



How do political, individual and contextual factors affect school milk demand? Empirical evidence from primary schools in Germany



Daniela Weible*, Petra Salamon, Inken B. Christoph-Schulz, Guenter Peter

Johann Heinrich von Thünen Institut, Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute for Market Analysis, Bundesallee 50, D-38116 Braunschweig, Germany

ARTICLE INFO

Article history:

Received 13 June 2012

Received in revised form 22 August 2013

Accepted 24 August 2013

Keywords:

School milk
Demand model
Multilevel analysis
Context effects
Price experiment
Policy impact

ABSTRACT

Despite the subsidies provided for school milk within the European School Milk Scheme, consumption has declined steadily in Germany. Thus, a federal research project was established to analyze factors that influence the demand for school milk. The results should form a basis to improve future school milk policy. To identify the factors affecting the decisions by individual pupils to order school milk and to quantify the impact of each factor, politically induced factors, individual and context factors were considered. Price effects and the associated policy issues were derived via a price experiment in selected German primary schools, while information on weekly orders for school milk was collected at the individual level. Detailed information on the eating habits, preferences and tastes, attitudes, socio-economic circumstances and characteristics of the persons involved was obtained by administering various surveys. The respondents examined in the study included pupils, the pupils' parents, class teachers, school milk managers (primarily janitors) and school principals.

To properly account for the hierarchical structure of the dataset (pupils within classes and schools along the different price steps of the experiment), a logistic multilevel analysis was applied based on 7336 pupils from 101 schools. The free-of-charge distribution of school milk had a high positive impact in the demand decision, confirming the importance of the policy setting (e.g., availability of subsidies). Although the price had an expected negative effect, its impact is limited. In addition to socio-economic factors (e.g., age, gender, immigration background and income of households), the behavior and attitudes of pupils and parents, as well as the context or environment surrounding the school milk offering (e.g., number of school milk products, whether teachers drink milk with the pupils during the break) had an impact.

© 2013 Elsevier Ltd. All rights reserved.

Introduction

As part of a balanced diet school milk like other milk products can help meet children's basic daily nutrition requirements. Often the importance of sufficient calcium in the diet during childhood for bone development and general health is emphasized (Promar International, 2002; Jacobson, 1961). In Germany, the average calcium supply for children up to 18 years old is considered insufficient, and it is particularly low for girls (DGE, 2008; Mensink et al., 2007a). The German Nutrition Society (DGE) recommends daily consumption of milk and dairy products to ensure the recommended daily intake of calcium, which is 900 mg of calcium for children aged 7–10 and 1100 mg of calcium for children aged 10–12 (DGE, 2008).¹ Actually, real intake of calcium is 749 mg for children aged 7–9 and 855 mg for children aged 10–12 (Kersting

and Bergmann, 2008). According to Alexy et al. (2008), the recommended daily amount of calcium is equivalent to 400–420 ml of dairy products for children aged 7–10. For teens, these recommendations rise to 450–500 ml per day for boys and 425–450 ml per day for girls (Alexy et al., 2008). Dairy products also contain high-quality protein and many vitamins and minerals (Heine, 1999). The former are essential for children's growing muscles as well as for their organs. Vitamins and minerals are essential for many metabolic processes. With the exception of vitamin D, the human body is not able to synthesize them (Biesalski, 1999; Fürst, 1999).

In the European Union for more than 30 years, pupils have, in principle, had access to what is known as “school milk” products in educational establishments. “School milk” products are subsidized dairy products provided in schools and other educational institutions encompassing a range of dairy products, including plain milk, flavored milk², yogurt and cheese. As part of the CAP, the EU School Milk Scheme with its consumption aid belongs to

* Corresponding author. Tel.: +49 531 596 5316; fax: +49 531 596 5399.

E-mail address: daniela.weible@vti.bund.de (D. Weible).

¹ For comparison: Recommended Dietary Allowances of calcium in the USA are 1000 mg for children aged 4–8 and 1300 mg for children aged 9–13 (IOM, 2011).

² Milk flavored with chocolate or fruit juice or aromatized with 90% milk and an additive of max. 7% sugar and/or honey (EC, 2008).

the area of market provisions (market price support) and was originally established in 1977. However, the objective was subsequently broadened to address nutritional and educational concerns as well. Today the EU Commission intends to improve the nutrition of children and to educate children about food (EC, 2008, 2007; EEC, 1977; Jacobson, 1961; Griffin, 1999; CEAS, 1999).

According to the provisions of the EU School Milk Scheme, all children attending an educational establishment are entitled to receive up to 250 ml of subsidized school milk (or school milk equivalents) per school day (EEC, 1977). Compared to the original program set-up, several adjustments were introduced like gradual cuts in the level of the subsidy. Currently, the subsidy is set at 18.15 Euros per 100 kg of milk equivalent, which corresponds to 4.4 cents per 250 ml package. Compared to its level in 1993, the subsidy has been reduced by 47% (VTI, 2012). Among other amendments, also the range of eligible product was extended and equal subsidies were introduced for all fat content levels so as not to encourage marketing of products with higher fat content (for a detailed development see VTI, 2012). In Germany, subsidized prices follow a maximum price policy, with the maximum prices fixed at the federal level. Distributing firms, in turn, are granted the subsidy in compliance with existing regulations (BMELF, 1985). Another specific aspect deals with the fact that in Germany, subsidized school milk is, in general, not part of school meals.

