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Persistent Food Shortages in Venetian Crete: A First Hypothesis

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Abstract: This paper examines the persistent food shortages in the island of Crete under Venetian rule (1204–1669) through the prism of the monetary system of Venetian territories and in combination with the other economic policies of the Venetian empire. From the available sources and analysis, it seems that the policies of Venice which prioritised the food security of the metropolis, the financial support to the elites, and the elite-favouring monetary and taxation system were contradictory and self-defeating. In particular, the monetary structure of the colonial economy and the taxation system seem to have been forcing both Cretans and Venetian settlers to produce wine for export instead of grain despite the repeated food shortages. The parallel circulation of various high-value (white money) and low-value (black money) currencies in the same economy and the insistence of the Venetian administration to receive taxes in white money seems to have been consistently undermining the food security policy adopted by the same authorities. The paper contributes to the discussion of how parallel currencies can stabilise an economy or can create structural destabilisation propensities, depending on coeval economic structures that usually go unexamined when we examine monetary instruments.

Keywords: parallel currencies; black money; white money; Venice; Crete; food security

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1. Introduction

This paper belongs to a greater ongoing research project which investigates the monetary policies of imperial Venice in one of its colonies, Crete island. The project started in 2013, and it was not initially focusing on food security issues but only on monetary phenomena in Medieval and Renaissance Crete island. However, the problem of food shortages in Crete is one of the major findings thus far, and it seems to be linked one way or another to monetary and taxation policies along with the policies of Venice concerning grain production and food security.

Crete island is situated in the centre of the Eastern Mediterranean Sea and is one of the major islands of the entire region with a very mild and diversified climate. Therefore, it has both the environmental and the geopolitical conditions not to falter in food production either through local production or through regional trade, unless, of course, there is such a disaster that affects the entire region. Moreover, the Venetians who ruled the island for more than 400 years undertook active policies to support and increase grain production, but it seems that they did not achieve the results they expected.

The paper attempts to formulate a first hypothesis on the problem of food shortages in the island, taking into account this favourable condition; why has this island faced this food provision problem for centuries despite the efforts by the Venetian rulers to create food security in the island? It is probable that the monetary system imposed on the island by the Venetian Republic along with its taxation and grain policies were driving the island economy away from any adequate food production, ending up at the clear defeat of the grain policy of the authorities and at serious food provision problems for the island. In other words, the economic system was forcing the local producers to produce for exports through monoculture, and this affected the production diversity as well as the entire landscape and the land uses of the island.

The next section describes the food shortages problem, and Section 3 describes the monetary system of Venice. Section 4 explains how this monetary system was functioning in colonial Crete in combination with the taxation system imposed by the Venetians. Section 5 explains the grain policy of Venice and the (often contradictory) decisions concerning grain production and provision in the island. Section 6 discusses in detail the research hypothesis concerning how the economic structures of Medieval Crete led to persistent food insecurity, and Section 7 presents the conclusions and the directions for further research.

2. An Unexpected Finding: Food Shortages in the Island that Can Have Anything

The research on the monetary policies of imperial Venice was not initially designed to address issues of food production and food security. There is indeed a later stage where the modes of production and the prices of various goods and services will be explored, but the main scope of the project at this initial stage has been to understand how the monetary system of Venice was functioning in one of its main colonies, Crete island.

There are various limitations to my research at this stage, such as the fact that I have not had yet the chance to do research in Italy. However, since the beginning, the problem of food shortages in Crete island during late Middle Ages and Renaissance has been mentioned in various sources, even if the papers or books are not focusing on this question. Most of the authors do not even pay much attention to the "famines" or the "hunger" they mention. They easily mention a crop failure or a war incident in an area where Crete imports grain from, and this is usually the only reference they give in the text (Detorakis 1994, p. 201). Other authors mention the efforts of the Venetian rulers to encourage grain production, sometimes with rather obligatory rules that prohibit other types of cultivation, and how the Cretans were not abiding with the policies that aspired to bring diversion of the local agriculture to grain (Gasparis 1994).

We examine the food security policies of the Venetans in Crete in more detail in Section 5. At this stage, we need to note that the failure of Venetian authorities to implement their grain policy is striking. First because, as rulers, they have been quite harsh with the local habitants, the colonised Cretans. The Cretan people revolted many times against Venice, sometimes taking to their side the Venetian settlers as well (what would make a Venetian settler turn against its own metropolis?). To be unable to implement such a simple policy while being an authoritarian regime in the island means that it was not as simple as it seems and that there were structural problems or resistances that were linked to structural problems.

The failure of food security policies is even more striking because Crete island, due to its geographical and climatic conditions, is supposedly one of those favoured areas where food is the last thing to be missing. Crete does not necessarily have the continental climate to produce vast amounts of grain, nor did it have the best climate to produce the vast amounts of wine that it did produce for centuries. It has, however, some highland plains where the climate is ideal for wheat and other grain species, and the production could have been enough, in theory, to feed the population of the island.

