difference in sale prices between non-shop enterprises and shops. For example, consider an enterprise which produces a tin of baked beans and a supermarket which sells it.

A shop takes price vector \mathbf{p} from the IFB as input. The prices from the IFB determine the shop's costs, which we classify here as *product costs* (the costs of acquiring the products which will be sold) and *operating costs* (all other costs, including staff, ground rent, utilities, etc.):

$$C_{total} = C_{operating} + C_{products} \quad (5)$$

If the shop sells its wares of quantity \mathbf{q} at the official IFB prices \mathbf{p} , it will cover the *product costs* but not *operating costs*:

$$R_{products} = \mathbf{p} \cdot \mathbf{q} = C_{products} \quad (6)$$

To achieve a total revenue equal to total costs, the shop must charge a *mark-up* μ to cover operating costs in addition to merely the cost of acquiring the stock:

$$R_{total} = C_{total} = C_{operating} + C_{products} \quad (7)$$

$$R_{total} = (1 + \mu)C_{products} = (1 + \mu)\mathbf{p} \cdot \mathbf{q} = \mathbf{p}' \cdot \mathbf{q} \quad (8)$$

Where:

$$\mu = \frac{C_{operating}}{C_{products}} \quad (9)$$

How this mark-up is set is beyond the scope of this paper. For now, assume that the markup is regulated by the consumer councils in one of two exclusive ways: firstly, each shop uses a different markup such that its Revenue = Cost; secondly, a uniform markup is used based on average cost structures (resulting in some shops having Revenue < Cost and requiring subsidisation).

In any case, the fact that shops form their distribution plans using a sale price \mathbf{p}' different from \mathbf{p} does not disrupt annual planning. What matters most here is the quantities \mathbf{q} the shop proposes to stock and sell. These quantities will influence how the IFB updates prices \mathbf{p} in the next round of annual planning because the IFB takes quantities as inputs, not prices.

4. Two Models of Personal Consumption Planning

In this section we explore two models for personal consumption planning in a participatory economy. Model A and Model B are similar, for instance both include shop plans. However, they differ on the role of the individual consumer in the process. In short, in Model A individual consumers submit personal consumption plans; in Model B, they do not. The dialogue between the two perspectives underpinning these models explores the problem space well.

Role of the Individual in Personal Consumption

In both View A and B, it is important that the individual have a substantial influence on personal consumption, for what can be called ‘informational’ and ‘political’ reasons.

Before considering individual personal consumption plans, we review 5 additional ways the individual will substantially influence personal consumption in parecon (summarised in Figure 2):

1. Aggregate Division of Capacity.
2. Council Political Participation.
3. Reviews of Products and Vendors.
4. Purchases.
5. Relations with Specific Shops.

