Sweden’s food strategy and self-sufficiency

A comparison with Norway

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Abstract

Due to the world's worsening security situation, countries are preparing themselves to become more independent. Except focusing on military rearmament, basic necessitates must also be prioritized. A part of Sweden's way of navigating through this difficult era is their National Food Strategy, a policy aimed to increase and reinforce Swedish food self-sufficiency. This study evaluates the first version of Sweden's National Food Strategy and its impact on Swedish food self-sufficiency, addressing a research gap regarding the policy's actual effect—particularly in comparison to a country without a similar strategy. A difference-in-differences approach was implemented on a panel data model, consisting of the self-sufficiency ratio for specific food products from Sweden and Norway. Sweden serves as the treatment group, having implemented the policy, while Norway functions as the control group, as it introduced no similar policy during the study period and shares key agricultural similarities with Sweden. The results showed no statistical significance, meaning that we cannot draw the conclusion that the policy has had any effect on Sweden's self-sufficiency ratio of food. The study's findings suggests that the implementation of the second version of the strategy is a necessary step to create a more resistant Swedish food security.

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Abbreviations

SSR	Self-sufficiency ratio
DiD	Difference-in-Differences

1. Introduction

The world as we previously knew has changed. With several conflicts going around the world, the Russia-Ukraine and Israel-Palestina war, Trump's reduction of governmental spending and tariffs together with a growing xenophobia the circumstances are now different (Lin et al., 2023; Hassoun et al., 2025; Driscoll, 2025). As the focus now turns from cooperation to solitude, more and more of the world's countries are in different ways trying to prepare themselves for the new reality (World Economic Forum, 2025). This has implications for food systems too, as ensuring self-sufficiency of food has become a focal point (European Commission, 2025). Food self-sufficiency is a crucial safety factor in times of crisis and has become an increasingly important issue, contributing significantly to overall food security (Pellizzonni et al., 2025). Still, due to today's global market and supply chain, many countries all over the world have become more dependent on imports of almost every kind of goods, not to mention food. There are many advantages of a global market, although it can be fragile where disruptions can create severe consequences (Stone et al., 2018). For example, Ukraine has been a leading grain exporter and a key player in the world's food security, but due to Russia's invasion the exports have decreased significantly. This has resulted in increasing global crop and food prices, causing major food security concerns for millions of the world's populations (European Council, 2025), highlighting the vulnerability of todays' global market (Stockholm Resilience Centre, 2023).

The fact regarding the global food market's vulnerability has influenced Swedish policies. A part of Sweden's response to ensure and enhance food preparedness and self-sufficiency, Sweden launched their National Food Strategy 2.0 in March 2025. The strategy is an update on a policy strategy first launched in 2017, National Food Strategy. The main aim of the first strategy was to increase Swedish food production to increase the country's food self-sufficiency whereas the second version focuses more on different targets in the food sector to achieve the first

strategy's aim - like promotion of Swedish food exports (Ministry of Enterprise and Innovation, 2017; Ministry of Rural Affairs and Infrastructure, 2025).

Sweden's National Food Strategy is a response to global uncertainty, but there is a lack of evaluation of its impact on Swedish food self-sufficiency in the literature. Therefore, the aim of this thesis is to investigate how the Swedish National Food Strategy, introduced in 2017, has influenced the self-sufficiency ratio of food. The focus of this thesis is on the first version of the National Food Strategy, as assessing the effectiveness of a policy requires a pre- and post-period. As the second version of the National Food Strategy was introduced in 2025, there are no post periods available to assess its effectiveness. The study will implement a Difference-in-differences (DiD) approach using data regarding the self-sufficiency ratio (SSR) on certain basic food commodities over time, before and after the policy was implemented to investigate if the policy has had any effect on self-sufficiency. As a control group, I will use Norwegian data. By comparing Norway to Sweden, I can assess the influence of the Swedish Food Policy on self-sufficiency as Norway has not implemented any similar strategy during the chosen timeframe and has similar agricultural production and conditions.

Previous research highlights the importance of food security and its relation to preparedness. Svensson (2022) claims that the changed and worsened security situation in Europe has raised awareness of Swedish food security. Svensson investigates Swedish regions' food strategies and their view on food production, in relation to food security and the division of responsibilities within the sector. The study concluded that regions mention food preparedness, while displaying a shattered attitude toward food preparedness as both a vital societal function and an industry with economic growth as primary incentive.