Besides the EU School Milk Scheme, an EU School Fruit Scheme was established in 2009. The key objective is to address children's low consumption of fruit and vegetables, whereas it is meant as a quite flexible approach to achieve target and tailored programs for the different member states (EC, 2007, 2009).

Despite the existence of the school milk program, school milk consumption has declined steadily in Germany. In 1993, approximately 130,000 tons of school milk equivalents were consumed by German pupils under the EU school milk program. The level dropped to only 36,000 tons for the 2009/10 school year, which represents a reduction of 72% over the past 16 years. The number of children entitled to participate has declined, and the level of participation among those who are eligible for the EU program has also dropped dramatically (Initiative Milch, 2011). Different reasons have been suggested for the decline in participation, but only a few studies have attempted to analyze the factors that have contributed to the decline (Wietbrauk, 1976; Weindlmaier and Fallscheer, 1997), and no quantitative studies have been conducted.

Factors discussed so far (cut in subsidy, inadequate packaging, high operational and handling efforts in schools, small quantities and low profitability, limited product range) relate either to the supply chain for school milk or to the institutional setting rather than to the consumers themselves. However, individual factors like attitudes of parents and children toward milk and milk products, including individual preferences and tastes; attitudes regarding a healthy diet; and changing eating habits and preferences, may have also contributed to changes in school milk demand.

To identify and quantify the factors that influence the demand for school milk including individual factors, the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), in cooperation with the Ministry of Environment and Conservation, Agriculture and Consumer Protection of North Rhine Westphalia, initiated a project called "Focus on school milk." The project is divided into a main project, conducted in North Rhine Westphalia, and several satellite projects that include other German federal states or the whole country of Germany. The primary objectives of the project were to evaluate factors such as price and policy issues, organizational factors (e.g., the product range and the form of distribution) and individual factors (e.g., attitudes, habits and social background). In addition to identifying the driving forces, the project will quantitatively analyze the impact of specific factors.

The results should provide a basis for recommendations to improve future school milk policies.

In this article the focus is on identification of institutional, socio-economic and individual factors affecting the individual decisions by pupils to order school milk or not and to quantify the impact of each factor. The factors that are considered include both individual-level and group-level factors.

The following section describes the theoretical model and subsequently, Sections three and four present the design of the survey and the data. Section five describes the methodology of the underlying analysis, and subsequently, Sections six and seven, the model specification and the results of the analysis. Section eight presents a discussion and the final section gives a short conclusion.

Theoretical model

Primarily, the individual decision of pupils to order school milk is analyzed. Hence nutritional aspects (type of milk, fat and sugar content) are neglected. Moreover, the underlying idea of the conception focuses on factors which are assumed to affect individual decision and go beyond these individual factors also to reach context factors. Both individual and context aspects are described successively in the following and it is viewed how the determinants leading to consumption decisions.

Individual aspects include socio-economic factors and preferences of the pupil, whereas their preferences may be determined based on their attitudes, knowledge and habits (especially consumption habits). In this particular case, pupils and their parents are assumed to be a single decision-making unit. In principle, the parents make the decision to order school milk in primary schools because they pay for the school milk, but the parents must still rely on their children to carry out their intentions by actually drinking school milk. Thus, parent's attitudes, knowledge and habits can also be seen as a determinant in individual decisions of pupils.

Although the individual decision to order school milk is predominantly determined by pupils and parents, other environmental or context factors may also affect their decisions. As school milk is normally consumed at school, the school environment and the school staff play an important role and need to be considered in analyzing pupils' decisions. In this regard, the teachers, school principals and school-milk managers (mainly janitors) may intentionally or unintentionally influence pupils' decisions. More broadly, the dairy industry and policy instruments such as the EU School Milk Scheme should also be considered because they set the prices and affect other factors such as product availability and product range within the Scheme. So, the school milk context consists of the environment or groups in which the consumption takes place and includes also political and institutional factors. For example, the price for school milk can also be seen as such a context-level aspect.

In contrast to individual-level factors which consist of influences whose effects vary only across individuals, context factors affect all individuals who belong to the same group. In the case of school milk, a group of pupils belong to a particular class, and a certain number of classes belong to a particular school. Therefore, the classes and schools represent group-level or context factors, respectively. Until now, the impacts of these context effects have rarely been demonstrated, and quantitative information regarding their influence on decisions is rare. Therefore, this large-sample study will contribute to a better understanding of these effects. Fig. 1 presents groups of factors assumed to influence school milk demand by pupils and differ between the individual and the various levels of context factors.

Our underlying assumptions are as follows: regarding individual aspects, there are socioeconomic factors (e.g., gender, age,

Download English Version:

<https://daneshyari.com/en/article/5070597>

Download Persian Version:

<https://daneshyari.com/article/5070597>

[Daneshyari.com](https://daneshyari.com)