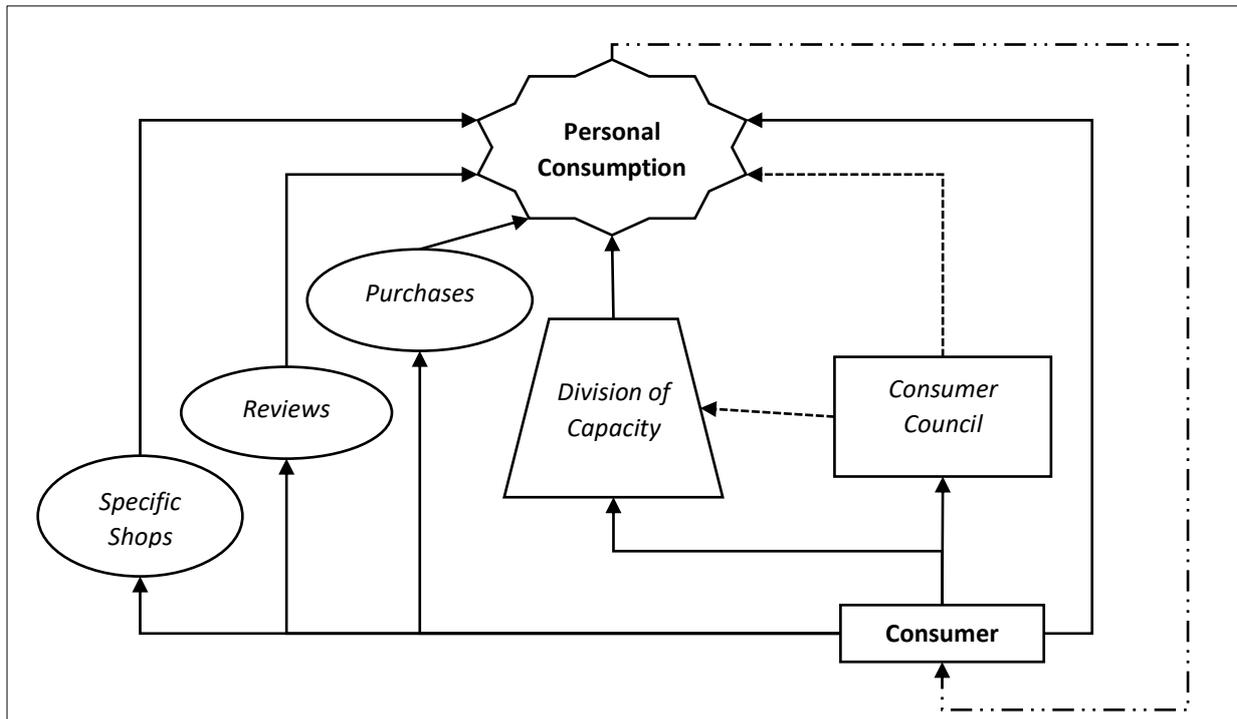


Figure 2 – Default individual influence on personal consumption in parecon.

In the sections that follow, only three further proposals are at play, viz. for Model A: individual personal consumption plans; for Model B: the Consumer Satisfaction Index (CSI), and Consumer Preferences Feedback (CPF). These three processes are shown in Figure 3.

1. Aggregate Division of Capacity

Before personal consumption planning, the individual consumer through their consumer councils and federations has already participated in a process of dividing productive capacity between consumption and investment, and between personal consumption and collective consumption. This frames personal consumption planning *ex ante*.

2. Council Political Participation

A key role for the individual consumer is participating in their consumer councils and making sure that they function properly; in particular, engaging in policy and administration, and ensuring that office holders and functionaries serve consumer and public interests. This means participating in meetings, assemblies, referenda, elections, lotteries, petitions, policy consultations, participatory budgeting, etc.

3. Reviews of Products and Vendors

Consumers can communicate their preferences by leaving reviews of specific products and vendors. These reviews could be consolidated into a public ‘Amazon’ catalogue if desired. Reviews influence producers, shops, and other consumers, *ex post*.

4. Purchases

Individuals can choose where to purchase personal consumption goods and what to buy (what quantities of which products). This substantially influences the pattern of personal consumption *ex post*.

5. Relations with Specific Shops

Individuals can influence consumption through their relations with specific shops. For example, they could tell the shop that they highly valued a product which the shop stopped stocking. A consumer could be part of a consumer cooperative – beyond their consumer council – facilitating an even greater influence on that specific shop.

Model A

Model A is more continuous with previous presentations of parecon, compared to Model B. However, Model A integrates shops into annual planning and attends more carefully to the practicalities of individual consumption plans.

Summary of Steps

Before a longer description of Model A, here is a very concise summary:

1. Individual

- a. Individual purchases are recorded and associated with an identity.
- b. The consumer makes and submits a personal consumption plan, constrained by income & savings.
- c. The consumer ‘owns’ their plan, used in rare cases of shortage.

2. Shops

- a. Individual consumer plans are summated and provided to shops.
- b. Each category of shop makes a collective distribution plan.
- c. Each shop makes its distribution plan, including changes from the sum of individual consumer plans.
- d. These changes appear in the consumer council account as changes in shop inventory.

3. Consumer Councils

- a. Shop proposals are summated and made available to consumer councils.
- b. Consumer councils can modify the aggregate proposal.
- c. The plan is submitted to the IFB.

