FOUR ESSAYS ON POLITICAL ECONOMY

By

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ABSTRACT

This dissertation uses public choice economics to analyze market and governance institutions. Chapter one focuses on the free-rider problem of aid, the collective action problem of getting people to contribute privately to charity. It compares zakat, the third pillar of Islam, with ordinary charity to show that zakat solves the collective action problem by changing the very framework of giving. Chapter two examines monetary policy, monetary institutions, and public finance through the lens of public choice. It provides a historical case of Venice's Zecca Mint which provided the elite patricians of Venice with a stable currency, playing a role in fostering the economic success of the Republic of Venice. This chapter identifies three factors that together formed a self-enforcing monetary constitution to inhibit public currency debasement in historic Venice: (i) the assignment of public debt to patricians, (ii) the nearly uniform trade-centric focus of the patricians, and (iii) the use of turn-taking in office for mintmasters. Chapter three provides a public choice explanation for the growth in unfunded liabilities at the state and local level based on James Buchanan and Richard Wagner's explanation for the growth of government spending under Keynesianism; that eliminating traditional balanced budget constraints enabled the intergenerational transfer of debt. By interpreting this growth in unfunded liabilities through this public-choice framework, this paper helps provide a more comprehensive public-choice explanation for the growth in unfunded pension liabilities. Transitioning from defined-benefit pensions to defined-contribution retirement accounts would help restore taxpayer constraint on the growth of these unfunded liabilities. Chapter four expands on Kirzner's theory of entrepreneurial

alertness. We develop a framework to study creative genius. We identify the conditions under which market forces will favor the performance of both functions (the entrepreneurial and the artistic) by the same person and those under which a different person performs each task. We use evidence from the historical records on the markets for paintings in the Italian Renaissance and those on the contemporary market for the visual arts.

To the ones who have supported me throughout this beautiful journey

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بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

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In the name of Allah, the *Most Gracious*, the *Most Merciful*

My success is from Allah alone. In Him I have placed my trust, and to Him I turn

(English interpretation of Qur'an 11:88)

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Chapter One

Zakat: Changing the Framework of Giving[1]

When the private incentives faced by individuals in a society are not properly aligned with their shared goals, a collective action problem arises. This paper focuses on the free-rider problem of aid, the collective action problem of getting people to contribute privately to charity. It compares zakat, the third pillar of Islam, with ordinary charity to show that zakat solves the collective action problem by changing the very framework of giving.

1. Introduction

Collective action problems in economic and social life arise when individuals who will be better off cooperating fail to do so due to conflicting private interests which inhibit effective joint action (Allison et al. 1996; Brown et al. 2018; Friedberg 2012). These problems can involve very large groups that cut across national boundaries, or relatively small ones such as families (Cronk et al. 2002; Sethi 2010).

In the context of the provision of public goods, Bergstrom et al. (1986) argued that voluntary contributions that are socially beneficial but privately costly will not

[1] This paper is currently in R&R at *Islamic Economic Studies*.

normally be observed. Nevertheless, there are numerous examples of groups that have overcome the collective action problem on a small scale, such as the management of local fisheries, forests, and renewable resources (Bromley 1992; Ostrom 1990), and on a larger scale, such as the Organization of the Petroleum Exporting Countries (OPEC) which has succeeded in constraining production to maintain price levels. In some instances, restraints are enforced by formal or informal sanctions (Ostrom 1990) and in others they're enforced by a mutually beneficial agreement among members like the OPEC. However, there also exist examples of collective action in the absence of the standard economic hypothesis of rationality and self-interested responses to material incentives, and the absence of any sanctioning mechanisms, such as private donations to charity (Sethi 2010).

2. The Free-Rider Problem

The theoretical free-rider problem is a type of market failure that arises when those who benefit from resources, services of communal nature, or public goods do not pay for them or under-pay (Baumol 1952). It is a problem because free riders may continue to access or use the good while not paying for it either indirectly through taxes or directly through tolls or fees. Consequently, the good may be under-produced, degraded or overused (Rittenberg 2008). Moreover, it has been shown that despite evidence that individuals

tend to cooperate by nature, the presence of free riders causes this prosocial behavior to deteriorate, perpetuating the free-rider problem (Choi &Robertson 2019). Buchanan (1968, 87) presents the conventional description of the free-riding problem in the context of public goods:

> It may prove almost impossible . . . to secure agreement among a large number of persons, and to enforce such agreements as are made. The reason for this lies in the "free rider" position in which each individual finds himself. While he may recognize that similar independent behavior on the part of everyone produces undesirable results, it is not to his own interest to enter voluntarily into an agreement since, for him, optimal results can be attained by allowing others to supply the public good to the maximum extent while he enjoys a "free ride"; that is, secures the benefits without contributing to the costs. Even if an individual should enter into such a cost-sharing agreement, he will have a strong incentive to break his own contract, to chisel on the agreed terms.

In the context of charity, it is said that some donors might have an incentive to hold down on their own contributions and free ride on the redistribution from other individuals (Pasour 1981).

Today, many economists accept the premise that government should take action to alleviate extreme poverty. One of the primary justifications for government action is that relying on private philanthropy leads to under provision of charitable activities because of the free-rider problem (Friedman 1962, 190-1).[2] The free-rider problem has

[2] There are, of course, scholars who take exception.

been used to justify many kinds of intervention including the subsidization or public provision of healthcare (Arrow 1963; Culyer 1976; Lindsay 1969), public policy to stimulate saving and investment (Marglin 1963; Sen 1967), and compulsory transfers of income through the tax system (Hochman and Rodgers 1969).

A growing literature examines the ability of informal institutions to solve the collective action problem when it comes to charity (Boettke and Smith 2010; Chamlee-Wright and Storr 2009; Goodman and Herzberg 2020; Skarbek 2014; Smith and Sutter 2013). There is also a literature finding that governmental solutions to charity are fraught with knowledge and incentive problems (Coyne 2020; Lupton and Lawlor 2011).

This paper builds on a large and wide-ranging literature on the topic of philanthropy. Some have studied the history of philanthropy (Bremner 1994; Fauzia 2013; McCarthy 2005), the moral issues associated with charity and philanthropy (Latief 2016; Smith 2005), and the factors that motivate volunteering and giving (Al-Qaradawi 2000; Benthall 1999; Brooks 2005; Dekker and Halman 2003; Kaag 2007; Latief 2016; Muhammad 2019). While others have studied the political economy of the philanthropic enterprise (Aspinall 2011; Aspinall and Van Klinken 2011; Boettke and Coyne 2008; Boettke and Prychitko 2004; Boettke and Rathbone 2002; Holcombe 2000; Latief 2014).

This paper aims to show that zakat solves the collective action problem by changing the framework of giving. An additional purpose of this paper is an attempt to fill a critical gap in the Islamic economics literature. This gap concerns the nature and role of zakat in effectively delivering aid to those in need while mitigating the potential for free riding. The main area of study has been money and banking, and a vast literature is often narrowly concerned with the issues of interest and usury. Some attention has also been given to public finance. The theoretical structure and substance of this solution can be extracted from (1) the Qur'an,[3] (2) the sunnah[4] of Prophet Muhammad (ﷺ)[5] , and (3) the views of Islamic theologians and exegetes.

Finally, this paper contributes to the literature on the economics of religion which is still nascent compared to other fields of economic research. While most early research in the economics of religion explores the incentives that individuals might have to hold religious beliefs (Ekelund et al. 2002), recent research focuses quite heavily on the

[3] Considered by Muslims to be the infallible word of God. There is only one version of the Qur'an in Arabic, and that was the version revealed to Prophet Muhammad, and that is still read and studied around the Muslim world today. Hence, this research only provides the English interpretation of the Qur'anic verses.
[4] *Sunnah* is what has been established from the final prophet of Islam Muhammad of his sayings, actions, or tacit approvals. Sunnah is sometimes referred to as *Hadith* which means the words, actions, approvals, or attributes that have been narrated from Prophet Muhammad.
[5] An Arabic phrase used by Muslims after mentioning the name of a prophet to show respect and honor. The Arabic pronunciation is "sallā llahu 'alayhi wa sallam" which translates to "may blessings of Allah and peace be upon him."

socioeconomic consequences of religion. Economic studies of religion show the role that "spiritual capital" may play in influencing human behaviors by affecting their beliefs and actions (Iyer 2016).

The remainder of the paper proceeds as follows. Section 3 introduces zakat. Section 4 compares voluntary charity with zakat. Section 5 sheds the light on the coordination problem of collective action. Section 6 concludes the paper.

3. An Introduction to Zakat

Zakat is one of the five pillars of Islam.[6] In Arabic, zakat means growth and purification. In a religious context, zakat refers to the spending of wealth for the sake of Allah[7] (ﷻ)[8] to purify a believer's heart of the love of material wealth. According to the Qur'an (100:8),

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[6] In a religious context, the Arabic word *Islam* means *submission, surrender and obedience to the Creator alone*.

[7] "Al-Ilâh (The God); [Allah] is the proper name of the only Supreme Being Who exists necessarily by Himself. This word comprises all the attributes of perfection. This word is neither feminine nor plural and has never been applied to any other being. This word has no corresponding word in English or in any other language of the world" (Malik 1997, 95). The name Allah, therefore, refers to the *One Who is adored and worshipped* (https://islamqa.info/en/answers/2594/some-of-the-names-of-allaah-and-their-meanings). The Qur'an refers to Allah using the masculine pronoun He (*huwa)* because the word "Allah" is *grammatically* masculine, not because Allah is *naturally* masculine.

[8] An honorific often said or written alongside Allah. The Arabic pronunciation is "jalla jalāluhu" which translates to "may His glory be exalted."

Man is an avid lover of wealth, therefore, giving zakat is an affirmation that a believer is fully prepared to sacrifice everything for Allah's sake and that nothing is dearer to him or her in life than the love of the Almighty.

Although zakat has a social and economic significance, the primary motive of zakat is religious and spiritual (Imam Muslim 875, Book 5). From a social point of view, zakat awakens in Man the sense of brotherhood with less fortunate members of society and stirs his moral conscience to make sacrifice for their sake (Imam Muslim 875, Book 5). However, from the economic point of view, zakat plays a key role in discouraging the hoarding of wealth and its concentration in the hands of the rich in a society. Zakat thus helps the steady and constant flow of wealth from the rich to the poor to ameliorate their hard lot and enable them to stand on their own legs by providing purchasing power. In this way, zakat helps the poor become a part of their economy and gradually transforms their status from zakat recipients to zakat givers.

Zakat is often mistaken for a tax on wealth for three main reasons (Hossain 2012, 6-7). First, zakat can be collected by force if a zakat giver does not give it willingly. Second, zakat is to be kept in a separate account in the state treasury if it is collected in an Islamic state. Third, similar to tax, there may be no direct and equivalent economic benefit from the state in return for zakat.

Hossain (2012, 6-7) also explains four important conceptual differences between zakat and tax. First, while tax is primarily a matter between citizens and their state authorities, zakat is an act of worship which has been decreed compulsory on Muslims to obtain the Almighty's nearness and express gratitude to Him. Second, unlike many taxes in modern times, zakat is based on nisab or a threshold which refers to the minimum amount of wealth and possessions that a Muslim must own before becoming qualified to give zakat. Therefore, any wealth below the nisab is exempted from zakat. This is not true in the case of many taxes in modern times, although tax authorities may decide when and where to apply exemptions. Third, unlike tax systems that can undergo change from time to time and from one country to another, zakat is prescribed and cannot undergo any change. Finally, the objectives of taxes are secular, whereas those of zakat are spiritual and religious. The intent of zakat is to make wealth pure (in a moral sense) and purify the heart of a believer from the love of material wealth, while the economic and social aspects are subservient to it.

Since zakat is an act of worship, it is not permissible to spend the zakat funds on building mosques or repairing roads, or any other public goods and services. Zakat becomes an obligation upon the fulfillment of five conditions: (1) Islam, (2) freedom,[9]

[9] Slaves and non-Muslims do not pay zakat.

(3) possession of the nisab, (4) complete ownership of the nisab, and (5) a lunar year of uninterrupted possession of the nisab (Al-Karmi 1624[2004]).[10] A Muslim must have a complete ownership of the nisab amount. For example, if Adam lends Jacob some cash, and there is a strong possibility that Adam won't be able to collect his debt back because Jacob has financial hardships or has defaulted, then the debt is not considered part of Adam's wealth any longer. Also, if Adam himself has personal debts, then he first needs to deduct their amounts from his wealth to verify whether he still meets the nisab condition.[11]

Sections 3.1 and 3.2 explain who's eligible to receive zakat and who's not, respectively. Section 3.3 briefly describes the kinds of zakatable wealth.

3.1 Who's Eligible for Receiving Zakat?

Zakat on all kinds of wealth can only be paid to eight categories who were singled out in the Qur'an in verse (9:60).[12] Since zakat is an obligatory act of worship which every

[10] The majority of scholars are of the view that it is obligatory to pay zakat on the wealth of minors and the insane by the wakeel (trustee) who is guarding their wealth. When the prophet (ﷺ) sent Mu'adh ibn Jabal to Yemen, he told him, "..If they obey you in that, then tell them that Allah, the Mighty and Sublime, has enjoined on them a charity (zakat) to be taken from their rich and given to their poor . . ." (Sunan an-Nasa'i online, hadith 2435).

