Policy Factors in the Decline of U.S. Agricultural Imports in the MENA Region 2024

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Abstract

The Middle East and North Africa (MENA) region stands on a global pivot point, impacting the world through its diverse political and economic dynamics. While often recognized for its complex challenges, the region's food security remains surprisingly under-considered, even though it carries significant global repercussions. This research focuses on a concerning trend: the decline of U.S. agricultural exports to MENA, potentially jeopardizing regional stability and impacting global food systems. While EU competitiveness is acknowledged, this research delves deeper than mere identification of competitors such as the EU, dissecting the interplay of their advantages – superior pricing and yields – against the U.S. approach from a policy-perspective. Import value data was sourced from the World Bank database, consisting of official annual trade statistics. The paper's ultimate goal is to highlight how the US has suffered from out-competition from the EU, leading to the latter's collapse as a source of staple crop imports, in order to prevent such drastic changes in the future as the same trend in other industries could provide much more devastating for the US. Repeated policy mistakes have contributed to the decline of the US in the agricultural market. Through policy realignment towards the EU approach, the US can better support its agriculture sector particularly in regards to its appeal as a source of imports. This analysis can impact US policy and inspire a shift towards more sensible and outcome-oriented spending policies.

Review of Literature

Introduction

The Middle East is a crucial region on the world stage. From conflict to crude oil, different factors impacting the Middle East, or the broader Middle East and North Africa (MENA) region, can rapidly evolve to affect the world, especially in a detrimental manner. However, the agriculture sector and food supply of the MENA region are under-considered aspects of the region that can impact the population and furthermore have global repercussions. In the Middle Eastern agriculture sector, there has been an observable trend in that the U.S. share of agricultural imports has critically declined. Many factors may have contributed to this trend, yet certain processes have most critically influenced the decline of the U.S. share. The agricultural policies of the EU in comparison to those of the U.S. have empowered the EU over the US in the MENA agricultural market as a result of natural economic factors rather than deliberate MENA bias or policy. By examining the decline of US yields, rise of the EU agricultural sector, and out-competition of the US because of economic concepts, this paper seeks to analyze the economic and policy factors behind the drastic decline of US import share, information which can advise policymakers in preventing such trends in other markets and industries.

Background

The Middle East and North Africa, or "MENA," is a region that faces several pressing crises, among them militancy, sectarian conflict, terrorism, poverty, and climate change. Within this arid and wartorn environment, the region faces food shortage issues, creating an import dependent-population amidst growth. MENA food supply also has the potential to create global repercussions because of MENA's significance to the global energy sector and many other industries. Through the later twentieth century and thereafter, the U.S.'s growth as an agricultural producer cemented its place as a top exporter of grains to MENA. Yet, in the last three decades, the U.S. has faced fierce competition from E.U. member states and other countries as a result of interlinking factors: economic principles and policy.

The stagnation of US crop yields refers to the observed limited or negligible increase in the productivity of major crops, including corn, wheat, and soybeans, over a certain period. Despite historical trends of continuous improvements driven by technological advancements and enhanced farming practices, several factors contribute to this plateau. Inherent biological limits such as environmental challenges linked to climate change, and constraints on land and resources all play a role. Additionally, the emergence of new pests and diseases, economic considerations, and the potential technological plateau contribute to the complexity of addressing this issue. While not uniform across all crops or regions, the stagnation in crop yields highlights the need for sustainable and resilient agricultural strategies to navigate evolving conditions and ensure food security. This trend marks a departure from historical patterns of continuous improvement driven by technological advancements and enhanced farming practices. The stagnation in TFP growth implies that the overall efficiency and productivity of agricultural inputs, encompassing labor, capital, and technology, have not been increasing at the anticipated rate. Factors such as diminishing returns on technological investments, environmental challenges linked to climate change, and constraints on land and resources have likely played a role in this slowdown.

The repercussions of declining agricultural outputs are far-reaching, emphasizing the urgency of addressing the complex interplay of factors that contribute to this trend for the sake of sustaining food production in the United States. In more recent years, total factor productivity (TFP) growth has been stagnant resulting in a slowdown in the average annual growth rate of farm output (Wang et al., 2022). With growing world populations, the United States agricultural sector will be unable to continue exporting at the same rate. Therefore, international markets will have to turn to other exporters to fulfill their demands for food, especially bare necessities such as staple crops. In and of itself, the US would fail to keep up with its prior market share as a result of diminished production.

US vs EU Crop Yields

In comparison to the decline of US yields and imports, the EU has grown its agricultural sector. Through a series of coordinated policies, encompassed in the Common Agricultural Policy (CAP), EU states have utilized government subsidies for rural farms--historically affected by conflict and communism, import regulation, and price control among other methods (Scown, 2020). Although government intervention has been criticized for being out of touch with business owners and consumers, in this instance, benefits are visible and persistent. For example, EU cereal and oilseed production could increase in 2023/24, by 5% and 8% respectively (Directorate-General for Agriculture and Rural Development, 2023). Crop production/output itself is necessary for businesses and products to function in any economic capacity, including exporting, importing, and simply meeting consumers' demands as according to needs. Given staple crops' status as an especially necessary good, policies that sustain production guarantee the self-sufficiency of the population, as well as the populations of importers from the said market, in this case the MENA region importing from Europe.