Moreover, Crete at the time of Venetian rule was not as populated as it is today. Estimates show that the major cities of the island (Chania, Rethymno, Handax/Herakleion, Siteia) at the time could not have had more than 10,000 inhabitants each and likely even fewer than that. The countryside was even more sparsely populated to the point that the Venetians had to bring settlers of various ethnic origins to the island in order to make sure that they had enough labour to work in the fields or in other production sectors (Gasparis 1994). The last Venetian census of 1644 shows that the population of Crete was 257,066 people (cited by Stallsmith 2007), which is fewer than half of today's population of the island. The 2011 census showed that Crete has 623,065 habitants (Region of Crete 2021). Therefore, the local needs for food did not seem to exceed the productive capacities of the land.

Crete seemed to be able to export grain at some point of time, and in other times, it was a net importer or a permanent importer (Tsougarakis 1990; Stallsmith 2007). It is not possible to have a clear picture of how much grain in total the island could produce. It is normal that the total production varied given that the Venetian rule in Crete lasted more than four centuries. As we see in Section 5, the sources partially reflect the quantities of grain, given that we can only know the quantities traded, as those are reflected in contracts. Of course, as Tsougarakis states, exporting does not mean that Crete had a surplus of grain nor does importing mean that Crete had a deficit of grain production. Exports and imports of grain, therefore, need to be examined along with other political and economic conditions instead of being taken for granted or connected to linear explanations about the local quantity of grain production. The important thing is that Crete island was also very capable of exporting and importing grain because it is situated at a point in the Mediterranean Sea that facilitates trade. This means that geopolitical conditions of Crete could be anything but isolating and commercially marginalising its island economy (Maltezou 1997; Pallastri 2005; Thiriet 1961; Williamson 2002).

Even a bad weather incident is not enough to explain the persistence of the food shortages as a permanent problem in Crete. For example, a bad weather condition for one or a couple of years would make Crete dependent on imports. It might also make people (producers and/or authorities) reconsider their agricultural activities so that they can face weather instability in a better way. For example, more production could be an option. Experimenting with producing in new areas or by using new methods could be another option. However, what is not explainable is that the problem seems to have persisted for centuries, no matter what the weather is, no matter whether there is war or not on the Mediterranean coasts, and no matter how hard the Venetian authorities try to persuade the locals to cultivate more grain.

In other words, we have references for lack of adequate quantities of grain in Crete during various times of the Venetian rule. We also have sources that mention the tough control of Venice over the trade of grain, both internal and external. We discuss the debate about whether the grain sector was completely state-directed or a market in the next sections. We also have references for grain imports, which sometimes had to be done from areas under Ottoman rule, with which the Venetians had ambivalent relationships.

Irrespective of the policies of the Venetian authorities, it is also important to mention that the local people who were actually the ones to bear the consequences of the food shortages were not so prone to cultivate grain or other food staples. Quite the opposite, they seemingly preferred to deny to conform with the official policies and cultivate other species, such as grapes for wine, although they knew that, in case of famine, they would be in danger themselves. The persistence of food shortages would make anyone expect that the Cretans would have the social or the historical experience to cultivate at least enough for themselves to survive in times of hardship, especially if the policies of the authorities seemed to fail. A failure of the state to provide food would mean individual or perhaps collective provision decisions. Why would Cretans opt for behaving as if the food shortages were the least probable, although they were persistent?

3. The Greater Economic Framework: The Venetian Monetary System

The Medieval and the Renaissance monetary systems in the Mediterranean coasts and in the European continent in general are characterized by a multiplicity of monetary instruments that circulate and are used on local and international levels of the economy of the region. The same state can issue various series of currencies without always taking out of circulation the old ones. In most areas, foreign currencies were often accepted as legal tender, e.g., for payments towards the authorities.

This variety of monetary instruments permitted various distinctions among them, and each categorization led to different groupings of the currencies that go beyond our contemporary criteria for understanding a monetary system. In the same economy, whether local or regional, we could see foreign and local currencies circulating together or even used at the very same time to calculate the value of a transaction or the main payments of a loan. The distinction between legal and non-legal tender meant that authorities could also accept foreign currencies as a means of tax or fine payments. Authorities could also, such as in the case of Crete, compromise to use in their account currencies of the previous empire which ruled the island (Eastern Roman Byzantine hyperpyron currency). The above coincided with the existence of both minted and virtual currencies in the same economy, which means that accounts could be done in a different currency than the one in which the payment was made in the first place. Currencies that were literally minted might be used as virtual units of account in a transaction without ever being transferred from one party of the contract to another (Antoniadi 1967; Bacharach 1994; Stahl 2016, 1985, 2000, 2007; Travaini 2006, 2007; Tucci 2001; Drakakis and Sidiropoulos 2004; Liata 1996, pp. 13–82, 119–69; Mazarakis 2004; Papadaki 2000; Ploumidis 1972, 2006; Tsiknakis 2005; Mueller 1980; Spufford 2014; Cipolla 1954; Spufford 1988, pp. 122–288; Sotiropoulou 2018a).