[11] If a Muslim has a large debt that is being paid off in instalments, such as a mortgage, then one should only deduct the payment that is currently due from one's assets (https://www.islamic-relief.org/zakat/loans-and-debts/).

[12] "Zakat expenditures are only for the poor and for the needy and for those employed to collect [zakat] and for bringing hearts together [for Islam] and for freeing captives [or slaves] and for

Muslim (male and female) is enjoined upon to perform if they are sincere in their belief in Allah (ﷻ) and the hereafter, there is a sense of gratitude on the part of zakat givers because they have been enabled by the recipients of zakat to discharge their obligation that they owe to Allah (ﷻ) and society (Sahih Muslim 875, Book 5).

The first category of those entitled to zakat and to whom it must be paid is the poor (faqeer in Arabic) who is desperately in need. The second category includes the needy (miskeen in Arabic) who does not have full sufficiency. Third are those appointed by authorities to administer the zakat in terms of collection, division, recording, distribution, and delivery. Those should be given from the zakat according to their efforts, whether they are rich or poor.[13] The fourth category is those whose hearts are to be reconciled, including new Muslims who have just entered the fold of Islam, in order to strengthen their faith, regardless of whether they are rich or poor; this also includes those whose hearts are inclined to accepting Islam; and a non-Muslim leader who is obeyed among his people and is thus given from zakat funds as a measure of precaution to safeguard Islam and Muslims from his malice and to ward off his evil from Muslims. The

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those in debt and for the cause of Allah and for the [stranded] traveler—an obligation [imposed] by Allah, and Allah is Knowing and Wise."

[13] An exemption is the members of Prophet Muhammad's (ﷺ) household and their descendants because the zakat is forbidden for them even if they are among the zakat collectors and distributors, or any of the other seven categories.

fifth category includes slaves who may be bought with the zakat funds and set free; and Muslim captives who may be ransomed. This also applies to ransoming a kidnapped Muslim if it was not possible to force the kidnapper to release him or her.

The sixth category includes those who have fallen in debt either because of need (for non-sinful causes) or those who have fallen in debt to bring about reconciliation between Muslims. For example, if there is a dispute, conflict, or war between two Muslim clans and a man of good will, standing and honor incurs expenses to reconcile between the two clans, then he should be given from zakat in appreciation of his effort which has put an end to enmity and bloodshed between believers, regardless of whether he is rich or poor. The seventh category is the path of Allah (ﷻ), which means the ones who fight so that the word of Allah (ﷻ) may be supreme and for the defense of Islam. Hence, the ones who fight for tribal or nationalistic reasons do not receive zakat; and the pilgrims who need financial aid to fulfill hajj [pilgrimage to Mecca which is the fifth pillar of Islam].[14] Finally, the eighth category includes the stranded traveler, to enable him to reach his hometown, regardless of whether he is rich or poor.

[14] See Al-Anzi 2003, p. 548. For more details about the five pillars of Islam, see https://www.islam-guide.com/.

3.2 Who's not Eligible for Receiving Zakat?

Muslims can give their zakat to one of the above eight categories or divide it between two (or more). Jurists agree that priority should be given where the need is greatest because all categories are entitled to zakat. Usually, the ones who are in greatest need are the poor and needy, and so Allah (ﷻ) started with them first in the Qur'anic verse. However, it is not permissible to give zakat to anyone who belongs to any of these seven groups (to be explained next): (1) non-Muslims, (2) the rich, (3) the able-bodied, (4) a dependent or direct family member, (4) Ahl al-Bayt, (5) slaves, and (7) those who do not fall in the eight categories described earlier (Ibn Qudamah 1223[1994]).

Zakat is an act of worship; therefore, it is not permissible to give it to a non-Muslim except those whose hearts are inclined towards Islam, or those who hold positions of authority and influence among their people so as to ward off their evil from the Muslims.[15] Zakat is not to be given either to a rich or to an able-bodied Muslim capable of earning his livelihood.[16] Moreover, a man cannot give his zakat to any of his direct relatives on whom he is obliged to spend such as his parents, grandparents, wife,

[15] Apart from zakat, it is permissible to give gifts, money, and accommodation to non-Muslims, and *sadaqah* (voluntary charity) to poor non-Muslims. Siddiqui and Wasif (2021) found that Muslims in the United States gave an estimated $4.3 billion to charity in 2020. They gave USD 1,810 to faith-based causes compared to USD 1,138 in the general population.
[16] Exemptions have been addressed in section 3.1.

children and grandchildren no matter how far the line of descendant goes.[17] On the other hand, a Muslim is encouraged to give his zakat to his poor relatives if he is not obliged to spend on them, which is better than giving it to a stranger. It is not permissible to give zakat to Ahl al-Bayt (the members of Prophet Muhammad's household) and their descendants.[18] Finally, zakat is not to be given to a slave because it will automatically be transferred to his master, and he won't be able to benefit from it himself.

Finally, it is the duty of every Muslim to give his zakat to someone who is eligible for receiving it, otherwise he will not be discharged of his obligation and, consequently, must give his zakat again.

3.3 Kinds of Zakatable Wealth

Muslims have been enjoined to give their zakat with the same sense of earnestness and devotion in which they observe their prayer. Zakat, hence, has been mentioned in many verses in the Qur'an in close connection with salah (the five daily prayers). Accordingly,

[17] In Islam, the husband is obliged to spend upon his family, upon his wife and children, on a reasonable basis, even if the wife is rich.

[18] This is meant to honor them because zakat is from the dirt of people. Allah (ﷻ) commands His prophet (ﷺ) in the Qur'an (9:103): "Take sadaqah (zakat) from their wealth in order to purify them and sanctify them with it."

whoever does not believe that zakat is obligatory is a kafir (infidel) according to the consensus of Muslims.[19] Zakat is obligatory on four kinds of wealth including:

(i) Livestock

There is a consensus between scholars that zakat is payable on three kinds of livestock: camels, cattle, sheep, and goats. It is not payable on other animals like horses, donkeys, and mules unless they are part of trade goods (merchandise). In order for this type of zakat to become an obligation, three conditions must be met. First, the animals should not be those intended for work. For example, a camel used for transport, or an ox used for tilling are not zakatable. Second, livestock should be grazing freely on public pastures for most of the year. In other words, its owner does not bear the cost of providing it with grass except rarely. Third, the number of animals must reach the nisab, which differs for each kind of livestock (Al-karmi (1624[2004]; Maghniyyah 1915).

If all three conditions are met, then zakat will be payable after the lapse of one lunar year of the complete ownership of the nisab. For instance, the nisab for sheep is 40 and the zakat for 40 sheep is one sheep; for 121, two; for 201, three. If the number of

[19] Ibn Qudamah discusses this matter in further detail in al-Mughni (1223[1968], part 2, p. 228).

sheep reaches 301, the zakat is four sheep up to 400; from then on for each extra 100 the zakat is one sheep (Al-karmi (1624[2004]; Maghniyyah 1915).[20]

(ii) Products from the Earth (Crops and Fruit)

The rate of zakat on crops and fruit varies according to the method of irrigation. If irrigated without any expense, such as by rain, river, or springs, then the rate of zakat is 10%. If irrigation requires mechanical means of lifting up the water, such as artesian wells, then the rate falls to 5%. Zakat must be paid on grains and fruit, on condition that they can be measured and stored.[21] Therefore, the scholars are unanimously agreed that zakat is obligatory on wheat, barley, grapes (raisins), and dates (Ibn Qudamah 1223[1968]).[22] However, zakat does not become obligatory unless grains and fruit reach

[20] For the nisab of the other kinds of livestock, see Tables 1 and 2 in appendix.

[21] Because Islam is for all times and places, zakatable grains and fruit are non-perishable; to last for one lunar year.

[22] The basic principle concerning the Muslim is that he adheres to the Qur'an and sunnah according to the understanding of the companions of the prophet (ﷺ) and those who followed them in guidance. Among the leaders of Ahl al-Sunnah wal-Jama'ah (those who adhere to the sunnah and who unite in following it) are *Abu Hanifa, Malik ibn Anas, al-Shafi'i,* and *Ahmad ibn Hanbal*. Their schools of thought within *Fiqh* (knowledge of the practical, minor sharia rulings that are derived from detailed evidence) are *Hanafi, Maliki, Shafi'i, and Hanbali*, named after them, respectively. The differences between them are minor and *not* related to doctrine or creed. Following one of these four schools or any other is not obligatory, and the Muslim does not have to adhere to any one of them in particular. There is nothing wrong with following the four schools if a Muslim does not have sufficient knowledge to enable him to derive rulings from the Qur'an and sunnah himself,

the nisab, which is five wasqs [1 wasq = about 425 pounds].[23] Finally, the passage of one lunar year is not a required condition for paying zakat on agricultural yield; “and pay its due on the day of harvest” (Qur’an 6:141).

(iii) Trade Goods (Merchandise)

The basic principle is that whichever is prepared for sale is that which is subject to zakat and that which is used as a tool in one’s work is not subject to zakat (Ibn Bazz 1999, 183). Therefore, there is no zakat on tools, equipment, machines, and other items unless they are meant for sale. For example, if Jenna is a spice merchant, then the glass bottles she uses are considered tools and exempt from zakat, unless she intends to sell the bottles with their contents, in which case zakat must be paid on the bottle and spice.

The value of the trade goods is worked out at the end of the lunar year,[24] based on the market price (i.e., the price which the trader would get if he or she sold the owned merchandise without being under great pressure). If the value reaches the nisab, then he or she will give zakat. The nisab for trade goods is the equivalent of 595 grams of silver

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but if it becomes clear to him that the correct view is other than that of his school, then he must follow the correct view and not his school (Al-Munajjid 2005 and 2009).

[23] Sahih Muslim online, hadith 979.

[24] Counting begins from the time commercial transactions commence.

and the zakat rate is 2.5%.[25] It is necessary here that the ownership be acquired through the owner's own activity (commercial transactions made for profit); therefore, if acquired through inheritance, there is consensus between scholars that it will not be considered merchandise (Maghniyyah 1915).

Finally, a Muslim does not have to pay zakat on his or her car, house, or shop, even if the value of these things is great. Rather zakat is due on things that are bought and sold for the purpose of trade and profit, which are called "trade goods." If a person has any property or real estate – land, houses, or shops – which he or she has acquired for the purpose of trade, then he or she should work out their value at the time when zakat becomes due and give 2.5%. But if a person has acquired that property to live in, or to farm it, or to buy and sell in it, then no zakat is due on it; sincerity is the key and actions are judged by intentions.[26]

(iv) Al-Athman (Gold, Silver, and Paper Currency)

Zakat al-athman is a payment on the idle wealth. According to Al-Qaradawi (2000, 61), "[i]f money is hoarded and prevented from fulfilling its role in circulation and

[25] https://islamqa.info/en/65515.
[26] https://islamqa.info/en/78607.

production, the hoarder is held responsible for leaving it idle. He is not by that action exempt from zakah, but rather, zakah gives him the signal to utilize his money in growth and useful business, otherwise it will perish."

The nisab of gold is 85 grams and that of silver 595 grams. The nisab of cash is the same as that of gold. The rate of zakat on gold, silver, and cash is 2.5%. However, the majority of scholars are of the view that zakat is not payable on gold and silver jewelry that is intended to be worn and used for adornment by women.[27]

To explain how zakat al-athman is calculated, let's assume that Mary had $10,000 on January 24, 2022. Suppose the market price of 85 grams of 24 carat gold was $5,000 on that day. This means that the nisab was $5,000 and Mary had possessed the nisab as of January 24, 2022. After letting one lunar year pass, Mary will check the market price of 85 grams of 24 carat gold again on January 12, 2023.[28] Suppose the price has slightly increased, but she still possesses the nisab, in that case Mary will give $250 as zakat ($10,000 x 2.5% = $250). If she spent part of the money before the end of the lunar year and the amount dropped below the nisab, she is no longer obliged to give zakat that year.

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[27] It is not permissible for Muslim men to wear anything made of gold.
[28] There is a 12-day difference between the lunar and solar calendars.

Now, let's assume that her original $10,000 grew through halal investment returns to $20,000, in this case she gives $500 ($20,000 x 2.5% = $500).

4. Voluntary Charity vs. Zakat

The free-riding problem in collective action arises when an individual's interest conflicts with society's interest and information is asymmetric. A voluntary charity has two features that can lead to free riding. First, the possibility of private gain as some charity givers can shirk from their moral responsibility and give less, or they can behave strategically to increase their private gain while others are contributing, which leads to imposition of cost on others. The second feature is the hidden or asymmetric information between charity givers.

To illustrate how these two features can lead to free riding, I will analyze the simple, game theoretic version of Iannaccone's model.[29] In his essay, economist Laurence Iannaccone uses rational choice theory[30] to show how strictness in churches

[29] For this simple version of economist Iannaccone's model, see the Appendix section of his *Strict Churches* paper (Iannaccone 1994).
[30] According to rational choice theory, rational agents act out of self-interest to maximize their utility.

mitigates the free-rider problem.[31] Iannaccone uses an example of a heterogenous population which consists of two types of people, the religiously committed type Cs and the relatively uncommitted type Us. Participants can make two decisions: whether to join any given religious group and, contingent on joining, whether to maintain a high or low level of participation (and contribution). Three assumptions are made. First, each person acts rationally by choosing the group and level of personal participation which maximizes their welfare. Second, personal welfare depends on the individual's own decisions and those of others. Third, each individual's welfare rises when the other members of the group increase their participation level.