An additional impact of production manifests in decreased dependence on imports. For instance, EU exports of cereals could continue to grow by about 6% while EU imports of cereals, particularly from Ukraine, are expected to decline by 35% from a historically high level observed in 2022/23 as a result of heightened production (Directorate-General for Agriculture and Rural Development, 2023). This increased autonomy contrasts the foreseen decline of American agriculture and dependence on imports to support the burgeoning American population. In contrast, EU policies encouraging production has increased EU states' self-sufficiency. Declining necessity for imports opens the doorway for exports, which in this situation seems to have occurred. With the EU's growing self-reliance, it has afforded to expand exportation to the MENA region, fulfilling the latter's food needs and growing the former's share in MENA imports. Thus, the advancement of production demonstrates international effects that must be factored into the import share trends in the MENA region.

Further statistics exemplify the rising competency of the EU agriculture sector. 25% less labor was needed in 2009 to produce the same overall quantity of farm output as in 2000 (Zahrnt, 2011). Thus, the CAP has not only expanded the overall volume of produce but also expanded efficiency via output per worker. If the EU requires less workers to produce the same or even a higher output than the US, the latter will find it difficult to compete with the EU in foreign markets. The fact that as the EU population increased by 20% since 1961, food production per person grew massively from 1.6 tons in 1961 to over 2 tons in 2005 (25% increase) shows that the EU agriculture has not only kept up with the growing population but the

EU will export the extra production, as has been observed, to foreign markets (Zahrnt, 2011). Therefore, not only in raw production, but also in the relative metrics of output per worker and per person, the EU has reinforced its competitiveness through coordinated policy, addressing pertinent issues in a manner that the US lacks.

The Economics

To understand why US or EU policy impacts who MENA imports from, one must examine economic theory and the alternative to a deliberate diversification strategy on MENA's part. Beginning with demand and supply, growing MENA food demand creates a compounded effect of declining market share from both the US production decrease and also increase in demand, trends poised to only increase (Wang et al., 2022). When agricultural output fails to keep up with domestic demand, profound implications for global food security and economic stability will develop. Naturally, the MENA region lacks the ability to produce a supply to match its demand as a result of climate and other natural factors, leading to dependence on imports. If US agricultural supply cannot match the growing demand for food in the MENA region, the latter turns to other prominent exporters, such as the EU and Russia, to fulfill the demand, creating a shift in the market share away from the United States (Teng et al., 2015). If agricultural productivity growth falters, then increased demand for farm products will outpace output growth.

Additionally, when demand exceeds supply, prices tend to rise (Wang et al., 2022). This inflationary effect leads to several consequences. Firstly, consumers may experience a decrease in purchasing power, as the increased prices make goods and services more expensive. Thus consumption patterns change, with individuals and households potentially cutting back on non-essential expenditures. However, in the case of staple foods, families cannot afford to cut back on expenditures under the threat of adverse health effects such as starvation. Furthermore, inflationary pressures can have broader macroeconomic implications, influencing monetary policy decisions as central banks may respond by adjusting interest rates to manage inflation. Furthermore, as prices rise not only locally but also globally, the US further loses comparative advantage for these products, resulting in the automatic preference of competitors; in other words, MENA countries will naturally purchase more of the cheaper goods, which have become non-US goods.

With the collision of the above factors in the MENA market, EU crops have outcompeted US crops because of economic principles such as supply, demand, and comparative costs. In 2020, UAE's food import bill hovered around $14 billion, an increase from nearly $10 billion a decade ago (Bartz, 2022). While the US's share has been consistent, averaging 8 percent, it has lagged behind its competitors EU (17 percent) and India (14 percent). From these statistics, one can understand that the UAE has relatively preferred the US's competitors to itself because of, for example, the EU's superior yields and efficiency, which provide lowered unit prices. Apart from import diversification, the UAE does not have a reason to favor US products, which have naturally declined in popularity.

US vs EU Policy

The EU's development in the agriculture sector at the expense of the US has had wider effects. China, Switzerland and the Middle East and North Africa region were the major growth destinations for EU agri-food exports in 2020 (European Commission, 2021). With the Middle

East listed as an important target for EU expansion, the EU has not only made a concerted effort to increase its yields at home but also export them abroad using its growth, which the US has been unable to do. On the topic of expanding exports, in 2022, EU agri-food exports reached €229.8 billion, a 31% increase compared with 2021 (Directorate-General for Agriculture and Rural Development, 2023). Therefore, the EU's policies have had a demonstrated effect in foreign markets. With more EU exports, customer states have a larger supply to purchase, giving the EU a clear advantage in these markets. Yet specifically pertaining to staple crops, cereals and milling products have been increasing the most in EU total exports, representing 7% and 10% of EU exports, respectively. In line with this growth, the EU has increased exports to import-dependent developing countries, such as Algeria (4.9 million tonnes), Morocco (4.1 million tonnes), and Egypt (2.9 million tonnes), all three of which are in the MENA region.