4. Repeat

- a. The IFB modifies prices of all categories of goods and feeds prices back to annual planning participants.
- b. The next round of annual planning begins, and the process repeats from 1.B, round after round, until a feasible plan is reached.

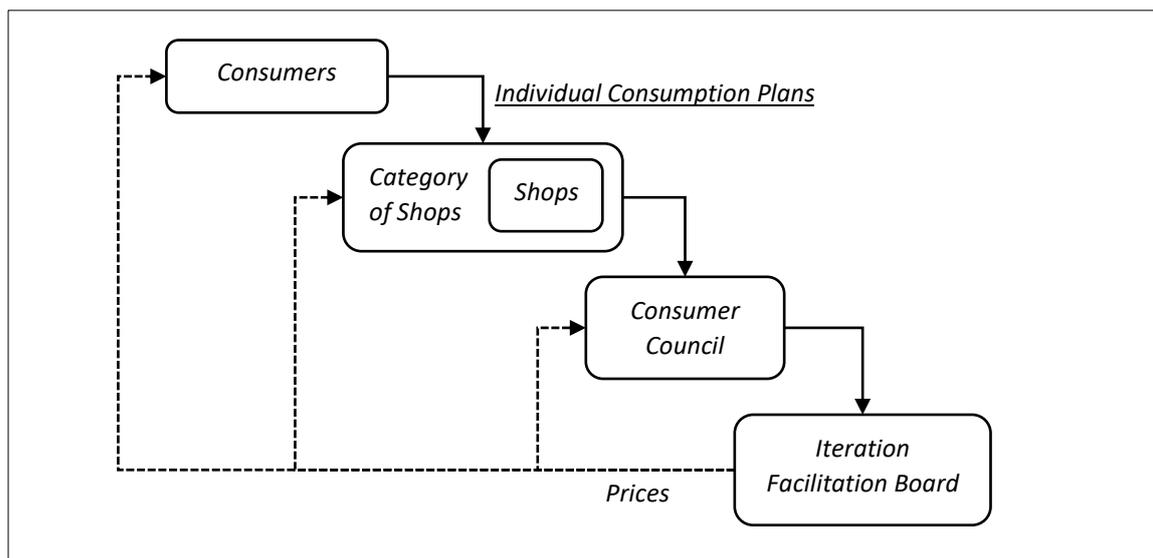


Figure 3 – Simple schematic of personal consumption in annual planning in Model A.

Step 1 - Individual

1.A – During the year, each good the individual purchases is recorded and associated with their identity for future reference.

1.B – At the start of annual planning, individuals are presented with a draft of their estimated individual consumption for next year by a support unit connected to the consumer council. One can imagine an individual accessing a planning software client which displays all available goods in the economy, organised in a category structure. It could be based on statistics for what the individual purchased during previous years, for instance their consumption patterns in the last 5 or 10 years. The purpose is to make plan formulation easier for the individual.

The plan would comprise at most a few hundred coarse categories of goods, with associated subcategories that could amount to many thousands for each coarse category. It is the coarse level of categories at which supply and demand will be tracked and for which prices will be adjusted and announced by the IFB during annual planning. But they will still be very useful for producers who will estimate the mix of subcategories connected to these coarse categories.

The individual may or may not adjust it before she submits it forward. There are a number of alternative ways the individual could be asked to adjust the plan. For instance:

Method one: The individual could change the quantity specified for each coarse category, one-by-one. Presumably not a very common or popular option.

Method two: If the individual is using past consumption patterns as a template, they could specify a desired percentage change either for each coarse category or for 20 or 30 or so defined even broader groups of consumption categories, e.g., clothing, entertainment, technology, etc., assuming a stable mix of categories in their future consumption in these broader groups.

Method three: The planning software could ask the individual 20 questions to build a consumer profile for the year. Questions would include things such as intention to travel, change of accommodation, dietary changes, having children, etc. The answers would be used by an algorithm (recommender system) to automatically make changes to the individual's consumption pattern from last year.

Method mix: A mix of two or more of the above methods.