Sweden's Agricultural Department is commissioned by the government to continuously follow up and evaluate the National Food Strategy annually and conduct every fourth year an in-depth analysis of the strategy and the development of the food chain. The evaluation also highlights the impact of external factors and

Swedish agriculture's profitability (Swedish Board of Agriculture, 2025). Outside Sweden, scientific literature assesses the effectiveness of agricultural to either productivity or self-sufficiency. For instance, Curtiss et al. (2017) uses a difference-in-differences (DiD)-model to analyze the effect of public farm subsidies on the productivity of Ukrainian agriculture. The study shows how DiD can be applied to agricultural data to isolate causal effects of policy interventions, which could be directly compared to my thesis' evaluation of Sweden's National Food Strategy. Using SSR as a measurement tool to evaluate food policies is also a recurrent method. Kaufmann et al. (2022) investigates the SSR within the EU by analyzing the relation between agricultural production and consumption multidimensionally on a regional level. Inspired by Kaufmann's study, my thesis will not only focus on an overall SSR of food but also on different food categories to get a deeper insight. Clapp (2017) discusses food self-sufficiency and its different definitions, e.g. SSR, and describes the definition as a profounder variant to describe self-sufficiency since the concept also includes trade in the equation. Clapp also claims that most SSR analyses evaluates data on key staple crops.

With previous research in mind, my thesis will use established methods evaluating an agricultural policy but will differentiate due to the choose of subject. Similarities can be drawn to Sweden's Agricultural Department's yearly analysis but there is a research gap on Sweden's National Food Strategy and its effect on food self-sufficiency when comparing to a country that has not implemented a similar policy.

2. Background

This section provides the background, explaining what self-sufficiency is and how it can be measured (section 2.1.), the role of self-sufficiency in different policies (section 2.2.), Sweden's food self-sufficiency and their National Food Strategy (section 2.3.). Finally, I discuss the agricultural policies in Norway, which is the country that serves as a control group in my analysis (section 2.4.).

2.1 Self-sufficiency

Baer-Nawrocka and Sadowski (2019) claims food self-sufficiency is one of three different agri-food policies that enhances national food security. The other two are food self-reliance and sovereignty. National food security is usually measured by looking at the average amount of energy people consume per person and comparing it to the minimum nutrition standards that define what people need. Food self-sufficiency and sovereignty focus on increasing the country's own production of basic agricultural goods, even if the country lacks a comparative advantage. The main benefit of self-sufficiency is that it reduces the need for food imports. As a result, the agricultural sector — together with hunting and fisheries — carries most of the responsibility for ensuring food security and self-sufficiency. However, the performance of agriculture is influenced by many factors, including natural conditions, human factors and advances in technical, chemical, and biological sciences.

Looking further, Clapp (2017) argues that the basic definition of food self-sufficiency — "*a country producing sufficient food to cover its own needs*" — is unclear as it ignores the role of trade. She suggests that including trade makes the concept more relevant for guiding policy in today's global economy. Therefore, this study uses the self-sufficiency ratio (SSR), which reflects production relative to total supply, as the main measure of Sweden's food self-sufficiency since Sweden is heavily involved in trade.

The self-sufficiency ratio (SSR) can be defined as:

SSR = (production) / (production + imports - exports)

The equation expresses food production as a ratio of available supply, which gives a more practical understanding of a country's food supply. If the SSR for a product is equal to 1, that means the country is self-sufficient at 100% for a product. There are some limitations of using SSR to assess food preparedness, such as a country produces one food commodity in abundance while needing to rely on imports for other food commodities, according to Clapp (2017). Another issue is that it does not consider what is consumed within the country, which can be explained by the fact that some commodities are either used as food or feed. The Swedish agriculture department also agrees on SSR's limitations to describe self-sufficiency, as today's food production relies heavily on imports on farm inputs: feed, fertilizers, pesticides, machines and its associated spare parts. The situation is complex due to today's global market, making the SSR insufficient to describe a country's food security (Swedish Board of Agriculture, 2024). In other words, while the SSR gives some insights into a country's food security under current production practices, it does not capture dependencies on farm inputs which may become unavailable when a crisis happens.

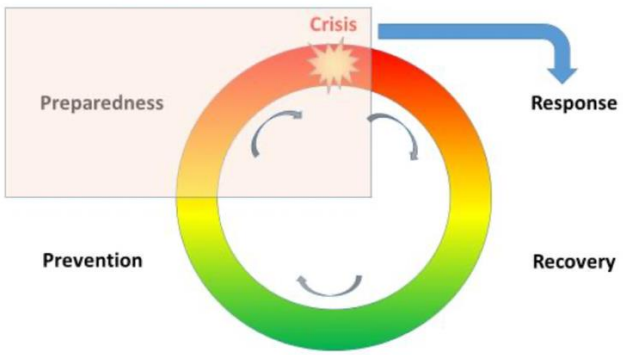
Still, the SSR gives a clear insight of the available supply for certain food product in numbers, but it is important to keep in mind that it is not perfect. Clapp (2017) also mentions that the variable is used in previous studies to analyze key staple crops as an approximation of food self-sufficiency — which aligns directly with the aim of this study.