Iannaccone models the situation with a series of matrices that specify the payoff that people receive from their own actions and from those of others (the specific payoffs are unimportant; only their relative magnitude matters). For simplicity, he assumes that each group consists of just two people and later applies his argument to groups of three and more. The matrices in figures A1-A4[32] depict the situation from a single member's perspective.

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[31] Less committed members might hold back resources of money, time (volunteer hours), and so forth from the group and free ride off those of others.
[32] Iannaccone 1994, Appendix.

	LOW	HIGH
LOW	2 2	1 4
HIGH	4 1	3 3

FIG. A1.–Both actors uncommitted

Figure A1 describes the possible outcomes in a group consisting solely of uncommitted people—type U. The cells of the matrix show the net payoffs accruing to each member contingent on the choices they both make. The number above the diagonal is the net payoff to the member whose choice listed on top, and the number below the diagonal is the payoff to the member whose choice is listed on the side. For example, if both choose low levels of participation, they end up in the top left cell. If both choose high levels of participation, they end up in the bottom right cell, and each earns a payoff of three. When they choose different levels of participation (top right and bottom left), the one with the high level of participation earns a payoff of one (since his or her costly involvement went unmatched), while the one with the low level of participation earns a payoff of four (since he or she did not make a corresponding contribution and instead was tempted to free ride off the other member's high participation).

Temptation for low participation arises because the second member maximizes his or her personal payoff by choosing low level, regardless of the first member's choice. Taken as a whole, the choices yield the classic Prisoner's Dilemma, in which each member is tempted to free ride off the other. As the size of the group, and hence the difficulty of monitoring the other members, increases, the group is likely to end up in the top left cell.

	LOW	HIGH
LOW	4 \ 4	5 \ 3
HIGH	3 \ 5	6 \ 6

FIG. A2.–Both actors committed

On the other hand, the situation is different for more committed, type C, people. As depicted in figure A2, their payoff matrix does not lead to a Prisoner's Dilemma because low level of participation is no longer the dominant strategy. Instead, as long as the first member maintains a high level of participation, the other does best by responding in kind. Hence the group is likely to gravitate toward the bottom right cell, enjoying the benefits of a high-powered group.

The result seen in the above two situations has nothing to do with differing levels of altruism among the two groups—type Us and type Cs. Rather it depends entirely on the different costs and benefits they derive from group participation.

	LOW	HIGH
LOW	4 \ 2	5 \ 1
HIGH	3 \ 4	6 \ 3

FIG. A3.–Mixed: committed actor is along the side; uncommitted actor is at the top

Consider now the problems that arise when different types of people are able to mix. The resulting mixed groups will have payoff structures like those in figure A3. Since everyone prefers to be in groups where the other members maintain high levels of participation, uncommitted members will tend to migrate from their weak groups to strong ones. This migration cannot be prevented unless it is possible to accurately monitor the members' actual level of participation. In other words, this migration is facilitated by the asymmetric or hidden information feature. The payoffs above the diagonal in figure A3 come from figure A1 and the payoffs below the diagonal come from figure A2. So the matrix depicts the decisions of a type U person along the top and the decisions of a type C person along the side.

As in figure A1, we see that type U person has the same unconditional incentive to free ride, but if he or she maintains a low level of participation, the type C person has no incentive to do otherwise. Consequently, the presence of type U people undermines what would otherwise be a strong group of type C people. Faced with this free riding, type C people will find it no longer worth their bother to participate fully (since their contributions are effectively "stolen" by free riders). This situation tends to degenerate until no one is participating fully. The outcome is inefficient because uncommitted members end up no better off (since they earn two either way) whereas committed members end up worse off than before (earning a payoff of four instead of six). Free riding has thus made all groups weak.

	LOW	HIGH
LOW	3 \ 1	4 \ 0
HIGH	2 \ 3	5 \ 2

FIG. A4.–Mixed group with one-unit membership cost

Figure A4 represents a costly solution for the free-rider problem in mixed groups. It shows how seemingly gratuitous costs can mitigate free riding. This cost consists of a uniform one-unit membership penalty to be paid by members, regardless of their

participation level. This means that all payoffs are now one less than in the original mixed group matrix in figure A3. If type U people join this group, they will make it just as weak as any of the other groups they join since low participation is still their dominant strategy. But having done so, uncommitted people will find themselves in the top left cell earning a one-unit payoff (the standard two-unit payoff depicted in A1 or A3 minus the one-unit membership cost). Because this payoff is less than what they earn in a standard weak group, uncommitted people will forsake the costly group, leaving it to the committed ones who now find that they have a viable, albeit costly, strong group, in which all payoffs are just one unit less than those in figure A2 (their standard six-unit payoff minus the one-unit membership cost). Even after the group becomes strong, uncommitted people still have no incentive to rejoin, since their payoff will be less than what they earn in figure A1. This simple, game-theoretic version of Iannaccone's model shows how free riding and its costly solution both arise as consequences of rational self-interest.

One approach to solving the collective action problem of getting people to contribute voluntarily to charity is modifying incentives. For example, a tax deduction might be a motivating factor for many people to be charitable. According to a 2019 report on philanthropy, "[a]n incentive to give will definitely increase giving, no question about

that. For many, it may not be a matter of whether to give, it's how much to give."[33] Although taxes might not be the reason people give, but they do have an impact on the amount, the timing, and sometimes the vehicles donors use to make their gifts (Eisenberg 2019). Another approach is using the force of law. For example, collecting taxes by government to provide financial and social support to people in need. In other cases, social pressures and personal appeals can be used to discourage free riding. For example, raising money for local charities and for endowments of colleges and universities.

Islam, on the other hand, provides a different solution to the collective action problem. Given that Islam is a complete code of life for all mankind, the sharia[34] touches on virtually every aspect of life and society, laying down the governing principles that must be followed by Muslims. The real owner of all wealth in Islam is the Creator; Man only owns wealth by proxy as a guardian and shall give an accounting for it on the Day of Judgement. A Muslim thus has a divine obligation to pay zakat upon the fulfillment of certain conditions. As zakat is not only an obligatory charity but also an obligatory act of

[33] https://www.nextavenue.org/charitable-giving-tax-reform/

[34] In terminology, *sharia* refers to the entire religion (Islam), which the Creator has chosen for His servants to bring them forth thereby from the depths of darkness into the light. It is what He has prescribed for them as halal (permitted) and haram (prohibited), because He is the law-giver, and there is no law-giver besides Him (Al-Munajjid 2021).

worship, it requires one's self-intention to give.[35] In other words, zakat privatizes giving. Therefore, the conflict of interest between the individual and society does not arise.[36] At the same time, there is no asymmetric or hidden information to Allah (ﷻ) about the intention and the act of the zakat giver, which eliminates moral hazard for true Muslims. Zakat thus solves the collective action problem by changing the very framework of giving.

However, since giving zakat is an act of worship while receiving it is not, free riding can arise on the zakat recipients' side then spill over to zakat givers' side by creating distrust if the distribution methods are weak. This occurs during distribution when some Muslims whose faith is weak masquerade as deserving of assistance and line up to receive zakat. This not only leads to free riding on the rights of the deserving poor people, but also leads to a change in the behavior of zakat givers who consequently reduce their contribution fearing a misallocation. So instead of handing all their zakat to

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[35] Like all other acts of worship in Islam, zakat is not valid without intention. The prophet (ﷺ) said, "The rewards (of deeds) are according to the intention, and everybody will get the reward for what he has intended" (Sahih Al-Bukhari online, hadith 5070). Therefore, if a Muslim gives money with the intention that it is *charity*, he cannot change his intention afterwards to *zakat*. He will still have to give zakat.

[36] A Muslim does not give zakat to fill a social need or as an act of service; it is an act of deep personal worship.

the zakat committees to distribute it on their behalf, zakat givers might choose to discharge their obligations in their societies through personal and informal channels.

The spillover effect can be eliminated by different means. The first is by addressing the root cause of the problem, or weak faith. This can be curtailed by inculcating abhorrence to deception in Islam and inculcating values of self-esteem. Second, giving zakat to one's poor relatives instead of complete strangers can assure givers of the needs of the recipient.[37] Third, effects can be eliminated by finding ways to overcome the trust issue, since weak distribution methods can be related to the credibility of the zakat committees. Due diligence is an important part of the zakat committees' duty and is essential in safeguarding the zakat funds; these duties entail carrying out proper evaluations on those individuals who receive the zakat.

In an example of the consequences of a lack of trust, a growing population in Pakistan has been finding ways to avoid the state's deduction of zakat as citizens do not fully trust the zakat committees who have often politicized the use of zakat funds (Latief 2014). This resentment and resistance can be expressed by mass withdrawals from private savings accounts immediately before the announced date of zakat calculation and

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[37] The prophet (ﷺ) said: "Your charity given to a relative is both charity and upholding the ties of kinship" (Sunan an-Nasa'i online, hadith 2582).

transfer on the first day of Ramadan (Candland 2001; Powell 2010, 68). This trust issue in an environment in which religion has been highly politicized has led to the formation of few development organizations that have succeeded in generating cooperation or trust within the community (Candland 2001, 137).

This trust issue has been captured in IRTI's report,[38] "[i]t is interesting to note that while the amount distributed by the Ministry for the whole of Pakistan stood at US $ 105 million in 2011, one private foundation alone, SKMCH&RC[39] collected US $ 13.7 million in zakah and another US $ 9.24 million in donations. One is inclined to conclude that the above is due to a high degree of trust and credibility enjoyed by the hospital in the face of the lack of the same for the government, notwithstanding the fact that the law in Pakistan has made it mandatory on the part of the muzakki [zakat giver] to pay zakah

[38] The Islamic Research and Training Institute (IRTI) was established in 1981 then renamed in 2021 as the Islamic Development Bank Institute (IsDBI). It promotes the development of innovative knowledge-based solutions to support the sustainable economic advancement of the 57 IsDB Member Countries and various Muslim communities worldwide.

[39] Shaukat Khanum Memorial Cancer Hospital and Research Centre was established in 1994 in Lahore, Pakistan, and has come to be recognized as one of the most credible and resilient charities in the country. Zakat has been successfully used as a sustainable source of funding, starting at 46 million PKR in 1994 and increasing to 1,343 million PKR in 2011. The growth in zakat has kept pace with the growth of other donations and income from hospital services (Islamic Social Finance Report 2014).

to the government on certain specific forms of wealth" (Islamic Social Finance Report 2014, 65).[40]

Collective action problems become more frequent and difficult to solve as group size increases (Boyd and Richerson 1988; Olson 1965). The costs of monitoring for free riding increase in larger, dense communities, and conflicts between group members tend to become more frequent (Alberti 2014; Johnson 1982). The following section shows why coordination is not a problem in the zakat system when all collections are decentralized.

5. The Coordination Problem of Collective Action

It has been argued that successful collective action may arise in small and stable groups whose members interact with each other repeatedly which is consistent with the standard economic hypothesis of rationality and self-interest, especially if threats of punishments in future periods are credible (Sethi 2010). The larger the groups, however, the more difficult it is to coordinate expectations and effective communication (Buchanan 1981, 1983; Dixit 2004; Greif 1993, 2002; Zerbe and Anderson 2001). Therefore, non-market activities such as philanthropic enterprises are most effective when limited to local action

[40] See also Sawmar and Mohammed (2021, 149) who argue that the "perceived legitimacy of zakat institutions is critical for encouraging zakat payers' compliance through trust."

where the services can be directly monitored and the reputational collateral of the recipients of aid is clearly on the line (Boettke and Coyne 2008, 85).

Research has also addressed internal moral constraints. Many scholars argue that the role of culture should be evaluated more deeply when explaining countries' economic growth (Landes 1998; Norris and Inglehart 2004), and that economists ought to be vitally concerned about the moral consequences of economic growth (Friedman 2005). Others argue that the evolution of markets and that of morals, culture, and institutions – including religion – need to be studied together (Bowles 1998; Friedman 2008). According to Iyer (2016, 397), an individual's economic environment is likely to influence his beliefs, morals, and religious choices. Furthermore, religion and culture inform economic systems, institutions, and markets. The economic approach thus links the study of markets with the study of religion and culture.

Today, the zakat system helps coordinate expectations and effective communication between approximately 1.9 billion[41] Muslims around the globe when the collection of zakat is decentralized.[42] In spite of a large population, the coordination

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[41] Muslim Population by Country (https://worldpopulationreview.com/country-rankings/muslim-population-by-country).

[42] If all collections are centralized, then there is no coordination problem of collective action in the zakat system.

problem between Muslims disappears because the rates and details of levying zakat are centrally created based on divine revelation. In other words, the Qur'an and hadith provide Muslims with all the needed information on "who, what, when, and how much?" – meaning: who pays the zakat, who receives it, what types of wealth are zakatable, when is it due, and how much is to be paid.[43] This collective knowledge serves as a coordination device between Muslims around the globe. Furthermore, zakat rate is fixed and does not change from year to year and from country to country, this further eliminates the role of updated information or announcements as a coordination device.