Within this context, one should add fake, forged, or illegally minted currencies. Those could have been forged by individuals or even by local lords or competitor states that wanted to reduce the coins of the other states in the market or reduce the trust to their rivals' currencies. Forgery of currency and fake coins of all types were all over the place. As if this was not enough of a problem, even the assigned authorities proceeded with debasement of their own currency, adding to the complexity and the lack of confidence in the monetary system (Chilosi and Volckart 2010; Stahl 2000; Liata 1996, pp. 171–98; Drakakis and Sidiropoulos 2004; Ploumidis 2006; Mueller 1980; Spufford 2014).

A major distinction in this very complex monetary situation is the one between gold and silver themselves and between precious (gold and silver) and non-precious metals (copper and/or other mixed alloys). The currencies were distinguished in two major categories: low value currencies and high value currencies. The low value currencies could be virtual or physically minted, and they could contain no silver or low percentage of silver, which caused their oxidation and their dark colours; this is why they were called the generic term, "black money". The high value currencies could also be virtual or physically minted, but they contained high percentage of high-quality silver or gold, or, in the case of the virtual version, they were imagined to contain this precious metal. Because the high value currencies did not lose or were not perceived to lose their metallic brightness, they were called "white money" (Stahl 1985, 2000; Drakakis and Sidiropoulos 2004; Ploumidis 2006; Hocquet 1979; Mazarakis 2004; Mueller 1980; Spufford 2014).

In practical terms, white money, as high value money, was used in big transactions, such as trade (especially international/overseas trade) and wages of highly skilled labour. Black money, on the other hand, given that its value was low, was used in small transactions and was the currency type preferred for everyday life activities of the majority of the people (Stahl 2000, 2007; Mazarakis 2004; Liata 1996; Spufford 2014; Mueller 1980; Lane and Mueller 1985; Cipolla 1954).

Venice, for several centuries, had no "white money" as such and adopted the silver grosso in about 1194, i.e., about ten years before Venice became a Mediterranean Empire having colonies from the Italian mainland to Istanbul, Crete, and Cyprus and various trade points all over the Mediterranean Sea. About 90 years (1284) after the adoption of the silver grosso, i.e., the first white currency of Venice, the Venetian authorities adopted the golden ducato. The ducato was a coin with high quality golden metal which was never debased and was issued/minted until the end of Venice as a separate state. Apart from the silver grosso and the golden ducato and their various issuance series, the Venetian monetary system had also other currencies, physically minted or virtually circulating. All of them were of lesser value and were containing no or very small quantities of precious metal (i.e., silver). Most of them were regularly debased or abandoned by the Venetian authorities and their instability of value and trust of the public was in contrast with the stability of fineness and value of the precious-metal-based currencies, particularly the ducato (Travaini 2006, 2007; Papadopoli-Aldobrandini 1871, 1893; Stahl 2016, 1985, 2000, 2007; Drakakis and Sidiropoulos 2004; Mazarakis 2004; Mueller 1980; Spufford 2014; Chilosi and Volckart 2010; Lane and Mueller 1985; Spufford 1988, pp. 265–338).

4. The Local Economic Framework: Cretan Currencies and Taxation under Venetian Rule

Crete became officially a Venetian colony in 1204 during the Fourth Crusade, and Venice acquired practical control of the island in 1211 after war with Genova. Venetians held the control of the island until 1645, when Chania was conquered by the Ottomans. However, Venice retained control of Candia/Herakleion and its suburbs until 1669 during the so-called Cretan war or the War of Candia, which was a siege of the city by the Ottomans. In reality, the Venetian rule of Crete coincides exactly with the transition period between Middle Ages and Modern era, i.e., between feudal system and capitalist economic structures in Western Europe (Detorakis 1994, pp. 143–244; Norwich 1989, pp. 542–60).

A major economic and monetary problem in colonial Crete (and not only in Crete) was lack of liquidity, i.e., lack of adequate monetary instruments in an economy to perform the transactions the people who live in this economy want to perform. Moreover, the public treasuries in both Venice and Crete were lacking funds, which coincided with general shortages of monetary liquidity. That meant that the people did not have enough monetary instruments to perform the transactions they wanted and, at the same time, they could not pay their taxes. Debt to the public treasuries accumulated just like the public debt itself for Venice and its colonies (Thiriet 1985; Tucci 1981, 2001; Antoniadi 1967; Drakakis and Sidiropoulos 2004; Mazarakis 2004; Ploumidis 2006; Hocquet 1979).

It is indicative of the needs of the Cretan economy for currency that the false coins circulating in the island are many and the Venetian authorities try to take them out of circulation or at least to raise awareness about them and exchange them with genuine coins. In 1603, for example, the fake coins in Crete collected by the Venetian authorities corresponded to the value of 600,000 ducati, 140,000 of which were found in the public coffers. During the first half of the 17th century, the Venetian authorities tried to inject new coins and increased amounts of money in Crete. It seems, though, that the coins were not enough, either because the exchange rate with ducato currency was not favourable to the low value currencies that were released to the market or because the latter (low value currencies) exited the island through currency trade to be used in other Venetian markets in which the exchange rates were more profitable, such as in Corfu island (Drakakis and Sidiropoulos 2004).