2.2. Self-sufficency and its link to policies

Policies play a central role in shaping agricultural production (Lencucha et al., 2020). Due to the world's changing security situation, preparedness and such policies have become more relevant and more vital for the supply of food. But other

vulnerabilities and dependencies also highlight the importance of food security. Covid-19 is one such event. Even though Covid-19 did not result in a food crisis, it became an insight of the importance of preparedness (see e.g. European Commission, 2021/689). And with the increased risk of extreme weather events due to climate changes and to not forget the likeliness if a similar event as Covid-19 should occur again, contingency plans for ensuring food supply becomes more necessary. The European Union (EU) are working towards this, by highlighting the vulnerabilities and dependencies and implementing different initiatives to improve the preparedness to ensure food supply and security in times of a crisis (European Commission, 2021/689). The EU's contingency plan is inspired by the disaster cycle as shown in Figure 1 below. The disaster cycle is used in crisis management and includes four phases. The first phase is prevention: meaning new measures are undertaken to prevent or minimize the effects of future disasters. The second phase is preparedness: response plans are constructed. The third and fourth phase occur when a crisis has happened. Response included immediate actions to limit the hazards created by the disaster and recovery reflect the effort to return to pre-disaster levels of functioning (Klein et al., 2023). The contingency plan focuses on preparedness, the highlighted part in Figure 1, which identifies vulnerabilities and potential impacts to respond in a planned manner in case of a crisis (European Commission, 2021/689).

Figure 1. Scope of the contingency plan for ensuring food supply and food security in times of crises (European Commission, 2021/689)



2.3. Sweden’s self-sufficiency and the National Food Strategy

Today, Sweden’s self-sufficiency ratio of food is at about 50% (LRF, 2025). The number has historically been significantly higher. During the later 20th century Sweden had a completely different approach on food security than today’s. The contingency plan regarding food security consisted of three sectors: a high self-sufficiency ratio of staple food, a restructuring plan for the domestic agriculture ready to be activated in case of a crisis and warehousing of imported input goods. Agricultural policy was used as an instrument to ensure a high self-sufficiency ratio via efforts to increase agriculture's efficiency and by limiting the imports of food with tariffs to stimulate domestic production. The former contingency plan could almost be compared to a planned economic tool able to replace the import market (SLU 2018). It is important to have in mind that the cold war was a turbulent time and required action, but parallels could be drawn to today’s changed security situation which also requires action.

The first version of the National Food Strategy was launched in 2017, with the vision of a Swedish food value chain that in 2030 is globally competitive, innovative and attractive to operate in (Ministry of Enterprise and Innovation 2017). The main intended goal was to increase total food production while still achieving relevant national environmental goals, to create growth and employment contributing to a national sustainable development. The size of the increase should be equivalent to the consumer’s demand in both conventional and organic farming. An increasing food production could contribute to an increased self-sufficient ratio. Another intended goal was to decrease the vulnerability of the food value chain. Three strategic areas are:

- Terms and conditions
- Consumer and market
- Knowledge and innovation

All with specific objectives set to achieve the strategy (Government Offices of Sweden 2017). The second version was launched March 2025, National Food

Strategy 2.0, and is meant to set various measurable objectives to reach the first version's intended objective which was to increase domestic food production. In addition, it will focus on three main areas:

- Increased robustness in the food-chain
- Promotion of exports
- Swedish quality and gastronomy

Where the Swedish government will also try to have a more active role than before to implement the strategy (Ministry of Rural Affairs and Infrastructure 2025). However, the second version of the strategy has received some criticism. According to the World Wide Fund for Nature (WWF) the strategy does not show a way of sustainable food systems, instead it focuses primarily on increasing competitiveness, profitability and exports. Sustainability objectives were included in the first food strategy but are now abandoned (WWF 2025).

To summarize, the main goal of the first National Food Strategy is to increase overall food production, which likely results in increased self-sufficiency, while the second version focuses more on how to implement that goal. The thesis' aim is to evaluate the policy's impact after its implementation and because the second version was launched in 2025, the focus will be on the first version.

2.4. Norway's policies and strategies

The study will implement a difference-in-differences (DiD) model. When performing such a model, it is important to include a control group – a group with similarities to the treatment group but is not affected by the treatment (Polsky et al. 2014). Norway will be used in the study as a control group, due to the country's similarities to Swedish agriculture. Norway has not implemented any similar national food strategy aimed at increasing self-sufficiency like Sweden's during the considered timeframe in this thesis. Norway's self-sufficiency of food in 2023 was at 47% (NIBIO 2025). When investigating Norwegian food policies, there are of course existing prevalent food self-sufficiency-policies, but not to the same extent

as the Swedish or within the study's timeframe. In 2024 Norway's Ministry of Agriculture and Food proposed "*Strategy for increasing self-sufficiency in agricultural products and plan for escalating income opportunities in agriculture"*, a strategy like Sweden's with the overall goal to increase domestic food production and is a part of the Norwegian government's 2030 plan (Ministry of Agriculture and Food 2024). However, the strategy is outside my thesis' timeframe as I only consider the up to 2023 in my analysis. Table 1 provides an overview of other food policies in Norway since 2018 with their main policy aims:

Table 1. Overview of Norwegian food policies

Year	Policy	Policy aims	Reference
2018	*Nasjonal strategi for økologisk jordbruk (2018-2030) [National Strategy for Organic Farming (2018-2030)]*	Stimulate organic food production to cover the domestic demand of organic food	Ministry of Agriculture and Food (2018)
2021	*Matnasjonen Norge [The Food Nation Norway]*	Increase sustainable high-quality food production. Focus is not on domestic food production	Ministry of Agriculture and Food, Ministry of Trade, Industry and Fisheries and Ministry of Health and Care Services (2021)
2022	*Norway's strategy for promoting food security in development policy*	Global food support in developing countries to increase food security, based on UN's SDG	Norwegian ministry of foreign affairs (2022)
2024	*Strategi for auka sjølforsyning av jordbruksvaror og plan for opptrappning av innteksmoglegheitene i jordbruket [Strategy for increasing self-sufficiency in agricultural products and plan for escalating income opportunities in agriculture]*	Increase domestic food production while considering sustainability goals	Ministry of Agriculture and Food (2024)

Overall, Norway's food policies focus on targeted strategies and global food support. Policies that include self-sufficiency are outside of the study's timeframe and therefore, Norway is a valid control group for the thesis' research.

Note that, in the next section (Data and Methods), the SSR-values in Table 3 are way higher for the different food categories than Sweden's 50% and Norway's 47% as claimed in this section. Included in this number are also products that are not, or a to a limited extend, produced in Sweden (e.g. melons). The selected food commodities in this study were selected based on each country's most produced food products. This drives up the SSR-values making them differencing from the country's real SSR-value, which is important to keep in mind when evaluating the results.

3. Data and Method

3.1. Rationale and Data

This study focuses on data from Sweden and Norway from the period 2010 to 2023, collected annually from FAOstat. FAOstat is the Food and Agriculture Organization's (FAO) statistical database, containing food and agriculture data from all over the world. The period 2010-2023 was chosen because the first version of the National Food Strategy was implemented in 2017 and we are interested in evaluating the period before and after the implementation. The latest data available were from 2023 and to have about the same years before and after 2017, 2010 was chosen as the start of the dataset. The SSR will be calculated separately for each of the selected staple food commodities. Data on production, imports and exports are necessary for each commodity and were collected from FAOstat (2025) to be collected. Production is considered domestic production quantity in tons; import is considered import quantity in tons and export is considered export quantity in tons.

Fourteen food commodities were selected. These fourteen food commodities were selected as they were among the top 20 food commodities produced in both Sweden and Norway in 2023 (FAOstat, 2025). They also reflect the most consumed food commodities, either as food or as feed. Table 2 provides an overview of the production and selected food commodities. The selected fourteen food commodities include animal-based products (meat of pig, meat of chicken, meat of cattle, raw milk of cattle, hen eggs), fruits and vegetables (apples, carrots and turnips, potatoes, cabbages, cucumbers and gherkins) and arable crops (wheat, barley, oats, rye).

Table 2. Descriptive statistics of the top 20 commodities for Sweden and Norway in 2023 (FAOstat 2025)

Country	Year	Food commodity	Production weight (t)	Country	Year	Food commodity	Production weight (t)
Sweden	2023	Raw milk of cattle	2,818,530	Norway	2023	Raw milk of cattle	1,426,772
Sweden	2023	Wheat	2,768,200	Norway	2023	Barley	405,000
Sweden	2023	Sugar beet	1,743,600	Norway	2023	Potatoes	313,500
Sweden	2023	Barley	855,500	Norway	2023	Oats	179,000
Sweden	2023	Potatoes	810,000	Norway	2023	Wheat	172,000
Sweden	2023	Oats	411,500	Norway	2023	Meat of pig	131,163
Sweden	2023	Rape or colza seeds	304,900	Norway	2023	Meat of chickens	107,624
Sweden	2023	Meat of pig	244,660	Norway	2023	Meat of cattle	90,339
Sweden	2023	Meat of chickens	166,880	Norway	2023	Hen eggs	73,303
Sweden	2023	Meat of cattle	139,640	Norway	2023	Carrots and turnips	45,284
Sweden	2023	Rye	139,400	Norway	2023	Cabbages	31,045
Sweden	2023	Triticale	120,200	Norway	2023	Rye	29,000
Sweden	2023	Hen eggs	114,670	Norway	2023	Onions and shallots, green	25,304
Sweden	2023	Carrots and turnips	108,240	Norway	2023	Meat of sheep	22,370
Sweden	2023	Onions and shallots, dry	71,510	Norway	2023	Apples	20,104
Sweden	2023	Peas, dry	54,260	Norway	2023	Cucumbers and gherkins	19,803
Sweden	2023	Broad and horse beans	47,740	Norway	2023	Raw milk of goats	19,000
Sweden	2023	Cucumbers and gherkins	39,930	Norway	2023	Lettuce and chicory	16,630
Sweden	2023	Apples	32,170	Norway	2023	Tomatoes	15,088
Sweden	2023	Cabbages	26,510	Norway	2023	Cauliflower and broccoli	10,620

Table 3 below provides summary statistics for the main variables of interest, including a definition of these variables. The table also includes the mean (Mean), standard deviation (Sd), and number of observations (N) on the imports, exports, production including the total and separate SSR for all commodities for both countries. After selecting data and period, all data were collected in Excel and then used to calculate the SSR-values. The SSR-values were then composed in a separate Excel-file which was then analyzed in Stata to conduct the regression analysis and to visualize trends.