1.C – The submitted and agreed individual proposal is "owned" by the individual which means she, at least theoretically, risks not getting access to products or having to experience delayed delivery periods if items are not included in the proposal, for instance in case of a supply shortage due to changing consumer preferences before mid-year updates of plans have been implemented.

Once a month or even less frequently, an economy-wide support unit compares supply and demand for categories of goods, i.e. changes in inventory. If some categories of goods don't follow expectations this might trigger a mid-year change and/or rationing of certain goods for a period by requesting consumers to show that they included the goods in question in their plans. This would be rare, but it could happen.

Step 2 – Shops

2.A – Once all individual proposals are submitted, they are summated and made available for the regional or local distribution system, i.e. the regions' shops, which are run and overseen by the consumer council or federation.

2.B – Each category of shop collectively makes a distribution plan for the year and uses this information to inform their proposals regarding the distributional services they provide.

2.C – Shops will judge the total demand for goods at the specified level of detail. They may believe that demand for some items is understated and for others, they may think it is overstated, for instance based on historical statistics and demographic forecasts. If they believe it is understated (overstated), to be safe, they propose an increase (decrease) in their inventory for that good.

2.D – These changes appear as an 'investment' or 'disinvestment' respectively for the consumer council. That is, total proposed consumer council consumption = proposed individual consumption + proposed change in shop inventory. This does not appear as an

expense for an individual but as an asset funded by and recorded at the consumer council as a collective cost/investment.

Step 3 – Consumer councils

3.A – Shop proposals are summated and made available to consumer councils.

3.B – As a last resort, consumer councils may change the combined proposal from shops. Any such changes will appear as adjustments to inventory levels and not as changes in individual proposals.

3.C – This plan (modified or not) is submitted to the IFB.

Step 4 – Repeat

4.A – After receiving plans including all production, distribution, and consumption, the IFB modifies prices according to total supply and demand of each category of good. These prices are fed back to the individuals, shops, and consumer councils.

4.B – The next round of annual planning begins, repeating steps from 1.B onwards until a feasible plan is reached and planning concludes.

The Role of the Individual in Model A

It should be clear that individual consumption proposals are tentative with the primary purpose of helping the preparation of the total consumption proposal submitted by the neighbourhood consumer council in annual planning.

Consumers' income and preferences change from year to year, and the main purpose of asking consumers to make proposals for what they expect to consume for the year ahead during annual planning is to make it easier for producers to anticipate changes in demand and thus reduce inefficiencies due to over- and underproduction. The only constraint is that an individual's expected income must cover the cost of planned consumption.

Once all individuals' proposals in an iteration are submitted there is a rough first estimation of consumer preferences for individually consumed goods at current prices and incomes. However, the neighbourhood shops and consumer council will adjust its members' aggregate demand as part of the preparation of the total consumption proposal it will submit.

Criticisms of Model A from View B

This section presents criticisms of Model A from View B, across the headings (1) time; (2) information; (3) privacy; (4) binding plans; and (5) other consumer input.

1. Time

There is a trade-off between time and accuracy. More accuracy means more categories specified and more time considering the answer. Consider the following ‘back-of-the-envelope’ calculation: 1 minute per category for 1000 categories is 17 hours; 1 minute per category for 100 categories is 1.7 hours. This has to happen over, say, 5 rounds of annual planning. 17 hours is far too long. 1.7 hours is manageable but comes at the cost of very vague plans (see ‘2. Information’ below). A much more cursory 10 seconds per category achieves 2.8 hours for 1000 categories and 0.28 hours for 100 categories. However, not much serious prediction can be done in 10 seconds.

This time is important because (a) it can slow down rounds of annual planning, and (b) because the greater the time the greater the hassle for consumers.

2. Information

Primarily because of the aforementioned time constraints, 1000 categories is the absolute limit and 100 is more realistic for consumers.

What this means in practice is very vague proposals. To illustrate, 100 categories means a plan saying ‘X units of Women’s Clothing’ (on Amazon.com) or ‘Y units of Frozen Food’ (on Tesco.ie). It may or may not be more useful than nothing, but it cannot be the basis of a planning system and isn’t worth the trouble.