The question about liquidity is important because, in Crete, when the Venetians took over the administration, there were already other currencies, of which the prevailing one was the Eastern Roman Imperial (Byzantine) yperpyron (υπέρπυρον). At the time the Venetians took effective control of Crete, the yperpyron seemed not to circulate physically at all in the island but rather in virtual form, e.g., as an accounting unit. Venetians accepted that accounting, contracts, and taxes were calculated in yperpyra, even when the ducato was introduced by the Venetian state. Yperpyron, in particular after 1453, was a currency of an Empire that did not exist anymore but persisted in Cretan transactions until the mid-17th century, despite the introduction of ducati and the dissolution of the Eastern Roman Empire/Byzantium two centuries earlier (Antoniadi 1967; Pallastri 2005; Papadopoli-Aldobrandini 1871; Stahl 1985; Kalitsounakis 1928; Xanthoudides 1912; Tsiknakis 2005; Sotiropoulou 2018a).

All currencies circulating in the eastern Mediterranean had varying and floating exchange rates among them. Even the golden ducato, which had a constant amount of pure gold and was never debased, had variances in value and redemption power throughout the centuries that it was used (Antoniadi 1967; Stahl 2000, pp. 147–79, 212–16; Drakakis and Sidiropoulos 2004; Liata 1996, pp. 139–66; Spufford 2014; Sotiropoulou 2018a; Munro 1983).

In addition, not all transactions were usually done with all types of currencies. It seems that certain sectors of production or trade preferred to transact with certain types of currencies (of both high and low value). The aforementioned major distinction between white and black money concerning the volume of transactions is just a general rule. It seems that the variety of currencies represented also a variety of production sectors, of positions in production and distribution processes, and of transaction patterns (Pallastri 2005; Stahl 2007; Liata 1996; Maltezou 1985; Mueller 1980; Baroutsos 1999; Panagiotopoulou 1974; Spufford 2014; Lane and Mueller 1985).

Despite the issuance/minting of currencies of various levels of value and precious-metal base, the authorities who issue them are not so much into accepting all of them as means of payment for taxes and fines. The Venetian state prefers to be paid in white money, that is, in golden or silver coins of fine metal. That makes white money the legal tender of this monetary system, even if, in various cases, the white money is a virtual accounting unit on the basis of which the physical low value currencies are counted for tax purposes. In other words, even if no white money is physically paid, the exchange rates between white (golden or silver) money and low value currencies are always in favour of the Venetian state (Stahl 2000; Drakakis and Sidiropoulos 2004; Mazarakis 2004; Mueller 1980; Cipolla 1954; Munro 1983; Spufford 1988, pp. 265–88, 319–77).

As a consequence, the monetary segregation of sectors (and possibly of classes, professions or guilds, genders, and ethnic and religious groups) is directly linked to the state monetary policies. If the state prefers the white money for tax payments, those who own it are favoured, and those who do not have to pay in other currencies at an unfavourable exchange rate (Mazarakis 2004; Mueller 1980; Sotiropoulou 2018b). All imperial subjects need to make sure that they have available white money to pay taxes at the end of the financial year. If taxes are paid in white money, people tend prefer to receive payments in this type of currency for her/his trade (but this is not an absolute rule, see Sotiropoulou 2018a). If this is not possible, they need to find large quantities of the debased low value currencies to compensate for the exchange rates of white money currencies when need be.

5. The Food Policy of Venice in Crete: A Historical Example of Contradictions

If one wants to start examining the food shortages in Crete and what the Venetian rulers did about them, they will see that the food shortages experienced in Crete, particularly since the late 14th century onwards, historically coincided with the expansion of the use of the golden ducato currency and with the increase of food prices in general, not only in Crete but in the entire Mediterranean. The prices seem to have been free to fluctuate, and in that way, prices in the island had disparities among various localities. For example, in 1271, 100 mouzouria of wheat could have a price ranging from 6.25 to 14.2 yperpyra. In 1300, the same quantity (100 mouzouria) had a price ranging from 11 to 25 yperpyra. In 1361, 100 mouzouria had a price of 27 yperpyra, but in 1363, the price fell to 23.8 and 25 yperpyra. In 1399, the price of the same quantity of wheat ranged from 20 to 35 yperpyra (Tsougarakis 1990).

Although modern economics would suggest that a rise in food prices would attract more food producers, it seems that, despite the price increase, the island was producing mostly wine for exports plus other products such as sugar (Tsougarakis 1990; Detorakis 1994, pp. 198–201; Moody and Rackham 2004, pp. 103–18; Ploumidis 1972; Tsiknakis 2005; Bacharach 1994; Maltezou 1997).

As it has been mentioned previously, Crete was not a major producer of grain due to climate reasons, but it had adequate territories to cover the needs of the local population, especially plains that were on the highlands and that had adequate temperatures for efficient grain production. It seems, however, that the policies of Venice concerning both the food security of the metropolis and the financial support of the elites were self-defeating when combined together.

In particular, Venice required that grain be produced in Crete and traded to the metropolis at prices that were set by the Venetian authorities to make sure that the metropolis did not have to face food shortages. The system of grain price setting by authorities was complicated, but its main feature was that people who produced grain, whether they were powerful feudal lords or small producers, did not have many opportunities for profit in this sector (Stallsmith 2007). The grain sector was heavily controlled by the state authorities, and you needed special licenses to transfer grain, even from one point of Crete island to the other, and much more to transport grain outside the island (Gasparis 1991; Tsougarakis 1990).