Table 3. Summary statistics

Variable	Definition	Sweden			Norway		
		Mean	*Sd*	*N*	*Mean*	*Sd*	*N*
Import	Imported quantity in tons	44,718.25	57,958.01	196	40,593	96,527	196
Export	Exported quantity in tons	93,404.38	198,685.61	196	396,605	836,765	196
Production	Domestic production in tons	679,578.8	964,126.85	196	252,055.2	392089.9	196
Self-sufficiency ratio (SSR), All products	Production / (production + import – exports)	0.935	0.384	196	0.820	0.234	196
SSR of animal-based products	Chicken-, cattle- and pigmeat, milk, eggs	0.947	0.072	70	0.977	0.046	70
SSR of fruits and vegetables	Apples, cucumbers, potatoes, cabbages, carrots	0.607	0.292	70	0.715	0.262	70
SSR of crops	Wheat, barley, rye, oats	1.329	0.338	56	0.753	0.236	56

3.2. Method

To evaluate the impact of Sweden's National Food Strategy (1) on Sweden's self-sufficiency ratio (SSR) of food, a difference-in-differences (DiD) regression is implemented. A DiD-model is commonly used in similar policy evaluations, such as Curtiss et al. (2017). It is a suitable method when certain groups are exposed to a policy (referred to as a treatment) and others are not. The aim of the National Food Strategy is to increase the total domestic production of food and thereby the domestic SSR by comparing Swedish to Norwegian food commodities. Norway is then used as a control group as it has comparable agricultural conditions and trade relations as Sweden but has not implemented specific policies aimed at increasing SSR. The basics of a DiD-approach compare two groups (i.e. Sweden and Norway) over two considered time periods (2010-2023). In the first period, no groups are exposed to treatment. But in the second period one of the groups gets exposed (treatment) while the control group is not. The introduction of the Swedish Food Strategy in 2017 is used as a treatment. Such a policy is not introduced in Norway, making it a suitable control group.

DiD computes two differences between group means. First, it measures the change in the outcome variable (i.e. SSR) between the two time periods for each group separately. After that, it takes the difference between these two group-specific changes. This final difference captures how the change in outcome differs between the treatment and control groups and is interpreted as the causal effect of the treatment. For the DiD-model to be valid, two assumptions for the research must be fulfilled. First, the parallel trends assumption should hold, meaning that the treated and control group follows each other parallelly. Second, the stable unit treatment value assumption (SUTVA), meaning that the control group is not affected by the treatment group (Polsky et al., 2014).

The equation below shows the DiD-model, which estimates how the SSR is affected by the National Food Strategy (1) by comparing trends between Sweden and Norway, before and after 2017:

$$SSR_{it} = \beta_0 + \beta_1 \cdot Sweden + \beta_3 \cdot (Sweden \times After2017) + \varepsilon_{it}$$

where SSR_{it} is the dependent variable, the SSR for food commodity i at time (year) t, $Sweden_t$ is a dummy variable that turns 1 if the observation is Sweden, otherwise 0 (if Norway), $After2017_t$ is a dummy variable that turns 1 if the observation is after 2017, otherwise 0 (if before 2017), and $Sweden_t \; x \; After2017_t$ is the interaction variable that turns 1 if Sweden and t ≥ 2017, otherwise 0, and ε_{it} is the error term, which is assumed to be normally distributed with mean zero.

As the SSR of food commodities can develop in different ways for different food commodities, I will estimate several model specifications. The main model specification will consider all fourteen food commodities. Such a model specification hides heterogeneity across commodities. As part of a heterogeneity analysis, I will split my dataset into different commodity categories (animal-based products, fruits and vegetables, arable crops) and estimate a DiD for each of these food commodities separately.

4. Results

4.1. Descriptive results

To get an overview of the countries' SSR, I visualized developments in the SSR for different categories over time. By doing this, it will be easier to get an overview of the results and to see if there are any parallel trends, while also making it easier to interpret the regression models later. A total of four Figures are presented (Figures 2-5): one for the total SSR (Figure 2), one for the SSR of animal products (Figure 3), one for the SSR of fruits and vegetables (Figure 4), and one for the SSR of crops (Figure 5). The vertical dotted line represents the year 2017, in which the National Food Strategy was implemented to distinguish between the pre- and post-treatment period.