Thus, beyond price adjustments and increasing production, the EU's Central Agricultural Policy (CAP) has targeted specific nuances of trade. For example, the EU has encouraged the usage of traditional agricultural production methods in countries such as Italy and France. Furthermore, the EU has formed various agreements, such as the European Neighborhood Policy (ENP), Action Plans, and Associated Agreements, to open access to MENA markets. Dropping tariffs and coordinating to meet common goals, EU and MENA countries have created an accountable relationship that helps make EU goods more accessible to purchase and at lower prices -- tariffs taken into account. While the biannually-revised US Agriculture Bill does support yields and attempts to take the market into account, it ultimately fails to achieve the CAP and general EU policy's nuance; for example, US agricultural policy neglects quality and the aspect of actually selling produced goods. With very few free trade agreements with MENA states (Jordan, Morocco, and Bahrain), the US has limited its appeal to MENA buyers.

Conclusion

The economic phenomena observed in the MENA staple crop market can be applied to other regional markets in which one country previously held sway but later faced strong competition from other states. Furthermore, studying this scenario can aid the US in preventing similar phenomena in more crucial industries. US industries must make sure to keep up production and lower costs relative to strengthening competitors to maintain influence in foreign markets. In recent times, Europe, India, and China among others have emerged as powerful economic rivals as they recover from war and colonialism and engage in dynamic policies. The US must become more aware of these challenges going forwards in comparison to previous decades and also create more impactful and engaging domestic economic policies.

The inefficacy of US agricultural policy and spending habits in general US policy must also be recognized and reformed. In the current US agricultural policy, since the 1996 reforms, tailored changes to boost various aspects of the agricultural sector and utilize the US's specific geographic advantages as well as diversity in products have not materialized, with instead a shift of discussion towards mitigating the impacts of climate change, which have proved non-beneficial to the agricultural sector. More in the vein of the CAP, US policy must orient itself towards not only providing crop insurance and subsidies but also opening up new markets, providing farmers with new ways to procure income and develop their field. Encouraging the mitigation of food waste, which could instead be sold to foreign buyers, and forming trade deals

with potential market countries, such as MENA, would rebuild the US's advantage in a more competitive international market.

METHODS

The research question consists of, "What factors have contributed to the U.S. decline in staple crop imports to the MENA region?" In response to this question, the hypothesis is, "A combination of economic principles and comparatively-advantaged E.U. agricultural policy has resulted in the out-competition of U.S. products." The methodology of the data collection to aid in addressing the hypothesis involved the meta analysis of export/import value data from the World Bank. More specifically, annual trade data starting from the year of 2017 regarding the value of exports/imports of various agricultural products, including "cereals" and "oil seeds," was extracted and compiled from the World Bank's World Integrated Trade Solution (WITS) database. This data was extracted in two sets--U.S. and E.U. origin products-- for each category of good. Furthermore, U.S.-origin fruit nuts were included as a fifth set to depict overall U.S. trends outside of traditional staple products. Therefore this fifth set acts as a control in the study to take into account general non-situation specific variables; disturbances in the set that are echoed by the other U.S. sets could be attributed to overall upwards or downwards trends in trade, not industry-exclusive causes.

Overall, the data in the extracted sets is a combination of the value in USD of all of the goods sold in the given category to the importing country. Then, this statistic in each MENA country, for example Saudi Arabia, Iran, and Türkiye among many others, is added into the MENA regional total. The combination of the data to cover the region as a whole allows one to understand the U.S. and E.U. trends and policies within the context of the entire MENA region, neutralizing possible fluctuations between individual countries. Therefore, analysis will reflect regional relationships and not just trends between individual states, thus making a larger statement. The data was then analyzed to identify persistent trends and the difference in magnitude of these trends between the U.S. and the E.U., with the latter outcompeting the former.

RESULTS

The data analyzed through the data collection applies to the research question as the meta analysis specifically compiled and analyzed data that evidences the decline in U.S. imports in the MENA region in relation to the E.U.

Figure 1: U.S. and Euro Cereals, OilSeeds, and FruitNuts (World Bank, 2024)