We should add to this framework the fact that Venice itself, despite being very close to grain producing areas, was also facing famines now and then, despite its political power in the Italian mainland and despite its even greater economic power (Norwich 1989, pp. 449–63). It is also necessary to remind that transport was expensive, and luxury goods were those that would bring profit despite the transport costs. To the contrary, only when prices were quite high for food (e.g., there was lack of food or famine), it was profitable to transport food to a place (Cipolla 1954, p. 57). Yet, everyone wanted to do business in Venice, much more to acquire the fine metal coins of Venice that had become the most important international currencies of the late Medieval and the early Renaissance Mediterranean (Bacharach 1994; Stahl 2000; Thiriet 1952).

Venice was prioritising the food security of the metropolis over the food security of its colonies. This does not mean that they did not have food security policies for the colonies, but that, in case of emergency, the metropolis had a priority. Moreover, there is a huge debate whether the grain market was a clearly centrally organised economic space or whether it was a market the way we perceive it nowadays, upon which the state imposed limitations to make sure that both food security and market competition were ensured (Gasparis 1991, 1994; Gryntakis 2003a; Papadia-Lala 2003; Moody and Rackham 2004, pp. 103–12; Tsougarakis 1990). Even in the second case, the other state policies (monetary policy and taxation) were enough to affect the grain market, production and consumption, or export decisions of both the colonial locals and the people and the authorities in the metropolis.

In particular, the analysis of the grain rules and practices in Venetian Crete done by Tsougarakis (1990) shows that grain production and market allocation were much more complicated than one could anticipate. The Venetian authorities established a detailed system of monitoring the grain production and of gathering information about the production and the quantities of grain on the island of Crete. In that way, the rulers could make decisions based on actual situations and be able to implement them, at least at the level of administration.

To that, one should add the grain warehouses that were state-managed and various officers who were assigned to check and weigh the grains as well as the wheat flour that was offered to the market or to the state warehouses. The officers were members of a state network of monitoring that could have employees both in cities and in the countryside. That is, the Venetian administration was organised so that they could have an accurate picture of the grain production and they could disseminate the policies and the orders of the Venetian officers to the various regions of the island. The power of the Venetian officers with reference to the grain production was also leading to power abuses at the expense of the producers, in particular the low status local producers.

However, we do not have any cumulative calculation by the Venetian authorities concerning the total grain production of Crete. Tsougarakis (1990, pp. 349–50) analyses the various sources that mention quantities of grain, but he, too, has to differentiate that grain in Crete means wheat and other grain staples. Moreover, the contracts of trade do not show the whole volume of production but the grain that takes the commercial route within the island or towards Venice. It is indicative that, in 1330, Venice negotiated the purchase of 100,000 mouzouria (μουζούρια) produced by Chania producers and landowners. One mouzouri equals 17,089 litres (or fifteen oka(de)s (οκάδες), where one oka is equal to 1282 kg). Therefore, at that time, Venice was buying 1,708,900 litres of wheat. Tsougarakis (1990) states that this must have been one third of the total production of the region of Chania (one of the major cities and districts of Crete), which was 5,126,700 litres, according to the same calculation.

The market seems to have been supported to work more or less competitively, and only when there was a shortage or a price increase (or a price sinking), the authorities intervened to support the customers or even the grain producers. This analysis fits the hypothesis that the economic structures, particularly monetary and taxations systems, affected the decisions of the producers. It would not be otherwise, if one takes into account that Venetian authorities try to turn producers to grain cultivation and they fail. They could not fail if it was a completely state-directed market, but it likely was not. The failure of the Venetian interventions for grain production can be explained only if there was a market more or less working, even under control or supervision/intervention of the Venetian state.

This contributed to the harsh policy of Venice against the rebels of the island, which were the communities that were living in or around the highland plains of Crete that could be the most efficient lands to produce grain of good quality in adequate quantities. Venetian authorities insisted for many decades that the plains were not cultivated, thus the local communities lost their food security and, with this, their possibility for revolt and political autonomy. In other words, Venetian authorities needed grain for Venice and for Crete, but they preferred not to have it if the grain was to be produced by the rebels of the highlands. Nevertheless, despite the suppression of the rebels and their attempts to cultivate even illegally, Venetian authorities had, at some point, when grain cultivation was an imminent need, to waive the prohibition (Detorakis 1994, pp. 198–201; Gasparis 1994, pp. 13–33, 50–55; Gryntakis 2003a; Moody and Rackham 2004, pp. 131–32).

Here, one should note that the riots and the rebellions against the Venetian rulers were taking place rather regularly. Tsougarakis (1990) gives a list of major events that could have affected the political situation but also the food production in Crete for the 13–14th centuries. Cretans therefore revolted in 1211 (immediately after the Venetians won the war with the Genoese for the rule of Crete), 1217–1219, 1222–1223, 1230–1236, (possibly in 1252), 1261, 1262–1265, 1266–1271, 1272–1278, 1278–1282, 1283–1299, 1319, 1333, 1341–1347, and 1363–1365. Apart from the revolts, plague epidemics, earthquakes, or wars with invasions by Genoese or Turkish armies were events that possibly affected the production and/or access to grain.