Figure 2. Development of the (total) SSR

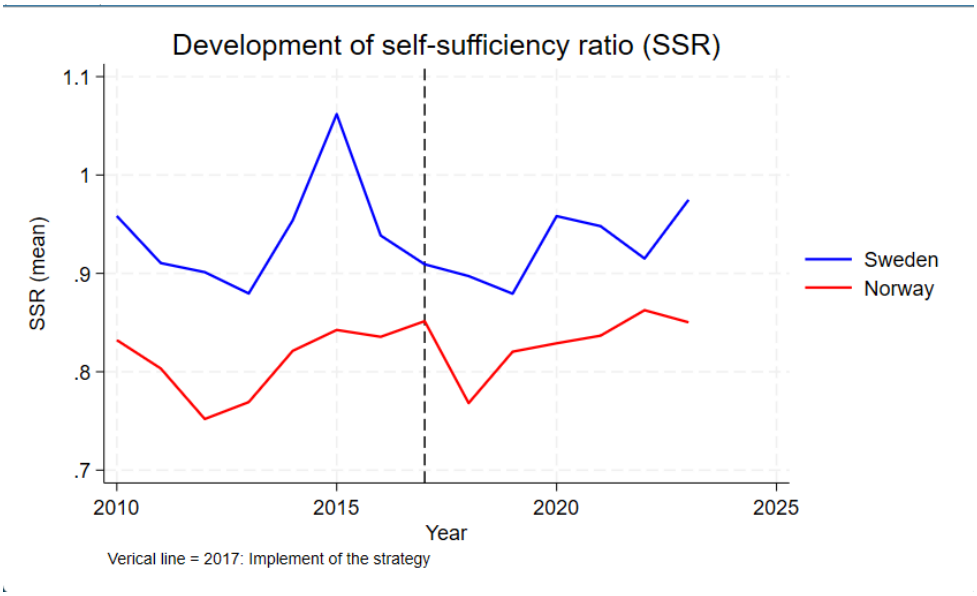


Figure 2 describes that the SSR's trends in the graph above are relatively parallel before 2017. Sweden's SSR had though a big spike in 2015, due to an almost tripled SSR value of rye in 2015. Looking deeper into it, Sweden more than doubled their export of rye in 2015 compared to 2014, causing the increased SSR.

Figure 3. Development of the SSR for animal products

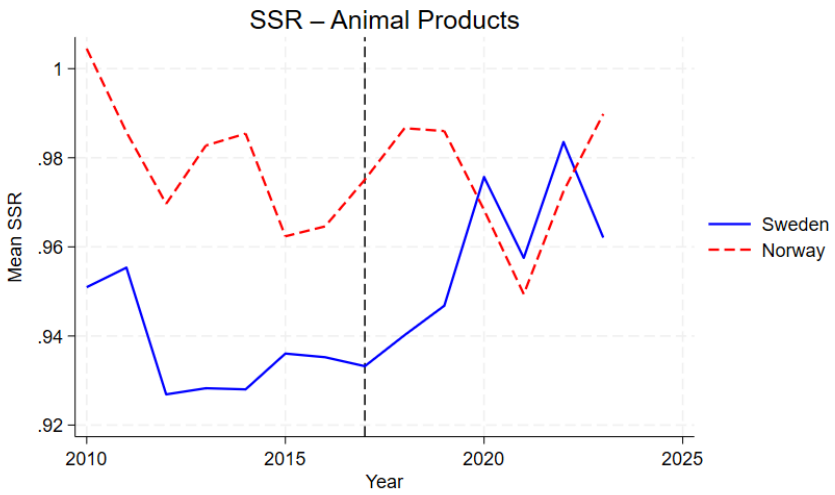


Figure 3 shows how the SSR for animal products has developed. The trends in Figure 3 are relatively parallel before 2017, but Sweden's SSR has a quite steep increase afterwards, with some ups-and downs 2020-2023. Norway on the other hand has a quite steep drop after 2017 with a turnaround in 2021. Both countries' SSR for animal products are almost the same after 2020 and their self-sufficiency has commuted between 0.92-1.10 during the period, meaning that they both are around 100% self-sufficient in animal products.