6. Conclusion

Conflicting interests can inhibit effective joint action and consequently lead to collective action problems like free riding. The free-rider problem has been used to justify many kinds of government intervention including the subsidization or public provision of healthcare, public policy to stimulate saving and investment, and compulsory transfers of income through the tax system.

Voluntary charity has two features that can lead to free riding: the possibility of private gain and asymmetric information between charity givers. Free riding becomes

[43] These details have been provided in section 3.

progressively more likely as the size of the group, and hence the difficulty of monitoring the others, increases. Moreover, the larger the group, the more difficult it is to coordinate expectations and effective communication between individuals.

There are different approaches to addressing the free-rider problem in charity, such as modifying incentives; using social pressure and personal appeals; and imposing taxes. Islam, on the other hand, solves the matter by changing the very framework of giving. Historical evidence shows that poverty was effectively eliminated, through the zakat system, during the eras of Caliphates Omar bin Al-Khattab (13-22 AH/634-642 AD) and Omar bin Abdul-Aziz (99-101 AH/717-719 AD).[44] When Omar bin Al-Khattab (R.A.)[45] became the second caliph after Abu Baker (R.A.), he appointed Mu'adh ibn Jabal (R.A.) as a governor of Yemen and instructed him to collect the zakat from the rich and render it to the poor in Yemen. In the first year, Mu'adh sent one third of the zakat to Omar, but Omar rejected the zakat funds and instructed him in a letter to deliver it to the poor and needy in Yemen. Mu'adh replied that he will not send any zakat to Omar if he finds the one who has the right to take it away in Yemen. The following year, Mu'adh

[44] Ahmed 2004; Hudayati and Tohirin 2010; Md Isa 2011; Nadzri et al. 2012; Al-Qaradawi 2000.
[45] An abbreviation for Islamic honorifics. It stands for "Radhiya Allahu 'anhu" (May Allah be pleased with him). Muslims use this phrase after the name of the companions of Prophet Muhammad (ﷺ).

sent half of the collected zakat to Omar, and a similar correspondence took place. In the third year, however, Mu'adh sent all the collected zakat to Omar and said, "[t]his year I did not find a single person who needs from me anything of the zakat" (Nadzri et al. 2012, 66; see also Ahmed 2004; Aisyah and Ismail 2019; Ayuba 2016). Consequently, zakat was amassed in Baytul-Mal (Public Treasury) and no one of the Muslims living at that time came to demand for it (Aisyah and Ismail 2019; Ayuba 2016).

Similar scenario occurred during the rule of Omar bin Abdul-Aziz when the governor of Egypt wrote to him asking what to do with the zakat funds as no poor or needy was found in Egypt. Omar instructed him to "[b]uy slaves and let them free, build rest areas on the highways and help young men and women to get married" (Ahmed 2004, 31; see also Al-Qaradawi 2000; Hudayati and Tohirin 2010; Md Isa 2011; Nadzri et al. 2012).

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Appendix A: Zakat on Camels

Appendix Table A

Zakat on Camels

Kind of Livestock	Nisab and range of livestock	Zakat deductible
Camels	Up to 4 camels	No zakat is due unless the owner of the camels wants to give
	5-9	1 sheep is due
	10-14	2 sheep are due
	15-19	3 sheep are due
	20-24	4 sheep are due
	25-35	1 bint makhadh (a she-camel in its second year) is due*
	36-45	1 bint laboon (a she-camel in its third year) is due
	46-60	1 hiqqah (a she-camel in its fourth year) is due
	61-75	1 jadha'ah (a she-camel in its fifth year) is due
	76-90	2 bint laboon (she-camels in their third year) are due
	91-120	2 hiqqah (she-camels in their fourth year) are due
	More than 120	For every forty a bint laboon is due and for every fifty a hiqqah

Source: Sahih Al-Bukhari online, hadith 1454. *If the owner does not own one and cannot buy one from elsewhere; he may give its value instead. Therefore, giving equivalent value of zakat is not permissible unless there is a necessity to dictate that.

Appendix B: Zakat on Cows and Sheep

Appendix Table B

Zakat on Cows and Sheep

Kind of livestock	Nisab and range of livestock	Zakat deductible
Cows*	Less than 30	No zakat is due unless the owner of the cows wants to give
	30	1 tabee’ (male) or tabee’ah (female), which is a bovine that is one year old and has entered its second year
	For every 40	1 musinnah (a two-year-old cow)
Sheep**	Less than 40	No zakat is due unless the owner of the sheep wants to give
	40-120	1 sheep is due
	121-200	2 sheep are due
	201-300	3 sheep are due
	More than 300	For every hundred, one sheep is due

Source: *Sunan Ibn Majah online, hadith 1804. **Sahih Al-Bukhari online, hadith 1454.

Chapter Two

The Zecca Mint: A Self-Enforcing Monetary Constitution in Historic Venice[1]

Monetary history is largely a repeated narrative of currency debasement. Yet historic Venice (1172-1797), ruled by elite patricians, stands out as an example of relative monetary stability. This paper provides a historical case of Venice's Zecca Mint which provided the elite patricians of Venice with a stable currency, playing a role in fostering the economic success of the Republic of Venice. This paper identifies three factors that together formed a self-enforcing monetary constitution to inhibit public currency debasement in historic Venice: (i) the assignment of public debt to patricians, (ii) the nearly uniform trade-centric focus of the patricians, and (iii) the use of turn-taking in office for mintmasters.

1. Introduction

Sound currency is recognized to be one of the key factors necessary for economic growth (Friedman 1960[1992]). Yet, restraining currency debasement is an inveterate problem

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among modern-day central banks (Buchanan and Brennan 1981; Buchanan and Wagner 1977[2000]; Click 1998; Glasner 1989, Ch. 2; Reed and Ghossoub 2012; Reinhart and Rogoff 2009). In fact, the record of modern central banks is lackluster at best. For instance, arguably the most successful central bank in the world, the Federal Reserve, has failed to improve the predictability of the price level or economic volatility (Davis 2004, 2006; Hogan 2015; Miron and Romer 1990; Selgin et al. 2012).

The primary problem with modern central banks is that they are not designed robustly to handle knowledge and incentive problems (Boettke et al. 2021; Hogan et al. 2018). In fact, Nobel laureates F. A. Hayek, Milton Friedman, and James M. Buchanan struggled with the way to best structure central banks to overcome these concerns (Boettke and Smith 2016).

Given the poor record of central banks in providing sound currency, some scholars have turned to exploring historic banking institutions which operated via private self-enforcing mechanisms, such as private clearinghouse arrangements (Calomiris and Kahn 1996; Selgin and White 1987; Timberlake 1984; White 1984), private mints (Selgin 2008; White 2020), forming clubs (Nair 2016), and free banking (Briones and Rockoff 2005; Dowd 1989, 1991, 1992, 1994; Selgin 1988). By and large, this literature examines how private banks, outside the direct control of government, provided a sound currency.

This paper contributes to this literature using a unique historic example of a government mint adopting self-enforcing governance mechanisms. It was an even bigger struggle to achieve in early manifestations of modern central banks; government mints (Burns 2013).

This paper provides a historical case study of one of the most successful early government mints, the Zecca Mint of historic Venice. The Zecca, which was located in the governmental heart of Venice, played a key role in the life and wealth of the republic. Its geographical position across Piazza San Marco from the doge's palace was indicative of the importance of the mint to the life of the Venetian state, a trade-dependent economy that was supported by the coinage and the revenues that the Zecca brought in (Stahl 2011).

The Zecca Mint held great importance and was among the biggest and most influential mints in all Europe. This was especially true in the 13th century when the grosso (the Venetian silver coin) dominated the trade of the Mediterranean world, and in the 14th century when the ducat (the Venetian gold coin) became dominant (De Lara 2002). The ducat, also known as the zecchino (from the word zecca), circulated widely in trade throughout the Muslim world for centuries (Markowitz 2015). As Lane and Mueller (1985: 90-91) write, "[t]he Rialto attracted foreign coins as well as foreign merchants […]. Venice was distinctive as a bullion market. Florence and Genoa are more famous as

the homes of international banking houses, but neither approached the position that Venice attained as a center through which silver and gold were imported and exported."

Understanding the unique monetary institutions of historic Venice is important for two reasons. First, it helps us better understand the success and longevity of the Republic of Venice (Ching et al. 2011; De Lara 2008; Ferraro 2012; Horodowich 2009; Lane 1973; Madden 2012; Strathern 2013) as its sound money was likely one factor contributing to its success. In this way, this paper contributes to the growing literature on the political economy of Venice, including its use of formal term limits (Fink 1945; Grendler 1990; Lane 1973; Queller 1986), informal term limits (Bouwsma 1968; Coggins and Perali 1998; Finlay 1980; Smith et al. 2020), and turn-taking in office (Smith 2020).

The republic of Venice became well-known for having a stable currency and a financial environment that enabled international currency exchange (Horodowich 2009: 54-57; Mueller 1997). In fact, some of the first deposit banks in the world were established in Venice (Madden 2012: 265). This financial stability is considered an important factor in the economic success of Venice (Robbert 1974: 49).

The second reason is that examples of historic success could inform modern discussions of the political economy of central banks. While the important differences between modern central banks and historic government mints must be appreciated, there

are still lessons that could be potentially applicable to modern debates on binding central bankers (Boettke et al. 2021; Salter 2014).

Most notably, the Venetian framework of accounting for the knowledge and incentive problems of policymakers and mintmasters in the design of their monetary institutions provides an under-appreciated insight in the modern central banking literature. By accounting for the epistemic and motivational shortcomings, the Venetian patricians designed a system that was relatively robust to deviations from idealized conditions. This reflects an incredibly advanced understanding of robust political economy (Boettke and Leeson 2004; Levy 1981; Pennington 2011) for that time.

The remainder of the paper proceeds as follows. Section 2 provides a brief history of early European mints. Section 3 briefly explains the reasons that led to currency reforms in Venice. Section 4 examines the operable constitutional constraints on Venetian policymakers and mintmasters. Section 5 concludes the paper.

2. Early European Mints

In the early Roman Empire, minting was an imperial prerogative (Bond 2017: 234). Minting was taken over by private goldsmiths and silversmiths following the collapse of the Western Roman Empire; there was a rapid decline in the quality of coinage. This decline was briefly interrupted in the late eighth century with Charlemagne's currency

reform, but soon after, the local magnates were to gain control over the mints. As royal power was once again reasserted, kings in England and France sought to reestablish central control over minting.

In Italy and Germany, however, the control over coinage remained in the hands of princes, temporal and ecclesiastical, and cities (Kohn 1999: 24). Mints were often granted an exclusive right to operate by a regional prince. In exchange for the local monopoly, the prince exercised the right to control the mint's policies, including the price it paid for bullion, the quality of its coinage, and the fees it was able to charge (Kohn 1999: 13-14). Given the complex principal agent problems and the potential for abuse, princes often appointed wardens to monitor the activities of the mint (Kohn 1999). In some cases, the merchant community appointed inspectors (Kohn 1999). In general, a prince was constrained because setting a higher seignorage fee than rival mints meant losing merchants who would take their metal somewhere else, and that stemmed or sometimes even blocked altogether the stream of precious metal to his mints (Munro 2012: 7-8).

With the growing monetization of the feudal economy, princes stopped this practice and started to auction off the office of mintmaster to the highest bidder who in turn promised to pay a fixed amount beforehand based on the weight of the metal he anticipated to coin over the life of his contract; the period varied substantially from one

region to another (Kohn 1999). Since the mintmaster was expected to provide the working capital, he was drawn from among the extremely wealthy, and this practice became universal by the fifteenth century.

However, not all mints in Europe were set up in this manner (Lane and Mueller 1985). For example, the Zecca[2] Mint of Venice was directly operated by the local government. The potential for abuse, however, remained, and controls were continuously developed to prevent opportunism (Lane 1973: 317-18). The earliest evidence of the existence of the Zecca comes from a document indicating that the doge of Venice, acting on behalf of the commune, had sold the mint land in 1112 to an individual for £2,000. The document, however, does not indicate how long the mint had operated in that location or what was to happen to minting once the public land was sold. The next documentation for the location of the Venetian mint would not be until the thirteenth century (Stahl 2000a: 8), by which time the Zecca employed more than a hundred craftsmen in one central workshop in the San Marco area to issue standardized coins (Lane 1973: 161).

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[2] The term *Zecca* comes from the Arabic word *Sikka* which means “coin die”.

3. **Medieval Coinage and the Need for New Stable Coins**

Medieval coins were handmade at all stages, from the "casting and carving of the die to the shaping of individual pieces of metal for striking" (Naismith 2018: 3). Coins from Western Europe, Byzantium, and various Muslim states mingled in the Mediterranean (Naismith 2018: 6).

Venice's monetary history started like that of most European minters, with a single coin, the *denaro* or silver penny (Stahl 2000a: 3). The *denaro* (800-1200) was modeled on the silver penny of Verona, with a weight of less than half a gram and fineness of about 25 percent, and soon had become the preferred currency for domestic transactions (Stahl 2000a). For high-value trade, however, people turned to contemporary Byzantine or Muslim gold currency, of higher value and more reliable and stable (Naismith 2018: 24).