Another policy instrument that Venetian authorities used to make sure that there was some grain production was to use the debts of the producers (mostly feudal lords who, on their turn, transferred their burdens to their serfs) in terms of taxation to force them to produce grain at regulated prices, sometimes at prices that were equal to or better than the market prices on the island. After all, prices for Cretan grain in Venice were always much higher than those on the island (Tsougarakis 1990). Taxation debts then were binding producers to grain production. The taxation debts were also educating the producers and the entire island that, in order to avoid debt to Venetian authorities, people needed to acquire the high value currencies needed or vast amounts of the low value currencies at a non-favourable exchange rate to the high-value currencies used to account for the payment of taxes.

6. The Hypothesis: A Monetary and Taxation System against Food Security

From the above, it is obvious that the Venetian authorities were defeated in their effort to increase adequately the grain production in their colony of Crete. One would also hypothesise that the defeat had some deep structural causes, because, when wine trade stopped being profitable for Cretan producers and Venetian traders, they turned to production and trade of oil for soap production instead of grain. When Ottomans undertook the rule of the island, the trend continued as before. It must not be a coincidence that the monetary system of the Ottoman Crete and the Ottoman Empire was similar to that of Venice (Detorakis 1994, pp. 192–93, 258–68; Stallsmith 2007; Liata 1996).

I mentioned in Section 2 that the insistence of Cretans and the Venetian settlers not to cultivate enough grain, even when they could see that their food security was undermined, is not easily explained. One does not need to know the reason for one's lack of grain to think or to try to cultivate more in a case where the climate is not bad for this cultivation. Additionally, one does not need to use the climate excuse once one also cultivates vast fields of vineyards for wine, although the climate is not very favourable for this cultivation either.

The explanation of the profit made through international trade of wine that was flourishing in Crete during most of the centuries that Venice had the rule of the island is not enough either. Even if grain was not profitable or was not profitable enough, is a strong profit motive necessary for self-preservation? In terms of individual, household, and collective survival, people would have also chosen to cultivate for their own use and food security instead of turning to export monoculture of a cultivation (vineyard, wine) that, in times of food shortages, could not be used as an alternative staple.

At this point, we come to the discussion of monetary and taxation frameworks I presented in Sections 3 and 4. It is probable that the monetary and the taxation systems that the Venetians imposed on Crete were obliging people, whether they were locals or settlers, to search for white money, i.e., highly valued, precious metal-containing currencies (Drakakis and Sidiropoulos 2004; Mueller 1980). In other words, if the taxation system exercised pressure over the producers to pay taxes in white money, people were forced to search for silver grossi and golden ducati and perhaps for other (foreign) currencies containing precious metals that were accepted for tax payments by the authorities. If those currencies could not be found, then they would have had to search for ever-increasing amounts of low value currencies that would be calculated at their (unfavourable) exchange rate with the white money currencies.

The monetary segregation mentioned in Sections 3 and 4 makes things even more difficult. First, white money was of high value and was used in trade or in payments for high-skilled labour. Most of the Cretans, however, were not allowed to participate in overseas trade (allowed only to Venetian nobles), or, even if they were, it was only by exception and after struggles and various bypassing of the law (Apellaniz 2013). Second, from the structure of the monetary system itself, it seems that the wealthiest people, usually the urban wealthy, might have had access to white money. Rural areas had no easy access to white money, therefore, they had to transact with low value currencies, turn to barter, and, at the end of the day, face devaluation of their produce through the calculation of its value in low value black money (Drakakis and Sidiropoulos 2004; Mueller 1980). However, we need to point out that, once the Venetians took hold of the island and sent Venetian settlers there, many good productive lands were grabbed by the settlers at the expense of the locals. The locals, especially if they were not of noble descent, ended up working for the new landowners or struggling to survive on less productive lands and politically were stripped of most official decision-making powers (Gasparis 2008; Labrinos 2002; Labrinos 2012; Maltezou 2000).

It was not only the profit that was not great in grain production. It was also that work by food producers was devaluated again and again, as it was represented in low value currencies, while the traded goods were represented in white money (high value currencies) (Stahl 1985, 2000, pp. 41–98, 201–25; 2007; Mueller 1980). It was easier, therefore, to turn to non-regulated or less-regulated sectors, such as wine trade, to acquire better income and, with it, the white money they all needed. Therefore, seeking white money was not only for taxation but also for avoiding as much as possible the representation of their labour or produce in low value currency that was constantly losing value in comparison to fine silver and golden coins.