Figure 4. Development of the SSR for fruits and vegetables

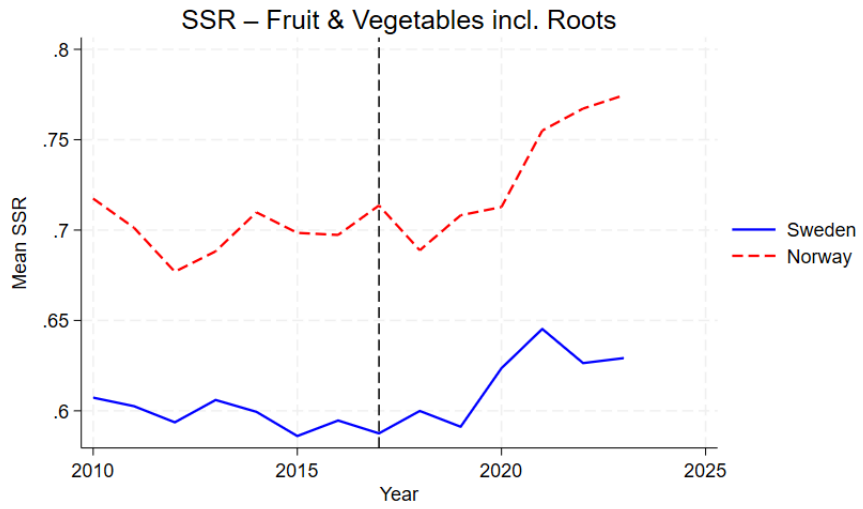


Figure 4 shows the SSR for fruits and vegetables, including root vegetables. Sweden's SSR for fruits and vegetables is lower than Norway's. For fruits and vegetables, the trends are parallel during almost the whole period until 2021, where Sweden's drops to later have a slight increase, while Norway's continues to increase. Both countries' SSR increased after 2017, and Sweden's are commuting between 0.57 to 0.64 and Norway's between 0.67 and 0.77.

Figure 5. Development of the SSR for crops

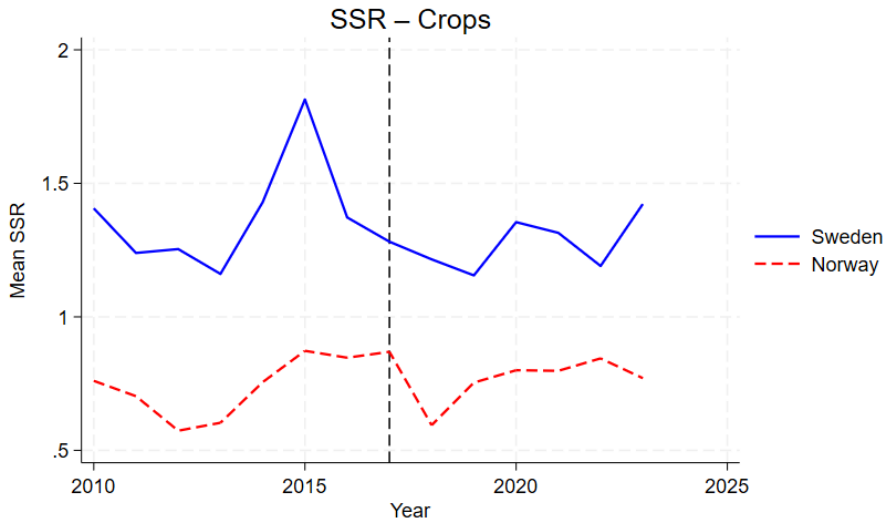


Figure 5 depicts the SSR for crops. The trends are relatively parallel for the SSR of crops too, but Sweden's SSR are constantly higher. Sweden's spike in 2015 is explained in graph 1, due to the sudden increase of the exports of rye. Sweden's SSR are commuting between 1.2 and 1.8 while Norway's commuting between 0.6 and 1.9.

4.2. Econometric results

Table 4 presents the results. A total of four different models were estimated: *Total (1), Fruits and vegetables (2), Animal (3)* and *Crops category (4*). When interpreting the results, the variable *Sweden* showed that Sweden had a statistically significant higher SSR in the *Total* category and for the *Crops* category. Norway had a higher SSR in *Fruits and vegetables* category and for the *Animal* category although only the latter are statistically significant.

For *After2017* the SSR for the countries increased marginally for each country except for the *Animal* category, although neither result is here statistically significant.

Table 4. Regression results

	Total (1)	Fruits and vegetables (2)	Animal (3)	Crops (4)
Sweden	0.126***	-0.103	-0.042***	0.622***
	(0.0453)	(0.064)	(0.014)	(0.080)
After 2017	0.014	0.034	-0.003	0.012
	(0.033)	(0.062)	(0.011)	(0.063)
SwedenAfter2017	-0.024	-0.012	0.028	-0.106
	(0.064)	(0.094)	(0.020)	(0.108)
Constant	0.813***	0.700***	0.979***	0.748***
	(0.023)	(0.044)	(0.008)	(0.044)
Observations	392	140	140	112

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01.

SwedenAfter2017, the interaction variable, shows us the DiD-effect. The DiD-effect describes Sweden's SSR development compared to Norway's after the policy's implementation in 2017. Three of four of the coefficients are negative, meaning that the development of Sweden's SSR decreased compared to Norway's after 2017 but shows no statistical significance. Lastly, the variable *Constant* shows us Norway's SSR for each category, commuting between 0,700 and 0,979 meaning that the Norway's self-sufficiency ratio is commuting between 70 to 97,9% in the different categories. All coefficients are also statistically significant. There is no clear evidence that a policy change or other event in 2017 had a distinct impact on

Sweden relative to other countries in these categories due to the lack of statistical significance. Further interpretation of the results will be discussed in the next section.