Periodic debasements were typical of most European coinages in the central Middle Ages. The pressure of incessant warfare made recourse to debasement a frequent necessity.[3] Currency debasement refers to the reduction of the precious metal content of

[3] Although warfare made debasement likely, it was less frequent in Italian city states compared to principalities. Princes debased in the absence of exceptional needs while mercantile influence on monetary policies favoured relative stability (Chilosi and Volckart 2010).

coins using several methods. For instance, a government can decrease the weight of coins by issuing smaller ones, or can add more copper in the alloy which decreases fineness, or can simply raise the face value of the coins. Cipolla (1963: 414-15) analyzes the cases of debasement in the Middle Ages and lists seven broad causes which lead to debasement. His list includes the growth in money demand over the long run which results from growth in population and/or income, the state's growing expenditure and deficit, the inflationary pressure of special-interest groups, imbalance in the balance of payments, the maladministration of the mints, the high percentage of worn coins in circulation, and the vacillations in rates of exchange between silver and gold. However, he notes that societies tend to choose the easy way out to their problems, which is usually debasement of their currency instead of other alternatives. Eroding debt obligations through inflation is an inveterate problem in political economy, and a problem of nearly every government from ancient times through today. "The honour of a state is surely very poorly provided for," Adam Smith wrote in 1776 (624), "when in order to cover the disgrace of real bankruptcy, it has recourse to a juggling trick of this kind."[4]

Among the most important problems that faced the Venetian currency in the late twelfth century was the debasement of the Veronese penny and change of its design. The

[4] See also Beaulier and Boettke 2009; Boaz 2011.

Venetian *denaro* was struck based on its Veronese counterpart, and therefore, debasement separated the two currencies and upset this practice (Madden 2003: 109-10). Another problem was the debasement of the Byzantine coins on which most Venice's trade was based, especially the hyperpyron and electrum aspron trachy (Stahl 2000a: 28). Adding to that the threat by new coins of high value in Italy, Germany, and England, like the British sterling first issued in 1180 (Madden 2003: 109-10).

Monetary deterioration can be a major impediment to the expansion of long-distance commerce. Crucial to the expansion of Venetian trade along the Mediterranean and beyond was a stable currency.[5] These reasons suggest that the environment was ripe for a rise of new stable coins. Records show that major currency reforms took place right after the election of Doge Dandolo in 1192. Dandolo and his council first discontinued the production of the silver penny and replaced it with two novel base coins: the bianco (half-penny) and the quartarolo (quarter-penny). Both coins were viable domestically, but neither of them could solve the problem of devalued trade currencies (Madden 2003: 109-10). To solve this issue, the grosso was minted as a replacement for Byzantine coins and had 98.5 percent silver, which made it the highest valued coin with the purest silver

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[5] For Venetian patterns of trade and trading routes, see De Lara 2007; Lane 1973: 68-73; Lopez 1976: 95, 1982: 314, 389, 393; Luzzatto 1952: 90-3.

content minted in Western Europe in more than five centuries (Madden 2003: 110). Robbert (1974: 49) points out that the grosso's value exceeded that of all other Italian silver coins in circulation at the time 24-fold, and it preserved the same weight and fineness for more than a hundred years, which made it the perfect fit for merchants' needs (Pirenne 1937: 115). By these currency reforms, Dandolo and his council made their mark on international currency for years to come (Madden 2003: 110). Later on, Venice introduced its ducat[6] which gained wide international acceptance and was one of the most trusted currencies around the world, especially in the Mediterranean region, due to its stability.[7] The ducat maintained its status for centuries and continued to be used until the end of the Venetian republic in 1797 (Barzun 2000: 172; Horodowich 2009: 57; Markowitz 2015).

4. The Zecca Mint and Robust Political Economy

The historical record shows that the Zecca Mint successfully provided sound money to local and international traders. This section argues that the success of the Zecca Mint was due to three factors: (i) it gave residual claimancy over fiscal and monetary policy to

[6] The Council of Forty approved the issue of the ducat on 31 October 1284 while its minting began in March 1285 (Stahl 2000a: 30-32).
[7] By 1400, Venetian coinage circulated from London to Yemen (Robbert 1983).

those most likely to be affected by them through the assignment of public debt to patricians; the ruling elites, (ii) it served the interests of the patricians who strongly preferred and were constantly demanding a stable currency due to their nearly uniform trade-centric focus, and (iii) it implemented operable constitutional constraints on mintmasters, using turn-taking in office, to make sure they could not exploit the powers granted to them.

(i) The assignment of public debt to patricians

Governments in general can use both monetary and fiscal policies to regulate economic activity. Goodhart et al. (2021: 5) define monetary policy as “the corresponding government issuing policy; the government produces outside money, whatever may be the capacity of the private sector to produce inside money.” This definition is centered on the link between political sovereignty and money creation either through mint or central bank (Goodhart 1998). Central banking on the other hand can be defined as a “device to implement at least one of a family of public policies aimed at fostering fiscal goals…and /or monetary financial goals” (Goodhart et al. 2021: 6). While monetary policy involves management of money supply, fiscal policy involves changes in the overall level of taxation and/or the overall government spending.

In the relevant historical context, there was really no concept of 'monetary policy' as such. Therefore, monetary policy in that period meant mint policy, and control over the coinage primarily meant the right to collect seigniorage (Kohn 1999).

In Venice, there was no divorce between the incentives of public finance and monied classes. During wartime, the conflicting needs of public finance and commerce were often reconciled by relying on debt instead of debasement. Dotson (2002: 225) writes,

> "[b]ecause of the universal aversion of the monied classes to direct taxes, medieval and Renaissance governments-including Venice-preferred indirect taxes on necessities such as salt and wine. When those proved insufficient to meet emergencies, usually the expenses of war, they turned to the wealthy for loans. At first these were voluntary and continued to be so in the cities that were ruled by princes. But in the republics of Florence, Genoa, and Venice voluntary loans were replaced by forced loans."

By 1207, Venice had adopted the *prestiti*, a system of forced loans,[8] which had become the hallmark of public finance in the Italian republics (Mueller 1997: 459).[9] Forced loans

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[8] According to Munro (2003: 516), "virtually everybody agreed that forced loans were a necessary obligation imposed on all citizens, in defending their state, and because volition was at the very core of the usury doctrine, many theologians and jurists justified the payment and receipt of interest with some version of damnum emergens or interes." Damnum emergens is "a compensation for damages or loss that the lender incurred after having made the loan: for example, from not having the money accessible in an emergency-a fire or storm that destroyed his barns or livestock" (Munro 2003: 511).

[9] Jones (1997: 398) states that the first Italian evidence that he has found for a forced loan was at Pisa, in 1162.

were levied according to the citizen's ability to pay based on the value of his property and assets recorded in the census registers; communal *estimo* (Munro 2003: 515). The *prestiti* thus was a structural way of linking wealthy merchants with public finances (Pezzolo 2003). Such a system rendered payments to the government palatable to the wealthy and politically powerful classes (Dotson 2002: 225). The interest payments were financed by an increased tax on salt and other indirect taxes (Munro 2003: 515). Public debt constituted a good portion of merchants' wealth. For example, in 1281 the prosperous merchant Lazzaro Mercadante held 13 percent of his wealth in public debt (De Lara 2008: 254).

(ii) The nearly uniform trade-centric focus of the patricians

Venice was a merchant republic wherein power was concentrated in the hands of families designated as noble. The pressures determining policy in Venice thus had a different pattern because devaluing the currency was less likely to be popular or helpful since the members of the ruling class were interested in the effects of particular monetary measures on the profits of their commercial ventures abroad (Lane and Mueller 1985: 91).[10] The Venetian patricians not only dominated the commercial sphere, but also held land within

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[10] The merchant class outside the Italian city states generally lacked political power and had little say in monetary policy.

Venice and on the mainland. This nexus of political power, trade and landholding is demonstrated by the example of Doge Ranieri Zeno, who at the time of his death in 1268 held 20 percent of his wealth in real estate (De Lara 2008: 254).

(iii) The use of turn-taking in office for mintmasters

Turn-taking within the same mint was the first check on mintmasters. Under such a system, two or more elected members serve a term for the same position, with the public office rotating exclusively among them, at intervals shorter than the term (Durant 2011; Durant and Weintraub 2014; Durant et al. 2018; Smith 2020: 3). The mintmaster position in Venice was restricted to nobles (Lane and Mueller 1985: 95; Stahl 2000b). The gold and silver mintmasters were elected to one-or two-year terms (Lane and Mueller 1985; Kohn 1999: 13). They held exclusive minting authority, rotated among themselves, depending on the time period examined, at two-week to two-month intervals (Smith 2020: 3).

Gold and silver were probably minted in separate rooms within the same complex across the doge's palace (Stahl 2000a). The earliest surviving capitulary (manual) for the silver mintmasters dates from 1278, shortly before the introduction of the ducat. It indicates that the silver mint was under the joint direction of three mint masters who were

almost all members of the hereditary nobility and were elected on a yearly basis (Stahl 2011, 351). The mintmasters of gold had their own capitulary, documented from 1285. These provisions specify a single weigher and two mintmasters (see Stahl 2000a for details).

The merchant republic succeeded in maintaining relatively strong currency for centuries by designing effective constraints on both the policymakers and mintmasters. Sections 4.1 and 4.2 detail the mechanisms that the patricians of Venice evolved to supervise the Venetian bullion market.

4.1 Constraining elites

Venice was a republic governed by the elite patricians of the Great Council. Established in 1172, the Great Council was composed primarily of the wealthy merchants of Venice (Hazlitt 1966: 216; Lane 1973: 20, 89-90; Lopez 1971: 67-68, 70; Puga and Trefler 2014; Ruggiero 1980: 4).[11] This is unsurprising given that the city's economy relied largely on

[11] Major institutional reforms strengthened the system of checks and balances under Doge Sebastiano Ziani, in 1172 and 1173. For instance, the number of ducal counsellors was increased from two to six. Also, to ensure that the doge would not be able to choose his own successor, the Great Council was charged with naming a committee of 11 whose task was to elect the new doge (Coggins and Perali 1998).

international trade (De Lara 2007; Lane 1973: 68-73; Lopez 1976: 95, 1982: 314, 389, 393; Luzzatto 1952: 90-93).

While throughout most of the 13th century, the Great Council dealt directly with any issues concerning bullion, the responsibility for bullion gradually became the domain of a smaller governing council, the Council of Forty, that was elected by, and drew their power from, the Great Council (Coggins and Perali 1998: 712; Stahl 2000a: 105). Day-to-day responsibility of the mints fell to elected officials, including mintmasters, weighers, and gold estimators, primarily from patrician families and members of the Great Council (Day Jr. 2003; Stahl 2000a, b).

Although mints were often a source of government revenue in the Middle Ages,[12] seigniorage was not a significant source of state financing in Venice. For instance, in 1343 the value of minted ducats reached £1,800,000 and seigniorage on maximum was £7,000 while the debt of the republic mounted to £1,348,000.[13]

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[12] From the fourteenth century, aggressive debasement became increasingly common. Kohn (1999: 17) writes, "[u]sually, it was the exigencies of war that precipitated a sequence of major debasement. For example, from 1542 to 1551, England's Henry VIII ordered some ten debasements, each of 30-40%. In all, Henry's 'Great Debasement' reduced the silver content of the pound sterling from 6.4 troy ounces so less than one troy ounce. The seigniorage rate, 2% before the debasement, rose to 57%, and, at its peak seigniorage accounted for 25% of crown revenue." Similarly, "in 1349, Philip VI of France derived 70% of his total revenue from seigniorage" (Kohn 1999:17).

[13] Table 8.5, Minting Profits and State Finances (Stahl 2000a: 200).

Venetians primarily focused on foreign trade, mostly in oriental luxuries.[14] They profited from being middlemen in the transit between Europe and the East (De Lara 2008: 263; Lane 1973: 58-63), and thus preferred and constantly demanded a stable currency. Finally, Venice was a key exporter of international currency until Antwerp became the new center of the European bullion trade in the 16th century. Being well known for high quality made the Venetian coins the prime means of payment in the Levant [the lands east of Venice], and made it possible for Venetian silver and gold coins to circulate widely in Italy and the remainder of Europe (Kohn 1999: 29).

The monetary constitution in Venice was self-enforcing and operated successfully because the elites had the incentive to monitor and preserve a stable currency.[15] Their monetary constitution did not require external enforcement because it had rules that agents acting within the system often upheld even in "the presence of deviations from ideal knowledge and complete benevolence" (Salter 2014: 280).

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[14] Venice was not a merchant-manufacturer city like most its Italian counterparts. Therefore, Venetians did not benefit from the effect of debasement on real wages. In Florence for instance, merchant-manufactures were not entirely averse to debasement of silver currency. A Florentine statute prohibited the fixing of wages in gold, and therefore, the merchant oligarchy possibly supported debasement as a way of lowering real wages (Kohn 1999, 29).
[15] According to Leeson (2011: 306), "constitutions are unlikely to be effective when the individuals charged with executing them have little incentive to do so."

4.2 Constraining mintmasters

The position of the mintmaster was full-time, with mintmasters expected to be at the mint every working day to acquire bullion, supervise its coining, and distribute the finished pieces. In return, those elected officials expected to receive an annual pay, income from fines levied on misbehaving mint workers, and eventually a payment based on the amount of currency produced (Stahl 2011: 351).