	A	B	C	D	E	F	G	H
1	*Total Trade Value (1000 USD) of US/EU Imports into MENA*							
2	*Year*	US-Cereals	EU-Cereals	US-OilSeeds	EU-OilSeeds	US-FruitNuts		
3	2017	1160338.244	2007972.426	64954.10557	149441.704	832425.737		*Imports into MENA, Sum of TradeValue in 1000 USD
4	2018	1491779.863	2445472.507	133686.455	155837.908	885976.836		
5	2019	937911.051	2140145.346	113652.8011	219983.327	1112567.902		
6	2020	829185.541	2452700.801	155551.4996	249368.942	1000043.372		
7	2021	1226814.21	1979476.779	147028.9904	215059.101	1083004.928		
8	2022	1075975.022	4089956.52	206144.053	254262.792	1274262.735		
9	2023	730843.943	700360.449	85429.99743	35375.387	1168053.496		
10	**Grand Total**	**7452847.874**	**15816084.83**	**129492.5574**	**1279329.161**	**7356335.006**		
11								
12								
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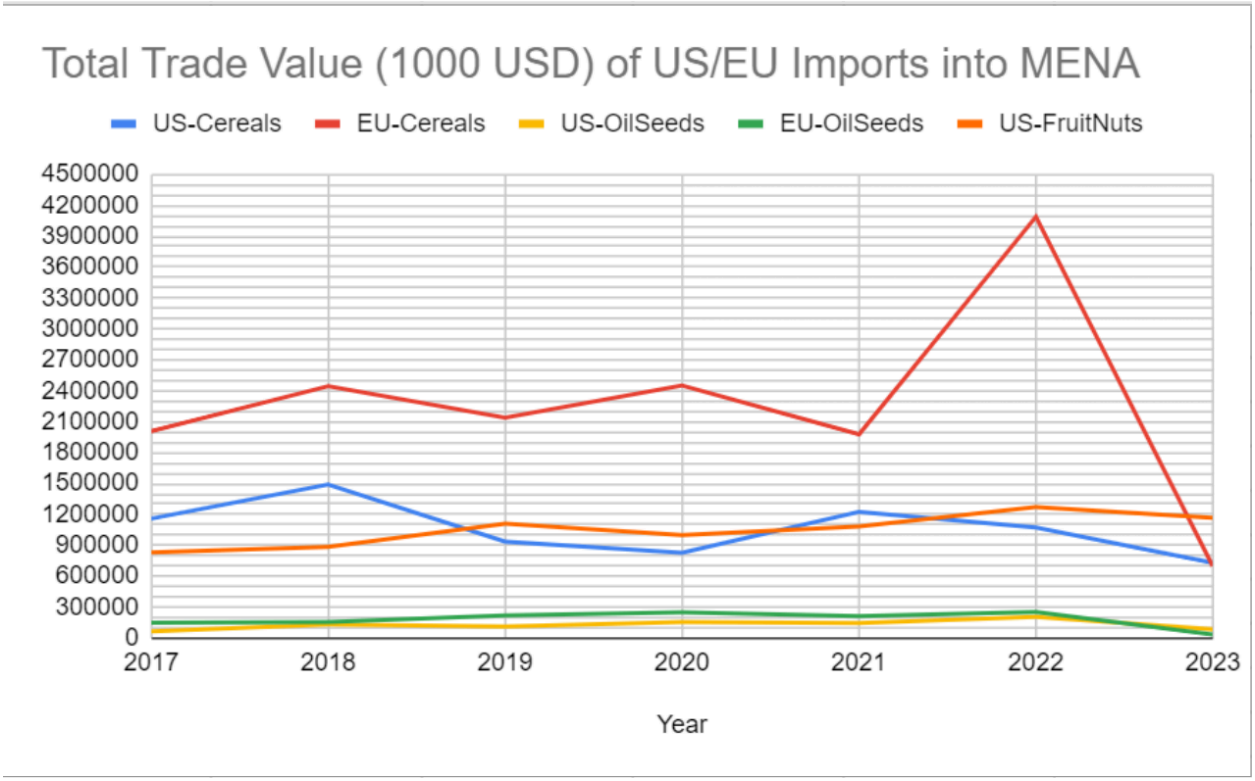
Figure 2: U.S. and Euro Cereals, OilSeeds, and FruitNuts (World Bank, 2024)



From the WITS data (Figure 1) as well as the line graph (Figure 2) generated from these statistics, one may observe that the U.S. export value did not itself decline drastically for cereals or oil seeds; the decline in between 2020 and 2023 could likely have occurred as a result of the ongoing COVID-19 Pandemic. This apparent lack of a decline does not however contradict the thirty-year trend in import share, which could also decline as a result of the increase in imports

from competitors while the U.S. imports stayed constant. More importantly than whether the value of U.S.-origin imports is decreasing is its relative position to E.U. goods. As one may observe in Figure 2, the value of E.U. goods exceeds the U.S. goods from the same category dramatically during every year. The difference between the red and blue lines, representing the cereal category, is rather noticeable, partly as a result of the high value and demand of these products. Yet, the same scale of difference, approximately twofold, exists for oil seeds as well, a situation that may not be as visible in Figure 2 owing to the comparatively lower value of oil seeds. Comparing cereals and oil seeds, the data for both the U.S. and the E.U. are much more variable for cereals, possibly because of the overall higher value of the category. Conversely, there seems to have been rapid declines across all of the sets, except fruit nuts, between 2022 and 2023. From this one metric alone, it is not possible to determine the reason for this irregularity because of its recency; whether this trend continues past 2023 will be an interesting observation to make in the future. Ultimately, the vast domination of the E.U. in terms of values for staple crops, that being cereals and oil seeds, illustrates the exigency of the research question, setting the stage for a qualitative justification of why the E.U. possesses a comparative advantage as covered in the Review of Literature.