5. Discussion

5.1. Comparison with previous research

Interpreting the result from the regressions shows that Sweden's National Food Strategy did not have any effect on Sweden's SSR of food when comparing to Norway's total SSR, who did not implement any similar strategy during the timeframe. Which also applied for the separate regressions for the different food categories, where no effect was neither recorded since no DiD-effect in the regressions showed any statistical significance. There could be several reasons why Sweden's SSR was not affected by the National Food Strategy, these possible reasons will be discussed below. Norway maintains high levels of agricultural support, with about 59% of farmers' revenues coming from government subsidies which strengthens domestic production (OECD, 2021). In contrast, Sweden is a member of the European Union, and its internal market makes the agricultural sector more exposed to trade dynamics, which could possibly reduce the strategy's impact on SSR.

It is also important to mention that the first version of the strategy also focuses on broader goals as sustainability and competitiveness beyond increasing food self-sufficiency (Ministry of Enterprise and Innovation, 2017). The possible lack of a more straightforward focus on self-sufficiency could be an explanation of the results. Also, the lack of a concrete action plan and the policy more being viewed as an admonition, agrees with Svensson's (2022) conclusion regarding Swedish region's shattered attitude toward food preparedness and its importance.

External factors may also have affected the results and the countries' food self-sufficiency. In 2018, Northern and Eastern Europe experienced above normal yield losses due to the year's extreme heat waves according to Beillouin et al. (2020). This can be seen at graph 4 regarding crops' SSR which experiences a drop for both Sweden and Norway during the period. Also, Covid-19 should be taken into consideration when evaluating the results. Even if the pandemic did not affect the trade balance significantly in the EU, the reduction of imports threatened the

physical food access for a greater part of Europe. Food net-importing countries, which Sweden and Norway could be considered as, were the most sensitive to the COVID-induced import declines (Pawlak et al., 2024). These claims are also highlighted in the Swedish Board of Agriculture's 2025 trend analysis report of the National Food Strategy, which also mentions the impact of further external factors like the Russia-Ukraine conflict and the inflation increases in recent years. The report also claims that due to the changed conditions for food producers requires an overlook of the policy – resulting in The National Food Strategy 2.0 – is a necessary step for Sweden's whole food chain (Swedish Board of Agriculture, 2025). Given that this thesis found no statistically significant effects from the first version of the strategy, the development of a second version may be a necessary and justified step forward.

5.2. Limitations and future research

This study is not without limitations. Two limitations of this thesis relate to empirical estimations and the usage of SSR as an indicator for food preparedness. First, a DiD-model has two assumptions that must be fulfilled: stable unit treatment value assumption (SUTVA) and parallel trends. SUTVA means that the control group is not affected by the treatment group. It is a bit difficult to determine whether the assumption is valid or not for this study, since Norway and Sweden are neighboring countries with several similarities, to not mention in agriculture. Although, since Norway is not a member of the European Union and since they did not implement any similar strategy to the National Food Strategy until 2023, the assumption that the control group is not affected by the treatment can be considered valid. The assumption for parallel trends is mostly based on the graphs in the section for the results. Looking back, every graph except for animal products shows clear parallel trends before 2017 when the policy was implemented. Even though the size of the increases and decreases were different in some of the graphs' sections when comparing, the trends were overall equivalent.

Second, using SSR as a measurement tool has been a convenient method to estimate which level each country's food self-sufficiency is at due to data availability. However, as pointed out by Clapp (2017) and Swedish Board of Agriculture (2024), the results can be misleading since it does not consider farm inputs required to produce food. Both Sweden and Norway are heavily reliant on imported farm inputs, a dependency not captured in the SSR. In case of a crisis, these inputs may become less available or more expensive which could in turn affect their self-sufficiency levels. Future research could use farmers' reliance on imported farm inputs as a measurement tool for preparedness with respect to food and compare the national-level preparedness based on SSR to farm-level preparedness based on input dependencies. Another suggestion for future research would be to include more countries, which would give more observations and, in that way, probably more robust estimations.

6. Conclusion

This thesis explored the impact of the first version of Sweden's National Food Strategy on the country's self-sufficiency ratio (SSR) of food, by implementing a difference-in-differences (DiD)-approach on a panel data model. Using data on SSR, I compared developments in Swedish SSR to the Norwegian SSR. Norway was chosen as the study's control group because of its comparable agricultural system while not having implemented a policy targeting SSR. The key results from the regressions show no statistical significance that the strategy has had any effect on Sweden's SSR.

Although the results show that the first strategy has not yet achieved its main goal—to make Sweden more food self-sufficient—they still help us understand where the strategy may have fallen short. The lack of clear impact suggests that stronger and more focused efforts are needed. This is especially important today, when food self-sufficiency has become a more urgent issue because of global challenges and unstable supply chains. In this situation, the new and updated National Food Strategy 2.0 is a step in the right direction. It includes more concrete actions and clearer goals, which may help Sweden improve its ability to produce food and handle future crises.

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