Mintmasters were considered the most substantial threat to the stable and authorized operation of the mint. Therefore, strict rules were imposed on them to make sure they could not exploit the powers granted to them. The prime mechanism used to supervise the bullion market was not different from that used to supervise other aspects of the economy. Lane and Mueller (1985: 99) write,

> "[i]t was common practice to encourage several different offices to be active in punishing offenders by offering monetary reward to those officials who condemned the offender. A widely applied general practice awarded a third of the fine collected to the accusor, a third to the agency condemning the offender, and a third to the Communal treasury. A decree of 1338 restricting the sale of silver named twelve different magistracies as enforcement agencies eligible to receive a third of the fines they inflicted, including not only several specialized agencies for the Rialto market but also local police authorities."

Throughout Venetian history, multiple cases of fraud or negligence at the mint suggest this was a perpetual problem. Punishments ranged from removal of office to restitution, jail, or even the amputation of limbs (Stahl 2000a: 39-40). One of the primary

mechanisms used to ensure the honesty of the mintmaster was the use of pledges. To become a mintmaster, one had to post pledges of collateral (such as state bonds), or, in the vast majority of cases, have members of the Great Council, who controlled substantial financial wealth, serve as a pledge (Stahl 2000a: 271). Pledges could also be held accountable in ecclesiastical courts (Gilbert 1991).

Given the stringent requirements, the salary of the mintmaster had to be raised on multiple occasions to find suitable candidates with qualified pledges (Stahl 2000a: 80). Typically, nominators were members of the Great Council and/or the Doge's Council (Stahl 2000a: 263). Mintmasters were prevented from having business interests that might compromise the integrity of their position (Stahl 2000a: 246), and they were required to maintain ledgers and records that were frequently audited and preserved for many years (Stahl 2000a: 260).

Furthermore, mintmasters were elected to administer and monitor coinage and came from different noble families (Stahl 2000a: 274). The three mintmasters charged with coining the grossi served in rotating fortnights for one-year terms (that were renewable), with ample provisions for oversight of each master by his colleagues (Stahl 2000a: 25). For example, the second mintmaster was the one responsible for taking the newly purchased bullion to be smelted, then putting what was left (if any) in a "vault to

which he alone had the only key…He and the third master were responsible for the by-products of minting which were to be sold and for safeguarding the funds that were kept in the mint" (Stahl 2000a: 257). Mint weighers were separately elected to check the quality of each coin produced (Stahl 2000a: 26). Scribes were appointed by the governing council to monitor and record the activities of the mints as well (Stahl 2000a: 252). One feature that distinguished the Venetian grosso (plural of grossi) was their relative uniformity. The mintmaster hired weight adjusters (sizers) to check the weight and correct any weight differences before striking the blanks. This additional advantage was not present in the bullion markets of Florence and Genoa. Such quality made it possible to use the grossi for smaller payments because the coins could be counted instead of weighed as often used to be in international trade (Lane and Mueller 1985: 166-67).

The responsibilities of mintmasters were basically to ensure the mint followed the Venetian state coinage standards and to provide revenue to the state which was derived from minting, thus strict regulations were imposed on mintmasters and officials. Those regulations even included compensation, given to the person who reported the illicit activity, from fines for misconduct (Stahl 2000a: 127). The most common violation among mintmasters was embezzlement or "putting one's hand in the purse of the

commune," and there were twenty cases in which mintmasters were charged with embezzlement in the course of the later Middle Ages (Rider 2010: 173).

The thought and care that went into even the design of the mint to minimize abuse became apparent after the mint was rebuilt following a 1532 fire (Howard 1975). The new mint was bigger and better organized. Lane (1973: 318) writes,

> "[t]he new mint built in 1540 excited admiration by the orderly way in which it provided for the variety of different craftsmen employed and for a convenient, well-controlled movement of the precious material from one workman to another, from one inspector to another. Accurate accounting was of course most important at this great depository of bullion and coin, and its accountants calculated the costs and the gains to the government in minting each kind of coin. They itemized costs of each kind of labor and materials, including such small items as charcoal, but did not allow for overhead" (Lane 1973: 318).

Additionally, contracts with officials were written in a way that encouraged propriety and independence (Dowd 1994: 304). Oftentimes, mintmasters were required to place a mark on each coin they produced so that any quality deviations could be traced back to the responsible mintmaster (Naismith 2018; Stahl 2000a: 251). As Lane and Mueller (1985: 232) write,

> "[i]n both the silver mint and the gold mint special provisions were made to pin responsibility on the managing mint master. From an early date, silver grossi had small dots which were differently placed on the dies used by different mintmasters. A pair of dies might strike about 10,000 coins, and each managing mintmaster turned over to his successor the reverse of dies which he had been keeping under lock and key. There was no need then of making all new dies, for it was relatively easy to change the privy marks so as to show which coins had been

> struck under which mintmaster. There were no such privy mint marks on gold ducats. Instead samples of all the gold ducats made during a mintmaster's tenure were kept until his term was ended and were then recast so that they could be reassayed before his account was cleared."

The mintmaster also had to deliver a specified amount of seigniorage revenue to the government or make up the shortfall out of his own money (Stahl 2000a: 54, 251). Because of this, one writer with mint experience advised mintmasters to "know how to do all the operations of the mint himself and, if possible, have a hundred hands and hundred eyes and be everywhere at once to guard against the negligence or malfeasance of the mintworkers" (Stahl 2000a: 251).

In 1268, Venetian officials at home and abroad received instructions from the Venetian state to cut in half any grossi that were clipped. Then in 1278, mintmasters had to swear to report counterfeiting and clipping incidents within or outside their mints. Also, they had to destroy any clipped grossi they received, and to exchange the clipped or counterfeited coins for new ones with Venetians trading abroad (Stahl 2000a: 230).

Later in 1328, the state passed an act that ducats were to be circulated in officially sealed bags, these bags continued to be circulated throughout the Middle Ages. This

mechanism proved to be effective against counterfeiting and clipping,[16] and over the course of two years, charges were brought against only 18 people for clipping grossi, and they were all prosecuted.

An example of one of the cases brought to court was that of Filipo Venier in 1349. Venier-the mintmaster for silver for at least six years-was cited for embezzlement after forcing a new scribe to falsify accounts. He was fined 200 lire and banned from holding office for five years (Stahl 2000a: 270). Another example is Morosini and da Canal in 1416. The public prosecutor charged them with "systematically alloying silver below the mandated standards and stamping ingots and coins of inferior fineness and weight," so the Senate's decision was to have them bear the cost of refining the inferior silver and to fine each of them 100 lire. Both men were banned from mint-related offices (Rider 2010: 177-78).

5. Conclusion

The provision of currency is often one of the functions of the state that is most difficult to constrain (Bordo and Schwartz 1987; Dornbush 2000; McKinnon 2010; Reed and

[16] While culling (systematic removal of heavier coins from circulation), clipping and counterfeiting were serious problems the Venetian mint faced, private currency debasement and the measures taken to inhibit them fall beyond the scope of this present paper.

Ghossoub 2012). It does us little good to assume independence, benevolence, and omniscience on the part of public policy decision makers since states are inclined to pursue their rational self-interest and compete for seigniorage.

Venetian politics were dominated by a powerful merchant class who understood the impact of debasement on their own mercantile profits. Lane and Mueller (1985: 91) note that,

> "..the members of the upper class who served on the councils were probably those most concerned with that aspect of their class interests. But the class to which they belonged-many of them individually and through their close relatives-was interested in monetary policy not only as an indirect way of advancing the fortunes of its members by increasing the power of their Republic. It was interested also in the effects of particular monetary measures on the profits of their commercial ventures . . . They might for example, gain or lose if a new kind of coin raised or lowered the prices they had to pay for cotton or spices in Syria."

Moreover, the fact that Venetian coins were circulating internationally made aggressive debasement costly, and thus, the ruling councils "were all in a position to see that debasement or devaluation or the raising of the seigniorage on a particular coinage might in the long run do less to increase the government's revenue than would the maintenance of Venice's reputation as an international trade center, a "world market"" (Lane and Mueller 1985: 92).[17] Stahl (2007: 196) writes,

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[17] See also Glassman and Redish (1988: 8) for more on the impact of competition on seigniorage fee.

> “[t]his progressive debasement, averaging around 3 per cent per decade, would have had the effect of favoring debtors and harming creditors for customary payments expressed in terms of the Venetian pound of 240 of its pennies. If the creditors were nobles who wished to exchange their local monetary receipts for foreign coins for trade, the debasements would have put them at a continued disadvantage.”

The history of the Mediterranean world shows that Venetian coinage effectively linked the Islamic centers of the world and Latin Europe. Venice’s record in issuing and maintaining a fairly stable currency demonstrates effective constitutional constraints on those in power. The merchant republic succeeded in maintaining strong currency by designing robust constitutional constraints.

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Chapter Three

Breaking Bad: Public Pensions and the Loss of that Old-Time Fiscal Religion[1]

Despite the widespread adoption and strict enforcement of balanced budget requirements, U.S. state and local governments have accumulated trillions in unfunded pension liabilities. While many casual factors for this growth in unfunded liabilities, including liberal discount rates and inadequate funding policy, have been identified, the broader role of public choice explanations is contested in the literature. This paper contributes to this literature by offering a previously overlooked public choice explanation; the undermining of the "old-time fiscal religion." According to this theory, balanced budgets provide taxpayer constraint on government spending by signaling a taxpayer willingness to pay assessment of government expenditures. Public choice scholars used this theory to explain the growth in federal deficit spending after Keynesian economics overturned the

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historic tradition of maintaining balanced budgets. Similarly, defined benefit public pensions, which allowed policymakers to make retirement promises to current employees without adequately funding these obligations, enabled policymakers to circumvent traditional balanced budget requirements, thereby undermining taxpayer constraint. Transitioning public pensions to defined contribution retirement accounts would help restore this taxpayer constraint.

1. Introduction

Despite maintaining strict balanced-budget requirements, U.S. state and local governments have accumulated trillions in unfunded pension liabilities (National Conference of State Legislatures 2010).[2] These unfunded liabilities represent a growing economic and budgetary concern for many state and local governments (Brown and Wilcox 2009; Kiewiet and McCubbins 2013; Ricketts and Walker 2012; U.S. State Budgets 2012). Although the extent of these unfunded liabilities varies according to

[2] Forty-nine states have a balanced-budget requirement in their statutes or constitution, and up until 1990 these requirements fairly effectively restrained deficits except for during recessions (U.S. Council of Economic Advisors 2016, 63). Outstanding state debt stood at $1.15 billion compared to a national debt of $19–20 trillion in 2017 (Census.gov 2017; FRED 2019; see also Eucalitto 2014).

assumptions, estimates generally range between $3 and $5.2 trillion (Biggs 2016; Foltin et al. 2017, 2018; Thornburg, Komissarov, and Rosacker 2017; Norcross and Gonzalez 2018). Using the latest available data from 2017 and a discount rate of 3 percent, the Stanford Institute for Economic Policy Research estimates these state and local pension liabilities to be $5.176 trillion.[3]

Many distal factors —such as liberal discount rates (Waring 2012; Gold and Latter 2009; Naughton, Petacchi, and Weber 2015), unsound investment policy (Ryan and Fabozzi 2002; Lucas and Zeldes 2009; Stalebrink 2014), accounting and disclosure policies (Marks, Raman, and Wilson 1988; Vermeer, Styles, and Patton 2012; Davidyan and Waymire 2018), and inadequate funding leading up the financial crisis (Munnell, Aubry, and Quinby 2011) —have been identified as casual explanations for this growth in unfunded pension liabilities.

More proximate factors, however, such as public-choice explanations, have been contested in the literature (Marks, Raman, and Wilson 1988). Public-choice theory makes symmetric behavioral assumptions across government and economic actors, assuming that both pursue their self-interest, broadly considered, and respond to the institutional

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[3] The Stanford Institute figures are available at http://us.pensiontracker.org/index.php. For a slightly dated, but more detailed estimates, see Novy-Marx and Rauh 2009. See also Rauh 2017.

incentives they face. In other words, once elected or appointed, policy makers do not suddenly switch from operating in a self-interested fashion in the market to operating in the public interest in government. More broadly, public choice examines government procedures and outcomes through the lens of economics. Whereas Olivia Mitchell and Robert Smith (1994), Cynthia Sneed and John Sneed (1997), Dashle Kelley (2014), and Steven Thornburg, Sergey Komissarov, and Kirsten Rosacker (2017) find evidence supporting public-choice explanations, including the median voter and special-interest-group models, Marguerite Schneider and Fariborz Damanpour (2002) find limited support for public-choice explanations.

This paper contributes to this literature by providing a previously overlooked public-choice explanation for the growth of unfunded public-pension liabilities: the undermining of the old-time fiscal religion. According to this theory, taxpayer willingness to pay or not pay taxes plays an important, albeit imperfect, role in signaling taxpayer assessment of government expenditures. This taxpayer calculus provides a check on government spending because taxpayers, bearing the full burden of current government expenditures, have more incentive to closely monitor and restrain the growth of government expenditures. The signal is most effective when governments maintain

balanced budgets—that is, follow the “old-time fiscal religion” —because this ensures that spending and taxes are contained to the current generation.