The needs of producers and shops for more refined categories during annual planning should be the priority, and not be compromised by the need of consumers for very vague categories.

3. Privacy

Recording every purchase for each person is a potentially enormous privacy violation.

There might be solutions but (i) collecting this data at all creates a non-zero risk, and (ii) the risk isn’t worth the plausible gain. It seems a contradiction to expose individuals to privacy risk in the name of libertarianism.

It would be possible for a consumer to track all their personal consumption, for example, on their mobile device, which wouldn’t require anybody else having access to that data. They could then privately use this data to aid them in personal consumption planning. This is compatible with a ‘token’ central bank digital currency using blind signatures, where privacy ‘is cryptographically guaranteed’ (Grothoff & Moser, 2021, p. 3).

However, consumers ‘owning’ their consumption plans requires shops to be able to access this data and compare it with the consumer’s plan to verify the consumer did include the correct product category (at the right quantity). This might be addressed using a decentralised digital identity system on a blockchain and a zero-knowledge proof to show the product

category was 'preordered'. However, this is speculative, and such a system would be far more costly as well as requiring probably intolerable transaction times.

4. Binding Plans

The information consumers will provide in their personal consumption plans is so low quality that it is practically meaningless to hold them to it.

Moreover, for plans that are 'owned', consumers are incentivised to include items 'just in case', distorting the information they provide.

If the '20 questions' method (or any other automated method) is used, it is unreasonable to hold people to that plan as they haven't formulated it themselves.

Is the benefit from this policy worth the hassle? Namely, the privacy dangers and the risk of being excluded from purchases because one made a mistake or didn't foresee something?

If rationing is required, it is better to organise it on a case-by-case basis. If the goal is to solicit more certainty through preorders, this should be done by preordering specific goods from specific vendors.

5. Other Consumer Input

There are much more interesting forms of personal consumption input from individuals which have never been explored, such as the Consumer Satisfaction Index and Consumer Preferences Feedback (see Model B).

Retort to View B from View A

Following View B's criticism of Model A, this section presents a retort from View A across the same headings (1) time; (2) information; (3) privacy; (4) binding plans; and (5) other consumer input.

1. Time

People who are interested, and don't just push the submit button, will spend a couple of hours on their first draft. The only reason to change their original proposals in subsequent rounds is if there are major price changes in the total for their proposals. For 80-90% of consumers there won't be. Presumably, they will just resubmit their original proposals. For the rest, they might need to alter their consumption in one or two categories, definitely not going through the whole thing again. The time spent on subsequent proposals for most people will be minutes.

2. Information

Consumers will only engage with a few hundred categories, which does not require excessive time or effort.

Even a few hundred coarse categories will be useful and much more information than producers have access to today when they estimate their sales to prepare their budgets. And it

could certainly form the basis of a planning system if the product structure is designed competently with logical subcategories, i.e. that reflect differences in production costs.

Furthermore, the individual is uniquely placed to respond to changes in multiple goods.

Individuals consume a lot of different things, including consumables, durables, services, housing and so on. And they are interlinked in that the demand and price for one type of product affect all the others in complex and unforeseeable ways. So, for example, if demand and price for housing increases it will affect the demand and prices for the other products in many different ways.

It will be practically impossible for a unit outside the individual to estimate a) if there will be a change in demand and price for housing, for example, or any other specific type of good that isn't the shop's own focus in an annual planning situation and b) if and in what ways that change will affect other products and especially the products the shop sells and will prepare a consumption proposal for.

Furthermore, there are reasons to expect shops to exaggerate the demand for their specific products since they presumably want to keep working with the distribution of their products, and this will lead to an overstated proposed consumption driving prices up.

There is still a good argument for shops and consumer councils making aggregate adjustments but a) they will have to start with the summation of individual proposals and b) they will be bound by the income constraint, meaning that they can only increase the aggregate demand expressed in individual proposals if those proposals include savings.

3. Privacy

Even if there are technical challenges at present to maintaining privacy while recording consumer purchases and plans, with consumers 'owning' their plans, these will likely be overcome in the near future.

4. Binding Plans

Individual consumption planning is an opportunity to preorder consumption, as an 'insurance' against long delivery times in instances of short supply.