Figure 3: Cereals & Difference

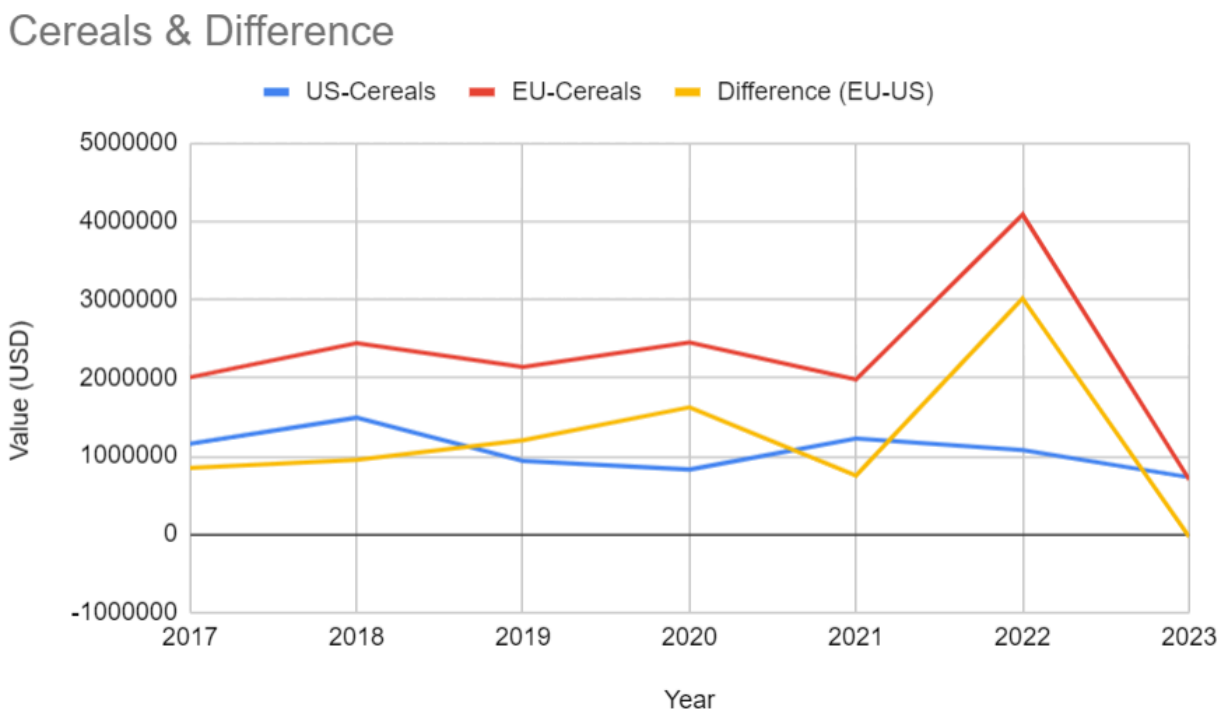
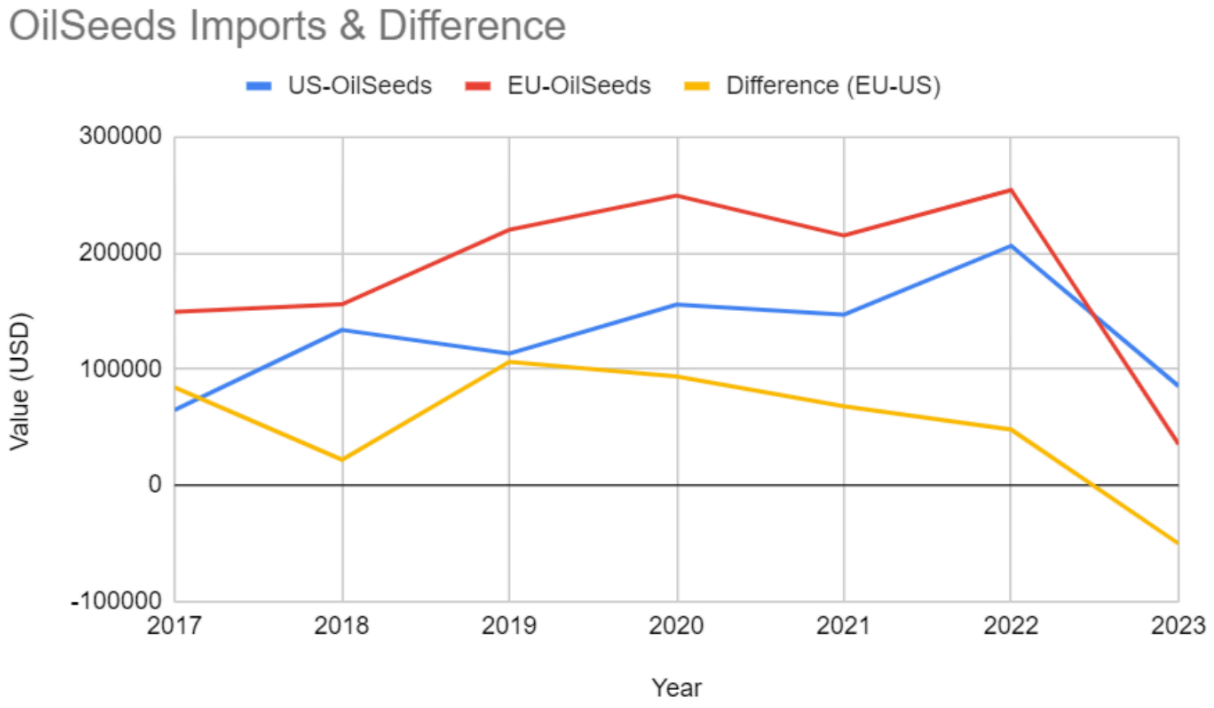