The intergenerational transfer of spending and taxes undermines taxpayer constraint on the growth of government because future taxpayers are incapable of providing an assessment of that growth and because current taxpayers have a reduced incentive to monitor spending promises (and the taxes required to support them) because they will fall on future generations (Kotlikoff and Burns 2012). Importantly, once the old-time fiscal religion is discarded and taxpayers have less incentive to monitor expenses, government actors are better able to minimize resistance to the promises of increased retirement to public employees made through the use of inappropriate actuarial techniques that generate the fiscal illusion that these promises are funded (Buchanan 1999a, chap. 10). Fiscal illusion, by making it difficult for taxpayers to accurately assess the projected costs of the increase in retirement benefits, can enable policy makers to deliver benefits to public employees, a concentrated and often well-organized special-interest group, at the expense of future taxpayers.

Public-choice theorists first used the old-time fiscal-religion theory to explain the substantial growth in deficit spending at the federal level following the Keynesian revolution. By removing the balanced-budget tradition, Keynesian economics helped

undermine taxpayer constraint on the growth of government (Buchanan and Wagner 2000). Removing this constraint thereby permitted policy makers to utilize fiscal illusion more effectively, often in the form of hidden taxes or public debt, to maximize their spending (Buchanan 1999a, chap. 10).

This paper argues that the broad use of the defined-benefit model in public-pension plans has, like the rise of deficit spending under Keynesianism, undermined the old-time fiscal religion at the state and local level and, in combination with fiscal illusion and the argument that public pensions contribute to stimulating state and local economic growth, has led to substantial growth in unfunded pension liabilities. By enabling policy makers to push the costs of promises made to current employees onto future generations, defined-benefit public pensions have undermined taxpayer constraint. Thus, this paper complements the existing literature by providing an additional and overlooked public-choice explanation for the accumulation of unfunded pension liabilities.

Controlling the growth of unfunded pension liabilities would require restoring taxpayer constraint (Giertz and Papke 2007). One potential way to restore taxpayer constraint would be to transition new public employees to defined-contribution retirement plans. Defined-contribution retirement plans, by requiring upfront funding, would help prevent the intergenerational transfer of spending and taxation. Many states have taken

steps toward reforming their pension systems either by lessening benefit generosity, tightening up their retirement provisions, or replacing their defined-benefit plans with either a hybrid defined-benefit/defined-contribution plan[4] or a pure defined-contribution plan as a solution to the large funding shortfall in pensions (Snell 2012; Ali and Frank 2018; Gorina and Hoang forthcoming).

The second section of the paper provides a brief discussion of the history of pensions in the United States. In the third section, we briefly review the public-choice arguments for how Keynesian economics undermined the old-time fiscal religion. In the fourth section, we argue that defined-benefit public pensions have undermined the old-time fiscal religion in U.S. state and local governments. The paper closes by explaining how state and local governments can help revive the old-time fiscal religion by transitioning to defined-contribution retirement plans.

2. A Brief History of Pensions in the United States

The history of public pensions dates back to antiquity when rulers motivated their militaries with the promise of lifetime support, especially for those disabled in combat. Since then, many nation-states have adopted this practice of establishing pensions for

[4] A hybrid pension plan combines smaller, defined-benefit pensions with defined-contribution plans.

military personnel. The Continental Congress created the first pension plan for navy personnel in 1775, financed by the sale of prizes seized by the Continental navy (Cogan 2017, chap. 3). Military pensions quickly became an expected entitlement for U.S. veterans, with the tendency for these programs to be expanded incrementally on a regular basis, especially during good economic times or for electoral gain, but with drastically underestimated costs (Costa 1998, chap. 8; Cogan 2017, 23, 40). For instance, with the Revolutionary War pensions Congress "established unfortunate precedents by bailing out an insolvent navy fund with an annual infusion of general revenues and by using creative accounting procedures to mask the use of general revenues to finance pensions rather than earnings on trust fund assets" (Cogan 2017, 25).

These military-pension systems were extended to nonmilitary public employees during the late nineteenth and early twentieth centuries. Beginning in 1857, cities in the United States began to offer pensions for their nonmilitary employees, and in 1911 states began to follow this path (Clark, Craig, and Wilson 2003, 167). These early public pensions were introduced as part of an efficient contract necessary to attract workers in an era when employees often stayed with the same employer for life (Clark, Craig, and Wilson 2003, chap. 2, 154–55). They originated as disability plans and often were fully funded by the employee (Clark, Craig, and Wilson 2003, 167). These plans were offered

by elected officials who recognized that government jobs were increasingly becoming lifetime careers rather than temporary appointments tied to a particular policy maker's or party member's term in office. This created a political opportunity for individuals running for office to secure electoral support in exchange for increased pension benefits, especially when these pensions were overfunded during periods of strong economic growth. Investment risk was initially minimized by restricting investment to the safest categories, but these restrictions were quickly subverted by governments that used public-pension assets to support their own debt or channeled them as investments to politically connected banks (Clark, Craig, and Wilson 2003, 205, 222).

The federal government followed suit in 1920 and adopted a universal pension plan for federal employees.[5] States began to experiment with retirement assistance to the elderly in need, a program that was eventually subsumed and expanded at the federal level to all retirees in the form of Social Security, largely due to the growing political influence of retirees (Costa 1998, 4, 166).

Private pensions were slower to develop than public pensions. The first private pension established in the United States was by the American Express Corporation in

[5] Before 1920, pensions were available for some retiring civil servants, but Congress created them on a case-by-case basis (Clark, Craig, and Wilson 2003, 157).

1875 (Latimer 1932, 21). The number of private-pension plans had increased only to twelve by 1900 (Costa 1998, 16). These private-pension retirement plans were normally funded by the employee, provided modest retirement benefits, and could be terminated at will (Costa 1998, 17). By 1926, there were roughly two hundred private-pension plans (Conyngton 1926). Blue-collar unions played a pivotal role in the subsequent rapid adoption of private pensions, especially as a way to skirt around wage-and-price controls (Ellwood 1985, 24; Freeman 1985, 89). A U.S. Supreme Court decision in 1949, Inland Steel Co. v. National Labor Relations Board (170 F.2d 247 7th Cir.) made pensions a mandatory bargaining topic for collective negotiations, further expanding the number of private pensions in unionized firms (Freeman 1985, 89). Private pensions, but not public pensions, became governed by the Employee Retirement Income Security Act of 1974, which mandated uniform and transparent reporting of pension finances and required an assumed rate of return set within a range linked to market fundamentals (Ellwood 1985, 20).

3. That Old-Time Fiscal Religion

Although John Maynard Keynes famously argued that government budgets should never exceed 25 percent of gross domestic product and that deficits incurred during an economic downturn should be paid off when the economy turned around, the revolution

inspired by his framework led to a paradigmatic shift in governmental accounting and budgeting that embraced deficit spending (Boettke, Smith, and Snow 2011, 16). The theoretical justification for deficit spending, according to Keynes and his followers, was based on the belief that government spending and direction of investment during a time when consumers were not spending would provide a stimulus effect that would boost the economy and thus restore full employment. Under Keynes's theory, taxes collected from the recovered economy would be readily available to pay off any accumulated deficits during the downturn.

This Keynesian framework stood in stark contrast to the budgeting milieu that existed prior to the Keynesian revolution. Up until that time, taxpayers provided a degree of constraint on the growth of government by maintaining the tradition that a well-managed government should balance its budget each year. By requiring that expenditures were in alignment with revenues, this tradition prevented the intergenerational transfer of spending and taxation. The necessity of collecting taxes to pay for government expenditures provided an important taxpayer constraint on government spending (Buchanan 1999b; Wagner 2012, 6). The willingness to pay taxes to finance government expenditures functions as perhaps the best, albeit imperfect, measure for policy makers to use to assess the appropriate level of government spending.

By toppling the old-time fiscal religion and undermining taxpayer constraint, Keynesian economics ushered in an era of deficit spending at the federal level (Bowen, Davis, and Kopf 1960; Buchanan and Wagner 2000; Cowen 2011; Wagner 2012).[6] This severing of the link between public expenditures and cost was also magnified by the adoption of artifices that intentionally or unintentionally hid the true cost of programs by creating a fiscal illusion for taxpayers (Wagner 1976; Buchanan 1999a, chap. 10). With the abandonment of the balanced-budget tradition, even federal constitutional and statutory spending restraints have failed to constrain deficit spending and the growth of government (Wagner 2012, chaps. 1 and 2).

Unfunded liabilities, including Social Security and Medicare, where government officials have been able to shift spending and taxation intergenerationally, have seen particularly substantial growth (Kotlikoff and Burns 2012). Laurence Kotlikoff and Scott Burns estimate that in total the true fiscal gap in the United States, including these obligations, is roughly $200 trillion higher than officially reported federal debt (2012, 3).

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[6] See Ferguson 1964 for more discussion and dissent.

4. Losing our Religion: State and Local Public Pensions

Our core argument is that the defined-benefit structure of public pensions has allowed state and local governments to transfer pension liabilities from current taxpayers to future taxpayers. This transfer has enabled the growth of unfunded pension liabilities because it has undermined the incentive for taxpayers to monitor the growth of pension promises. In addition, the fiscal illusion generated by utilizing unconventional actuarial assumptions to overreport the expected growth of assets has also contributed to the growth in unfunded pension liabilities.

While state and local governments have increasingly engaged in deficit spending with their general budgets, the growth in unfunded pension liabilities has substantially outpaced official state debt. We argue that this swifter growth is due primarily to the intergenerational transference of spending and taxation enabled by defined-benefit pensions. Defined-benefit pension plans offer state and local public employees a guaranteed package of future benefit payments. Many states and courts hold public-pension benefits to be obligatory promises (Monahan 2010). With state and local pensions, this promise often involves a predetermined formula for calculating pension benefits based on the employee's salary and years of service.

The defined-benefit model stands in stark contrast to the defined-contribution model, which sets up individual retirement accounts for each public employee. Under a defined-contribution plan, state and local governments contribute a specified matching amount (typically a specified percentage of the employee's salary) to each employee's contributions. This type of plan ensures that the taxes necessary to fund promises made to current employees are paid by the current generation.

Although the private sector has largely abandoned defined-benefit pension plans, state and local public pensions continue primarily to employ the defined-benefit model. A recent national compensation survey found that 94 percent of state and local workers in 2018 had access to defined-benefit plans, compared to only 17 percent of private-sector workers (U.S. Bureau of Labor Statistics 2018). The same survey found that 34 percent of private union workers, however, had a defined-benefit pension option.

Under a defined-benefit pension, promises are made to current public employees regarding benefits that will be paid to them in the future (Ennis 2007). In theory, total employer and employee contributions to the pension system should fully fund the benefits paid out in the future. In practice, however, with the obligation to shore up any shortfall in the future falling on future taxpayers, these systems have nearly

systematically been underfunded.[7] Thus, future taxpayers often end up paying the obligations created by previous generations (De Mello et al. 2017). Richard Ennis writes that due to the use of the defined-benefit model in public pensions, "[c]urrent taxpayers can be enriched at the expense of future taxpayers" (2007, 42).

Because of the widespread use of the defined-benefit model, public-sector compensation benefits, especially retirement benefits, tend to be much larger than those received by the workers in the private sector (Biggs and Richwine 2014, 8).[8] The retirement requirements for public pensions also tend to be far more lenient compared to those for private pensions (Kotlikoff and Smith 1983, 357). For instance, retirement age, years of service requirement, earning bases (i.e., whether the benefits-formula calculation uses an average of lifetime income or the highest years of salary), provisions for cost-of-

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[7] Unlike private-pension plans, which are required to be fully funded according to strict accounting rules, public-pension plans do not have to be fully funded (Giertz and Papke 2007, 310).

[8] There is an ongoing debate between scholars about the difference in compensation between public and private sectors. Some scholars argue that public-sector pension benefits are overgenerous compared to those in the private sector (Biggs and Richwine 2011, 2014; Richwine 2013; U.S. Congressional Budget Office 2017). Others argue that the benefits are the same or even lower (Allegretto, Corcoran, and Mishel 2004, 2008, 2011; Bender and Heywood 2010; Schmitt 2010; Keefe 2011; Munnell et al. 2011). One source of disagreement is how to appropriately measure the value of public pensions (and other perks of government employment, such as job security).

living adjustments, and accrual rates are far more generous in the public sector (Kotlikoff and Smith 1983, chap. 6; Munnell and Soto 2007, 3).

The generosity of public pensions can be attributed in part to policy makers' ability to understate the true unfunded pension liabilities as well as the cost of benefit increases (Novy-Marx and Rauh 2009; Biggs 2010, 2012; Elliott 2010; Kiewiet 2010; Norcross 2010; Rauh 2010; Russek 2011; Waring 2012; Naughton, Petacchi, and Weber 2015). Estimates of the extent of these unfunded pension liabilities vary, but they range from $3 to $5.2 trillion (Foltin et al. 2017, 2018; Thornburg, Komissarov, and Rosacker 2017; Norcross and Gonzalez 2018). Specific studies of individual states, including Delaware (Norcross 2013), New Jersey (Norcross and Biggs 2010), Illinois (Pozen and Khurana 2011; Davidyan and Waymire 2018), and Alabama (Smith and Dove 2016), have come to similar conclusions. In an updated analysis, Joshua Rauh (2017) finds that unfunded pension obligations have continued to grow because many state and local pensions continue to utilize overly optimistic assumptions in their actuarial calculations despite the new low-interest-rate environment.