Making individuals 'own' their proposals in the way described will give people an incentive to be more active in their consumption choices. This is a good thing in itself and something for which parecon strives.

Consumers don't *have* to preorder. If one doesn't, one will be assigned an order based on other people's estimates and one's previous consumption patterns and thus risk a slightly longer delivery schedule in a situation of shortage (a low risk). The cost of preordering will be a few hours to fill in a form. And one is allowed to deviate from one's plan, as long as the plan in the aggregate allows for it, which will be almost always, especially considering the error margins implemented by the shops and councils.

5. Other Forms of Consumer Input

This is fine but it doesn't replace the role of individuals in making personal consumption plans. In View A, the CSI and CPF proposed in Model B (see below) are at best

complementary and could in practice be too burdensome in combination with individual consumer plans.

Model B

Model B (shown in Figure 5) is very similar to Model A. However, it differs critically in not including individual consumption plans and instead including a Consumer Satisfaction Index and Consumer Preferences Feedback.

Summary of Steps

Step 1 - Individual

1.A – During the year, the purchase of goods is recorded but not associated with any individual consumer (except on an ‘opt-in’ and privacy-secure basis).

1.B – Individuals do not make personal consumption plans.

Step 2 – Shops

2.A – Personal consumption planning begins with each category of shop making a collective distribution plan.

2.B – Each shop estimates the goods stocked and sold and makes its own distribution plan.

2.C – The shop plans are submitted to a facilitation board in the consumer council.

Step 3 – Consumer councils

3.A – Shop proposals are summated and provided to consumer councils.

3.B – Consumer councils may change the combined proposal from shops.

3.C – This plan (modified or not) is submitted to the IFB.

Step 4 – Repeat

4.A – After receiving plans including all production, distribution, and consumption, the IFB modifies prices according to total supply and demand of each category of good.

4.B – These prices are fed back to the shops, and consumer councils, and are used to repeat steps from 2.A onwards until a feasible plan is reached.

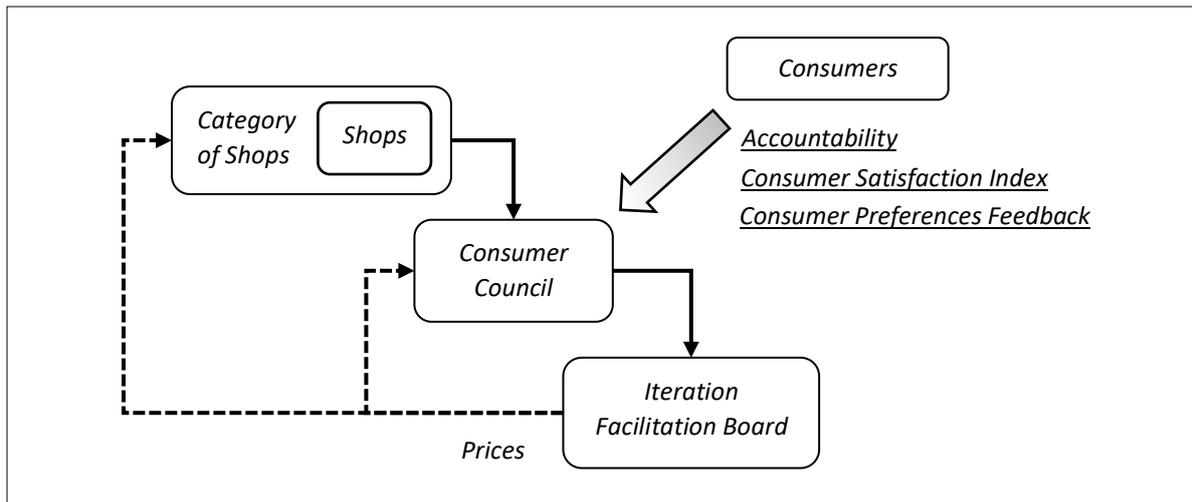


Figure 4 – Simple schematic of personal consumption in annual planning in Model B.