This is the framework within which the Venetian authorities wanted or even forced the Cretan people to cultivate grain, but it was to no avail. Authors explain the denial of people with their propensity to search for high profits or with the revolutionary untamed character of Cretan communities (Stallsmith 2007; Moody and Rackham 2004, pp. 103–18, 190–96). However, the crucial question is how the cultivators themselves endangered their own survival after repeated food shortages and insisted on cultivating wine and sugar or producing dairy products (mostly cheese) for export. That is, what makes an island with adequate (but not always enough quantities for export) grain production resources divert their agriculture to export trade of luxuries such as malmsey wine? Why would Cretans endanger their own survival to rely on imports for food they could produce themselves, especially in times of high political/military instability in the Mediterranean that endangered the import of grain from hostile lands?

My hypothesis is that they were forced to. The liquidity shortages and the tax system imposed on the island made everyone, particularly those involved in agriculture, seek white money, which was available in export sectors rather than local production or regulated sectors/state oligopolies such as grain trade. The trade-off between land production and high value money pursuit was eventually a choice, even for the landowners in the mainland around Venice (Spufford 1988, pp. 240–64). Moreover, the devaluation of the low value coins that were used by most people who were not traders or highly skilled workers or crafters meant that everyone's labour was devalued through the floating exchange rates among the various currencies that circulated on the island. It was not that the profit from wine was better, it was that the cultivation for subsistence was the worst option for producers. The monetary and the taxation systems made sure that subsistence production was not sustaining subsistence. Subsistence production, therefore, was not achieving its main aim (survival) because of monetary and taxation systems.

As a consequence, the entire island was forced into the highly risky export trade and production with monoculture (initially wine, then oil for soap workshops) to ensure that labour was compensated as well as possible and that subsistence was supported through trade by using the white money acquired through exporting high value goods when exports and imports were possible. I write, "when exports and imports were possible" because the export-led agriculture was a very unstable and risky enterprise in general. A war in Anatolia (now Turkey) was cutting off the links for grain imports to Crete. A change in wine preservation technology was making the malmsey wine out of fashion in Western Europe (Stallsmith 2007). An unpredictable change of weather could cause the monoculture harvest of one year to be destroyed in one single day.

We also need to comment that the perception of sustainability in financial systems was not existent at the time and that, even if the care for the landscape and for the people living in the landscape was there, it was not connected to the monetary system as it is today (Popescu and Popescu 2019). Yet, even if the producers and the businesses of the era wanted to be more sustainable and responsible to their communities who were in permanent risk of starvation, they were not given that chance due to the Venetian state policies.

In other words, the otherwise risky and self-defeating choices of the Cretans concerning their food security during the Middle Ages and the Renaissance were forced upon them by monetary and taxation systems that the Venetians imposed on the island. The persistence of food shortages was the result of the choices made by the Venetian colonisers who wanted to acquire wealth from their colony through all their policies: their prohibition of cultivation in the rebel plains to crash the anticolonial resistance; their monetary system that was bringing huge profits to Venice and Venetian elites; their taxation system, which was designed against their subjects; their trade policy, which favoured the wealthiest among the dwellers of Crete and the metropolis over the colonies; their grain policy, which aimed at reducing any attempt of the colonies to ask for better prices or for more political independence; and their agricultural policy, which was based on the devalued labour of serfs and peasants, including slave labour (Gasparis 1994; Tsougarakis 1990).

Obviously, Venice could not have it all, and their attempt to ensure adequate grain production failed because their policies were contradictory, or, the Venetian policies were self-defeating, at least in terms of macro-economic policy and collective political economy, because, in terms of individual traders and of the metropolis, it worked perfectly well in favour of wealth transfer from the colonies to the metropolitan centre.

To that, one should add the liquidity problems that this very same economic system was creating, leading to an expansion of debt in Crete that affected all social classes. It seems that the state itself was creating the debts by instituting a monetary system that had not enough quantities of the white money they required to have the taxes paid in this currency and not in low value coins (Gofas 1991, 1993; Kalitsounakis 1928; Mueller

1980). Nevertheless, it was not only the monetary system; many predatory loans with very high interest rates were hidden under feudal or non-monetary loans, a strategy that seems to have been very easy to use in favour of local lords or even monasteries who, in this manner, were avoiding the stigma and the legislation against usury (Gryntakis 2000, 2003b; Xanthoudides 1912; Sotiropoulou 2018b).

The adoption of legislation to protect or relieve the debtors did not help much. Many were leaving the island, and many others were losing everything because of their debts. Legislating the mitigation of the debt obligations did not bring the expected positive results. On the other hand, the Venetian state was a major debtor itself. It did not usually pay its debts to its lenders (particularly when it took obligatory loans in times of emergency). In many cases, it had to borrow capital from lenders at prices that were little by little draining the public treasury from liquidity and creditworthiness. The lenders of the Venetian state were various, one category being the nobility and the noble bankers and traders who, even if they knew they would never take their money back, would acquire political leverage in terms of decision making in the state institutions. Other lenders were citizens of lesser status but who were also willing to lend the Venetian state not for the income this might have bring them (because the income might never come) but for the political prestige and status this might give them. In other cases, especially when it was about obligatory loans, the creditors were people who had no decision-making powers and who were, in reality, heavily taxed through the obligatory loans without expecting to get anything back, either in money or in political power (Tucci 1981, 2001; Gofas 1991; Tsiknakis 2003; Hocquet 1979).