Figure 4: Oilseeds & Difference



Based on Figures 3 and 4, one may observe that the difference line between the EU and US import values have remained relatively consistent over a six-year period. Furthermore, the slight increases and decreases of the difference lines align well with the minor fluctuations of the US and EU oilseeds. Given that the rates of change between individual years match across all three lines in both import categories/figures, market factors/disturbances can be found as a likely reason for the changes, not US or EU specific factors; when one line decreases, more or less the other two follow suit and vice-versa with increases. The relative consistency of EU and US yields, side-by-side, and also the consistency of the difference between the two reveal the consistency of the EU's out competition of the US in the MENA market, echoing earlier points in the paper. Furthermore, the standard deviations of the differences for cereals and oilseeds were calculated to be s = $945932.99 and s = $53732.03 respectively. The standard deviations, in spite of relative consistency as displayed by trends in increases/decreases mirroring across the US, EU, and difference lines, reveal that there is relatively large variation in the quantities year-by-year. Thus, when understanding the MENA market through data, one must understand that although the trend of EU dominance is consistent, the data itself is highly variable, demonstrating several disturbances in a generally stable--agricultural--market. Overall, despite fluctuations and challenges such as regional conflict and the Pandemic that could have contributed to a high standard deviation, the ultimate trend of EU dominance has withstood all fluctuations, providing impetus for US policy to adapt and combat this out competition.

DISCUSSION

The broader implications of this meta analysis derive from the data demonstrating the E.U.'s comparative advantage. Because the E.U. consistently dominates the U.S. in terms of

import value, there must also be consistent factors for this trend, likely including policy. Therefore, the data opens up the discussion of what conscious decisions the E.U. is making policy-wise that guarantees its comparative advantage over the U.S., encouraging MENA states at large to purchase more of their products, as measured by value in USD. In turn, the ramifications of comparative policy analysis include insights into how the U.S. can improve its own agricultural policy to more effectively compete with challengers such as the E.U. Outside of the agricultural industry, as economic principles such as supply, demand, and comparative advantage are universal, U.S. policymakers can find insights into how to maintain, expand, or recover the U.S.'s comparative advantage in other, crucial markets such as the energy and technology sector.

The limitations of this data is that, given its numerical nature, it cannot support the qualitative aspect of policy and its impact. The analyzed data demonstrates quantitative trends that show the relative states of the value of the U.S. and E.U. imports, contributing to the conclusion that the E.U. is outcompeting the U.S. Yet, the data cannot in and of itself suggest contributing factors for the trends that it exhibits.

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Appendix A:

Figure 5: TFP Growth 1948 - 2019 (Wang et al., 2022)