Role of the Individual in Model B

In Model B, the role of the individual in personal consumption does not include submitting a list of quantities of goods – coarsely categorised or not – for the next year. Individual consumption plans are informationally poor, likely represent more detriments than benefits, and are unlikely to provoke enthusiasm in real people. The following two proposals – the CSI and CPF – don’t suffer these problems. Importantly, people are likely to experience these processes as opportunities to have a voice on things they care about, opportunities absent from both market systems and individual personal consumption plans.

Consumer Satisfaction Index (CSI)

What could go wrong if individuals did not have sufficient influence over personal consumption? The answer is that people would be displeased with the result. We can gauge this by asking people.

Consumers could be surveyed during annual planning, for example by providing verified answers through the official planning software. Importantly, it could also be done throughout the year.

For example, consumers could give feedback on general satisfaction with personal consumption over the past year. The survey questions could correspond to a multi-dimensional Consumer Satisfaction Index (CSI), including dimensions such as customer service, location of shops, assortment of goods, product quality, pricing, ethical practices, and other such concerns. Surveys could include demographic data, facilitating more effective corrective response to the feedback.

Surveys could take the form of a list of statements (e.g. ‘I am satisfied with the assortment of goods in my locality’) with numerically graded answers ranging from ‘strongly agree’ to ‘strongly disagree’.

Even a survey of 100 questions could take only 15 minutes for a time-per-question on the order of 10 seconds (which is typical for straightforward multiple-choice questions). A survey of 30 questions would be even faster.

The CSI could be tracked over time and feature in the political life of the consumer councils. That mutual knowledge would be potent itself. If participation in the CSI was substantial and indicated high satisfaction, then broadly the system would be operating effectively. If low satisfaction was indicated, the system would be failing and corrections be required. Beyond that, consumer and worker councils and federations would be statutorily obligated to use the CSI as a policy target.

Consumer Preferences Feedback (CPF)

The purpose of this proposal is to allow individual consumers to provide feedback on their broad preferences and values pertaining to personal consumption. As with the CSI, the Consumer Preferences Feedback (CPF) could be done during annual planning or during the year.

Here is an illustrative list of issues a consumer will want to have a voice on:

(1) The availability of vegan products; (2) the range of healthy food, and the use of addictive and harmful ingredients; (3) the trade-off between well-made goods which last long and cheap goods which are affordable (4) ecological soundness (e.g. packaging, pollution, habitat destruction); (5) modularity and repairability of goods; (6) range of imported goods, including Fair Trade and seasonality; (7) own brand and generics; (8) information on products, e.g. chemicals in cleaning products; (9) incentives to buy local; (10) deposits on glass bottles; (11) supermarkets having a butcher rather than packaged meat (12) sweets and painkillers at the checkout; (13) the availability of alcohol at petrol stations; (14) the prevalence and content of advertising.

Again, surveys could take the form of a list of statements (e.g. 'I would prefer well-made goods which last longer but are more expensive') with answers ranging from 'strongly agree' to 'strongly disagree'.

However, CPF surveys could also allow text responses. Up until recently, this would require administering surveys to small statistical samples of participants to avoid excessive volumes of responses. That is still an option. However, recent advances in 'artificial intelligence' have allowed the automatic bulk review and summary of huge text quantities. For example, machine learning and natural language processing software (such as OpenAI's GPT-3) can be used to identify key words, perform sentiment analysis, find commonalities in responses, and even suggest solutions.

In addition, there could be a consumer forum and collaboration platform where individual consumers could access this information, announce problems and suggest solutions, as well as read and respond to others' posts. The platform could enable multiple persons to collaborate on a particular issue (for example, reducing packaging).

As with the CSI, there would be a political mechanism requiring consumer councils and federations to integrate the CPF into policy over time, so that the reality of personal consumption would gradually converge to the aggregate feedback. For example, if consumers

indicated they preferred higher quality but more expensive goods, consumer products would shift in that direction.

Both the CSI and CPF are reminiscent of Stafford Beer's 'algedonic feedback' (Beer, 1981, p. 284).