As if the monetary and the tax structures were not regressive enough, the food production choices were made under such harsh financial conditions. After the 14th century, indebtedness became endemic and almost pandemic in Venetian Crete. Prohibition of usury and the reduction of interest rates by law did not help much either (Thiriet 1985; Tucci 2001; Gryntakis 2000, 2003a; Ploumidis 1972; Drakakis and Sidiropoulos 2004). Overseas trade and the possibility of acquiring white money currencies were, therefore, practically obligatory. It was as if the monetary system had created various walls here and there to make people go to one direction of production only—that of exports of mostly luxury goods.

The economic situation in the island of Crete as a colony of Venice and the problems it was facing due to the monetary policies of the metropolis can be compared to the situation of monetary instability and dependence created between countries of Western Europe and their colonies. Although such a comparison goes beyond the scope of this paper, we need to comment that the metropolis has only as much interest in the economic welfare of the colony as benefits the capitalist or trade centres in the metropolitan areas. In that way, the monetary system of the colonies is designed to make the metropolitan currency be "valuable" in the colony, while the local currency is both of low value and "expensive" to use. In that way, the economy of the colony is connected to the metropolitan economy, apart from other colonial methods, through a connection of monetary subordination. The colonial monetary systems also seem to challenge the quantity theory of money because the existence of multiple currencies in an economy does not secure that the supplies of money and monetary liquidity are adequate for the local economy to function properly (Earle 1954; Ferguson 1953; Hazelwood 1954; Hopkins 1970; Katz 1956; Prebisch 1959; Smith 1985).

A similar discussion could be opened when one would like to compare the monetary system of Venice as experienced in Crete island with monetary policies adopted by the European Union through the institutions of the Eurozone. This comparison would need even more research and careful consideration, given that one aspect is the debate about neo-colonialism in the European Union and another aspect is the actual monetary structure of the Eurozone, where the official currency is the euro only, and where other currencies are not legal tender but are used locally with a limited purchasing power. Nevertheless, one should bear in mind that, as this paper showed, complex monetary systems that reflect unequal access to currencies and unequal decision-making power concerning monetary issues tend to create positive feedback loops where those who control the valuable currency are at advantaged position to accumulate even more valuable currency and wealth reflected in other assets too (Lucarelli and Perone 2020; Lucarelli and Gobbi 2016; Mikelis 2016; Yeros and Jha 2020).

7. Conclusions and Directions for Further Research

We do not know whether the Venetian authorities were aware that their entire economic system, basically their commercial feudal system with monetary and taxation rules such as they were, was the cause or could have been the major cause for people in Crete to refuse to cultivate grain despite the fact that they needed it. We know that they were aware that their monetary system was not working for the favour of everyone in the economy and that it was favouring the social groups that had access to decision-making or had enough power and financial means to lobby to decision-makers. That is, nobles and wealthy people (who were identical with traders and bankers) were making monetary and taxation rules, and they had no incentive to make the rules against themselves and their interests (Mueller 1980; Apellaniz 2013).

By "interests", I mean, here, the individual interests and the interests of the nobles or the merchants as a class. As Hocquet (1979) points out, some of the members of their class may have been harmed (as was happening with the Venetian and the Cretan nobles of Crete that had to face the metropolitan policies and sometimes revolt against metropolitan rulers), but the class as a whole was better off, even if the economy or the society as a whole was not. That the economic rules of Venice were contradictory among themselves, therefore, was a policy. From some point onwards, the pursuit of certain individual and class interests was enough a conscious decision to erase concerns about other policies that could be beneficial for everyone.

In addition, that the basic survival of many was endangered because the Venetian nobles insisted in having a very regressive monetary and taxation policy was not likely perceived as such. Overseas trade, towards which the entire island economy was diverted, was very profitable for the traders. The traders were the wealthy class who, in times of emergency, were the least likely not to be able to buy food, even at a high price. In other words, the food production was subsidising the international trade, just as was happening with salt production and trade, which was used to mitigate the costs of luxury goods that brought the biggest profit to Venetian merchants (Hocquet 1979). Wine was the same thing—a luxury good for the ascending Western European markets that was subsidised by the food producers, who had to choose between either receiving very low income or changing cultivation in order to survive and/or avoid debts to individuals or to the state, and by consumers, who saw the grain prices rise constantly after the 14th century (Tsougarakis 1990; Tsiknakis 2005).

More research is needed to examine in detail how the monetary system and the changes in the monetary practices throughout centuries were affecting food production in Crete but also in other Venetian colonies. Environmental history is mostly needed to make sure that undocumented practices reflected on landscapes are taken into account and that documented practices are put into their integrated environmental and agricultural context. For example, it is very important to find more information about the quantities of the food produced, and this, if the written sources are not enough, can also be investigated as part of the environmental history. More investigation is also needed to explore how each social group was experiencing, on the one hand, the food security problems, and on the other hand, the pressures to work in the export sectors instead of producing for subsistence of themselves and their communities. Finally, in terms of economic policy and food security implications, the case of Venetian Crete needs to be further researched, because it seems that monetary structures affect heavily decisions about production and provision of food.

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