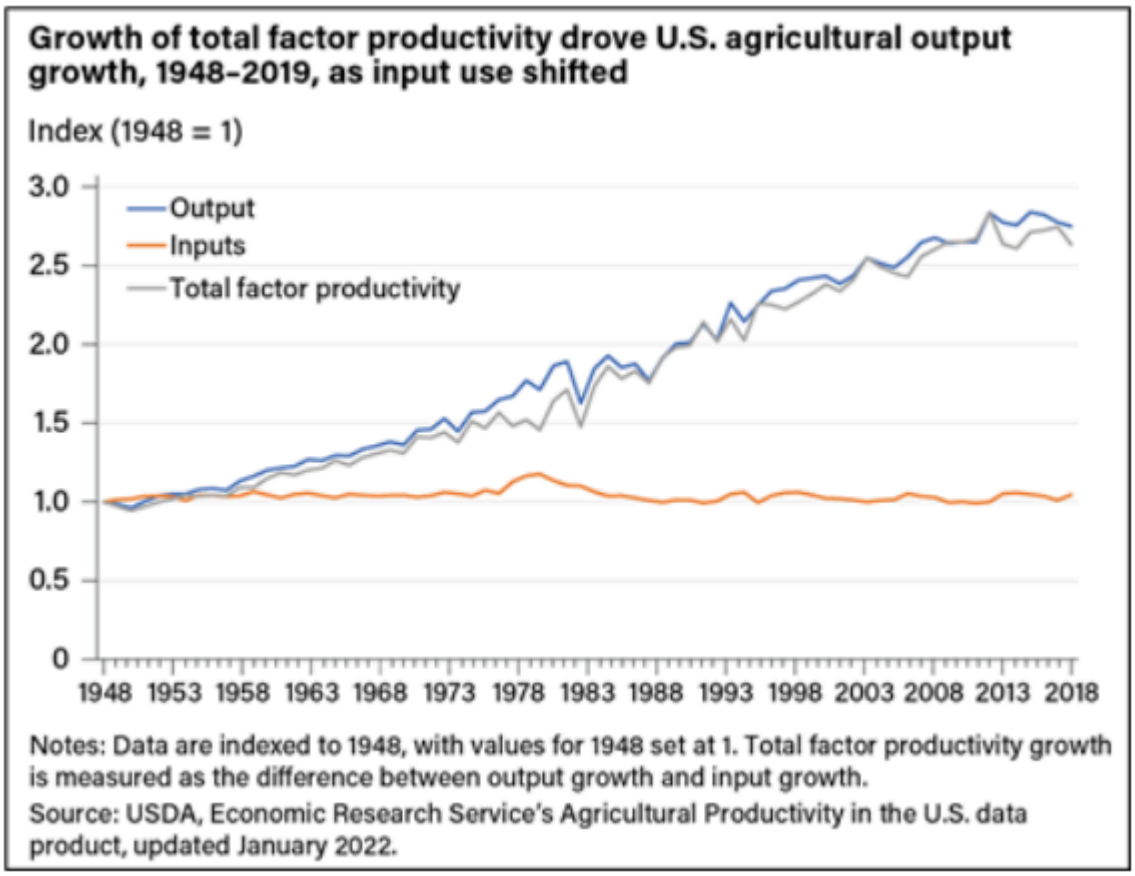

Figure 6. Public Spending on agricultural research (Nelson et al., 2022)

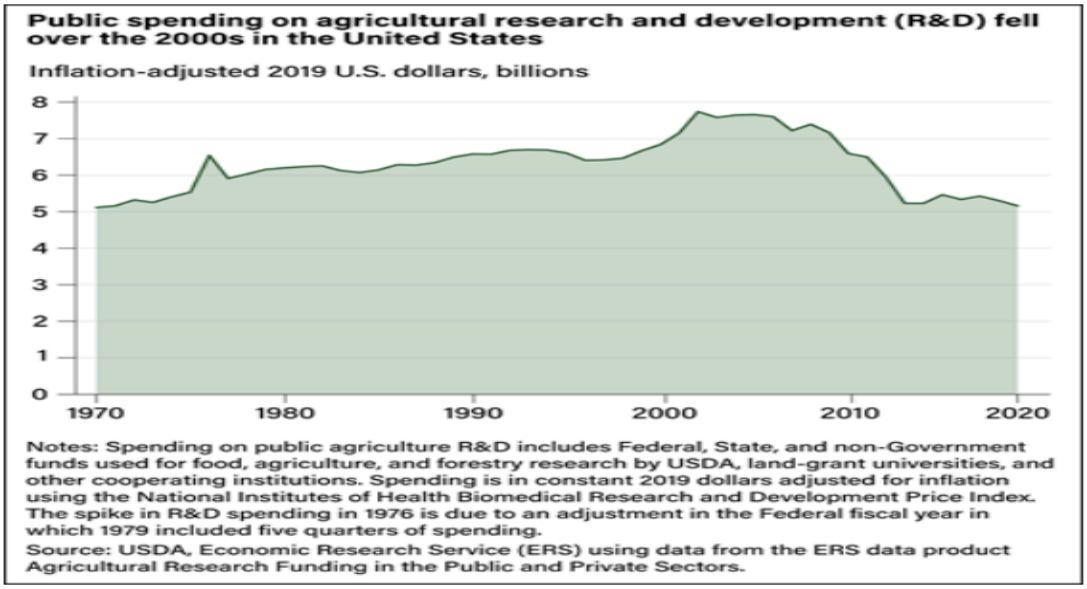

Figure 7: Growth rate in global agricultural output (Fuglie et al., 2021)