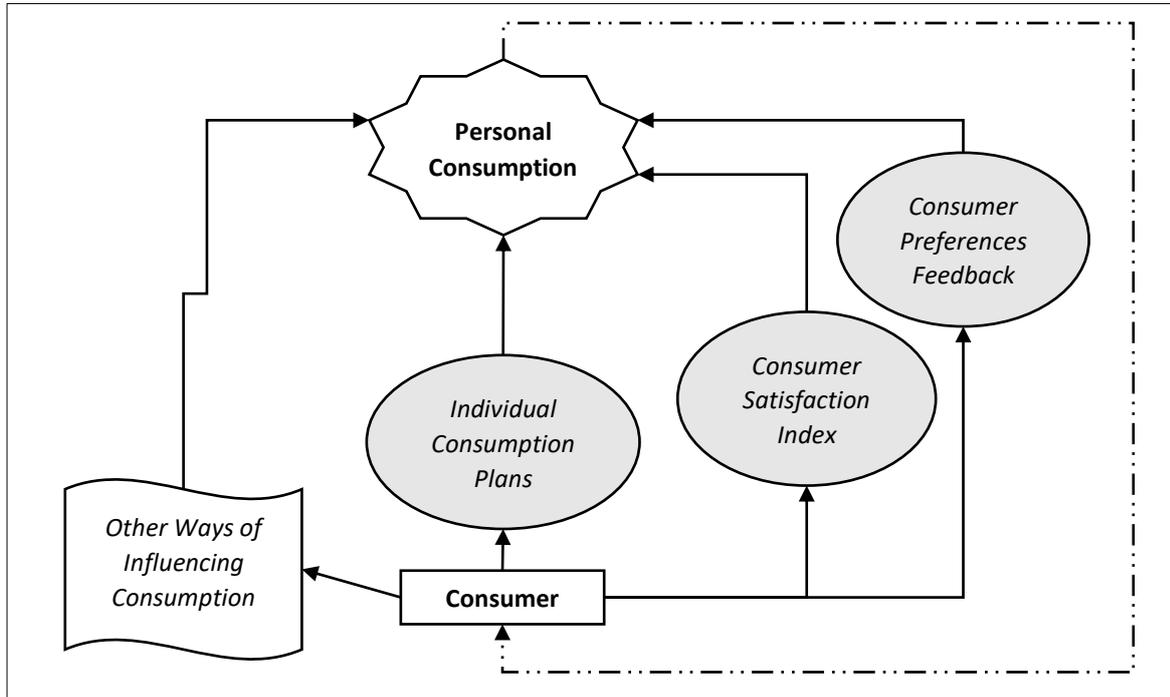


Figure 5 - Individual influence on personal consumption in parecon. Model A includes Individual Consumption Plans. Model B includes Consumer Satisfaction Index and Consumer Preferences Feedback. 'Other Ways' shown in Figure 2.

Criticisms of Model B from View A

Principal-Agent Problem

Shops and council officials may pursue interests contrary to consumers. Producers need to be informed of consumer preferences without distortions.

Retort to View A from View B

Principal-Agent Problem

The concern is sound but individual plans do almost nothing to provide accountability.

This is because the shops and consumer councils can modify the plans at their discretion, even in Model A. Therefore, the individual plans are not a practical constraint.

The Consumer Satisfaction Index is a clear signal of whether personal consumption is working well for consumers. If intermediaries distort the process, that will manifest in a low CSI score. Further accountability depends on political participation in the consumer councils.

Conclusion

In this paper we have elaborated on the design and role of personal planning in a participatory economy and the potentially facilitating role of shops and distribution plans in this context. We started by giving a brief overview of the model of participatory economics and especially its participatory planning model.

We have discussed the role of accounting, costing and categorisation of the huge amount of goods and services that are produced, distributed, and consumed in a modern economy.

We have argued that a public distribution system in the form of shops in a participatory economy has an important role to play not only for the distribution of goods but also in facilitating the planning of personal consumption.

Finally, we have presented two different models of personal consumption planning with different roles for the individual. One model is more continuous with previous presentations of the model of a participatory economy, the other less so. We have not advocated one model over the other but highlighted arguments for and against each.

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