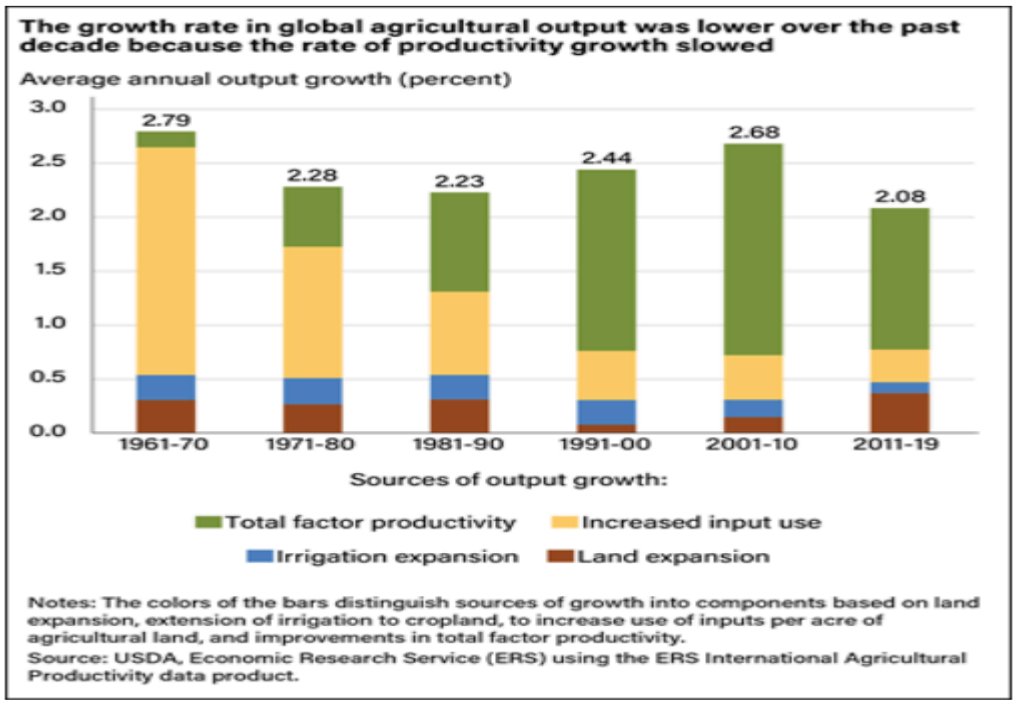

Figure 8: Changes in the commodity composition of food by major country groups (Alexandratos et al., 2012)

Kg / person / year	1969/ 1971	1979/ 1981	1989/ 1991	2005/ 2007	2030	2050	Comparison 1999/2001 New	Comparison 1999/2001 Old
World								
Cereals, food	144	153	161	158	160	160	158	165
Cereals, all uses	304	325	321	314	329	330	309	309
Roots and tubers	84	74	66	68	73	77	69	69
Sugar and sugar crops (raw sugar eq.)	22	23	22	22	24	25	23	24
Pulses, dry	7.6	6.5	6.2	6.1	6.6	7.0	6.0	5.9
Vegetable oils, oilseeds and products (oil eq.)	7	8	10	12	14	16	11	12
Meat (carcass weight)	26	30	33	39	45	49	37	37
Milk and dairy, excl. butter (fresh milk eq.)	76	77	77	83	92	99	78	78
Other food (kcal/person/day)	194	206	239	294	313	325	285	289
Total food (kcal/person/day)	**2 373**	**2 497**	**2 633**	**2 772**	**2 960**	**3 070**	**2 719**	**2 789**
Developing countries								
Cereals, food	140	152	160	155	159	158	157	166
Cereals, all uses	193	219	229	242	254	262	239	238
Roots and tubers	79	70	62	66	73	78	67	67
(Developing minus China)	62	59	58	64	74	81	62	63
Sugar and sugar crops (raw sugar eq.)	15	17	18	19	22	24	19	21
Pulses, dry	9.3	7.8	7.3	7.0	7.4	7.7	6.8	6.7
Vegetable oils, oilseeds and products (oil eq.)	4.9	6.4	8.4	10.1	13.1	15.4	9.4	10.4
Meat (carcass weight)	11	14	18	28	36	42	26	27
(Developing minus China and Brazil)	11	12	13	17	23	30	15.4	16
Milk and dairy, excl. butter (fresh milk eq.)	29	34	38	52	66	76	45	45
Other food (kcal/person/day)	115	130	177	253	279	293	242	242
Total food (kcal/person/day)	**2 056**	**2 236**	**2 429**	**2 619**	**2 860**	**3 000**	**2 572**	**2 654**
Developed countries								
Cereals, food	155	156	162	167	166	166	163	163
Cereals, all uses	571	620	618	591	682	695	564	565
Roots and tubers	96	84	78	77	73	72	78	78
Sugar and sugar crops (raw sugar eq.)	41	40	36	34	33	33	33.6	34
Pulses, dry	3.6	2.9	2.9	2.9	3.0	3.1	3.0	3.0
Vegetable oils, oilseeds and products (oil eq.)	11	14	16	19	20	21	18	18
Meat (carcass weight)	63	74	80	80	87	91	75.7	76
Milk and dairy, excl. butter (fresh milk eq.)	189	195	201	202	215	222	196	196
Other food (kcal/person/day)	492	508	498	458	488	509	472	458
Total food (kcal/person/day)	**3 138**	**3 222**	**3 288**	**3 360**	**3 430**	**3 490**	**3 251**	**3 257**

Note: Cereals food consumption includes the grain equivalent of beer consumption and of corn sweeteners; Vegetable oils do not include oils from crops other than oilseeds (rice bran oil and maize germ oil); Meat includes bovine, ovine, poultry and pig-meat.