State and local governments follow accounting guidelines set by the Governmental Accounting Standards Board (GASB), which is a private, nongovernmental body established in 1984. The GASB's goal is to ensure that the

general public and decision makers have access to useful financial information about the status and use of public funds. To enhance the "transparency, accountability, and clarity" (Weinberg and Norcross 2017, 1) of local and state financial reporting, the GASB issues statements that set the new standards for local and state governments. However, GASB 25 and GASB 27, issued in 1994, were criticized for generating misleading information and failing to "fully measure or report plan liabilities" (Weinberg and Norcross 2017, 1). Under the GASB, state and local public-pension systems are permitted to utilize overly optimistic assumed rates of return (Stalebrink 2014). They are also permitted to discount their liabilities at this same optimistically high rate of return (Kessler 2013; Naughton, Petacchi, and Weber 2015). The average expected rate of return on state plans is 7.52 percent (Weinberg and Norcross 2017). This assumed rate of return reflects the higher risk associated with equities and alternative investments, suggesting that public pensions must now make riskier investments than they did in the past to achieve this rate of return (Weinberg and Norcross 2017, 2) and to reduce their future reported liabilities (Lucas and Zeldes 2009; Novy-Marx and Rauh 2009; Waring 2012; Biggs 2015; Smith and Dove 2016).

In an attempt to improve its accounting rules, the GASB released the new standards GASB 67 and GASB 68 (Weinberg and Norcross 2017, 1). The new rules,

however, suffer from at least three problems. First, the underlying assumptions used to measure pension liabilities remain subjective and differ from one state to another. By permitting governments to use a “blended rate” approach, GASB 67 enables them to value the unfunded portion of the pension liability based on the lower-risk return on municipal bonds and the funded portion with a higher-risk discount rate. These rates, however, depend on the subjective assumptions of the actuaries, who can choose when to apply the blended rate to plan liabilities (Munnell et al. 2012; Mortimer and Henderson 2014; Weinberg and Norcross 2017). Second, the new standards allow governments to report pension liabilities from the end of the preceding fiscal year instead of using current pension numbers, thus rendering balance sheets inaccurate. Third, the use of measurement deferrals, a form of asset smoothing, increases the riskiness of plans due to the fact that they only gradually incorporate changes in market values (Weinberg and Norcross 2017, 5). Moreover, the actuaries continue to make optimistic assumptions, even when current plans are suffering, based on past funding behavior and the legislative intent to fund those plans, as in California and Kentucky (Weinberg and Norcross 2017, 5).

The complexities of pension accounting make it extremely difficult to monitor the fiscal health of defined-benefit pension plans, even in the private sector (Picconi 2006;

Easterday and Eaton 2012).[9] This means that when it comes to public pensions, boards of controls, taxpayers, public employees, and even policy makers often find it difficult to monitor public pensions and to control costs (Mitchell 1988; Sneed and Sneed 1997; Star-McCluer and Sunden 1999; Dove, Collins, and Smith 2018).

The complexities and subjectivism of public-pension accounting enables policy makers and plan administrators to give the illusion that plans are properly funded. This illusion is enhanced by the fact that public pensions are not subject to the same laws and accounting standards that private pension plans are subjected to (Forman 2009). This absence of standard accountability influences how state and local governments report and fund their pension obligations. For instance, Kathryn Easterday and Tim Eaton find that actuarial assumptions for defined-benefit public-pension plans tend to be more optimistic than for defined-benefit plans offered by corporations (2012, 304). Thomas Vermeer, Alan Styles, and Terry Patton (2012) find that even with more relaxed standards, many local government pension plans, especially the ones with the most unfunded liabilities, fail to meet their disclosure requirements. Public pensions also tend to select public actuaries who are predisposed to continue to utilize actuarial assumptions that

[9] See Crew and Twight 1990 and Dixit 1998 for discussions of asymmetric information and transaction costs in political decision making.

optimistically report financial health (Biggs 2009; Waring 2012; Glaeser and Ponzetto 2014; Anantharaman 2017; Mennis 2016). Moreover, the pension labilities in the annual reports of public pensions are often reported using opaque language and complex technical jargon, making it nearly impossible for the average taxpayer to "understand and respond to the financial risks being taken by their elected officials in a timely manner" (Thornburg, Komissarov, and Rosacker 2017, 87). Easterday and Eaton conclude that:

> "[i]n conjunction with other recent academic research on public sector pensions, our results suggest that differences between current GASB and FASB [Financial Accounting Standards Board] accounting and disclosure requirements may result in confusion or difficulties for stakeholders attempting to compare features common to DB [defined-benefit] pensions between the public and private sectors" (2012, 304).

An important factor undermining the old-time fiscal religion as it pertains to public pensions is the case made by public-employee unions and pension-fund managers that public pensions, even if underfunded, play a role in sparking economic growth (Apilado 1972; Hagerman, Clark, and Hebb 2007; Addy and Ijaz 2008). The argument being made here is that the increased economic growth will mitigate these costs in the long run and help shore up the pension in the future. For instance, Ilana Boivie writes that public and private pensions generated 7.5 million jobs and $1.2 trillion in economic output in 2018 (2018, 1). This argument holds particular sway in areas or times with slow economic growth. In fact, some public-pension systems specifically prioritize stimulating economic

growth and private-sector activity over investment-return performance (Ingram 2016, 2; Smith and Dove 2016; Fagan 2019; Niraula 2019). Similar to many arguments for Keynesian stimulus that undermined the balanced-budget old-time fiscal religion, these studies often do not account for what those dollars would have been put toward if they had not been (in the case of public pensions) taxed away from the private sector (Biggs 2016). Public-pension investments targeted at stimulating state and local growth have on net a poor track record of generating economic growth (Hochberg and Rauh 2013; Bradley, Pantzalis, and Yuan 2016).

Defined-benefit pensions and the fiscal illusion generated by inaccurate reporting have enabled state and local governments to overturn the old-time fiscal religion (Ennis 2007). For instance, Barbara Chaney, Paul Copley, and Mary Stone (2002) find that both states with balanced-budget requirements and states facing fiscal trouble are more likely to accumulate unfunded pension liabilities and to utilize favorable discount rates to underreport these obligations (also see Eaton and Nofsinger 2004). Rejecting this old-time religion enables state and local governments to forgo traditional budget reporting and balanced-budget requirements for unfunded pension liabilities and enables government officials to utilize unrealistic assumptions in complicated actuarial

calculations to underreport pension liabilities (Thornburg, Komissarov, and Rosacker 2017).

Overall, this incentive structure provides a payoff to current government officials because they can make promises to achieve short-term political goals, especially catering to organized public-employee groups, without having to implement politically unpopular taxes or debt (Giertz and Papke 2007; Naughton, Petacchi, and Weber 2015). As Thornburg, Komissarov, and Rosacker write, defined-benefit pensions "offer politicians a convenient way to satisfy public employee demands while providing the means to defer budgeted cash payments and obscure the accumulation of public debt from taxpayers" (2017, 87). Current taxpayers, knowing they are not on the hook for these obligations, have less incentive to carefully monitor and restrain the growth of these obligations that will fall to future taxpayers (Giertz and Papke 2007). Public employees, the only party that has the incentive to monitor government officials when it comes to the health of their retirement system, have a reduced incentive to monitor the health of the public-pension system due to the belief that they have a guarantee that any shortfall will be covered by future taxpayers (Monahan 2010). Public employees, may of course, also suffer from the fiscal illusion created by inaccurate reporting.

This intergenerational shifting of liabilities through defined-benefit pensions subjects state and local governments to substantial fiscal risk. State and local governments may not have the number of future taxpayers—or of taxpayers with sufficient wealth—needed to support future obligations, as cities such as Flint and Detroit, Michigan, demonstrate. Fiscally strapped cities and states, which often resort to imposing higher taxes or cutting essential government services, are apt to lose residents, especially with the capping of the state and local tax deduction in 2017 (Edwards 2018).

5. Solutions?

Although pension promises are often legally or even constitutionally protected, state and local governments overwhelmed by pension obligations may be forced into bankruptcy in order to reduce pension benefits (Giertz and Papke 2007; Monahan 2010).[10] Politically, however, outside of default, pension reforms must often be directed toward future

[10] According to Wayne Weingarden (2014), public-pension debt is cited as a key contributing factor in the bankruptcy of some local governments, such as Jefferson County, Alabama; Harrisburg, Pennsylvania; San Bernardino and Stockton, California; Detroit; and others. Under chapter 9 of the Federal Bankruptcy Code (11 U.S.C., 109), local and state governments can file for bankruptcy and then reduce pension benefits, which is exactly what happened in Detroit in 2013, where pension checks were reduced by 6.7 percent for 12,000 retirees despite Michigan having a state constitutional guarantee regarding the payment of full pensions (Christoff 2015; Chambers 2016).

employees. J. Fred Giertz and Leslie Papke (2007) argue that the practical distinctions between defined-benefit and defined-contribution plans largely do not matter, that focusing on the structure (defined benefit or defined contribution) is less important than focusing on benefit and funding reforms. For instance, they write, "[w]hile a new DC [defined-contribution] plan could be less generous in order to reduce future benefits, similar cost saving could be realized from a less generous new DB [defined-benefit] plan that applies to future benefits"— that is, except for the fact that defined-contribution plans avoid the moral-hazard problem of underfunding because "the state is required to pay its share of the pension contribution in a timely manner so it can be invested in the employees' DC accounts" (2007, 313, 314).

Yet, when viewed through the public-choice framework of taxpayer constraint, the structure of the retirement system does matter. One possible way to restore the old-time fiscal religion would be through transitioning defined-benefit public pensions to defined-contribution retirement accounts. Defined-contribution retirement accounts can avoid many of the problems that public-pension systems face using the defined-benefit model (Giertz and Papke 2007). Under a defined-contribution model, taxes are required at the front end, providing a credible commitment mechanism (Garon 2015). Increasing retirement benefits for public employees would then require either an increase in taxes or

a reduction in the provision of other government services. This increase in taxes or reduction in services would be borne by the current generation, thus making the commitment to and receiving the benefits of public employees' service as well as bringing the spending and taxes into alignment.

Under a defined-contribution retirement model, taxpayers would then have more incentive to monitor the level of public-pension retirement benefits. Importantly, policy makers would have a signal, the public's willingness either to bear additional taxes or to reduce governmental services, to better assess the desired level of public-employee retirement benefits. Taxpayers and public employees would also have more incentive to curtail the use of misleading actuarial assumptions and the lack of transparency.

6. Conclusion

Although many state and local governments adhere to balanced-budget requirements, defined-benefit pensions have enabled them to undermine the old-time fiscal religion. Defined-benefit pensions have severed the link between spending and taxes by enabling pension benefits to be promised to current public employees by committing future taxpayers to fund the payments. This has been exacerbated by the use of inappropriate

actuarial practices that create a fiscal illusion for current taxpayers that these promises are properly financed.

Similar to the growth in federal deficit spending enabled by Keynesianism, the severing of this link between spending and taxes has undermined taxpayer constraint on the growth of government, leading to the accumulation of substantial unfunded pension liabilities at the state and local level. By interpreting this growth in unfunded liabilities through this public-choice framework, this paper helps provide a more comprehensive public-choice explanation for the growth in unfunded pension liabilities. Transitioning from defined-benefit pensions to defined-contribution retirement accounts would help restore taxpayer constraint on the growth of these unfunded liabilities.

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Chapter Four

The artist as entrepreneur[1]

We develop a theory of the supply side of art markets building on Kirzner's understanding of entrepreneurship as alertness to profit opportunities. Whereas Kirzner's entrepreneur is alert to the existence of resource misallocation, the artistic genius is alert to the opportunity of producing aesthetic value out of mundane objects and resources with no such value of their own. Our theory produces an important empirical implication: when market conditions are such that most art is "high art," the artist will perform both functions, alertness to artistic value and alertness to profit opportunities. Instead, when most art is "low art," the two functions will belong to distinct individuals. To substantiate our theoretical arguments, we discuss their relevance to the markets for paintings in Renaissance Italy and contemporary visual art.

[1] Coauthored with Dr. Ennio Piano. Political Economy Research Institute and Department of Economics and Finance at Middle Tennessee State University. Published in *The Review of Austrian Economics*. 2021 Apr 12; 1-19. Note: Rania solely contributed to those sections of the manuscript related to Kirzner's work on entrepreneurship. For religious reasons, she did not work on parts related to art due to impermissibility of drawing anything that depicts animate beings, images taken as idols, and to erect statues of animate beings, and music instruments in Islam.

The work of the genius is outside the orbit of ordinary human action

Ludwig von Mises, *Human Action*

1. Introduction

We develop a theory of the supply side of art markets. We begin by characterizing art production as a process requiring the combination of the services of labor and various capital goods by an individual possessing artistic genius. Artistic genius consists in the faculty to perceive the potential aesthetic value of an artwork. By aesthetic value we mean a piece of art's ability to produce a set of intended reactions on the part of those who experience it. Thus, in our theory, artistic genius is to the realization of aesthetic value what entrepreneurial alertness is to the realization of pure profits in the market for mundane commodities. Whereas Kirzner's entrepreneur is alert to the opportunity of "buying low" and "selling high," the artistic genius is alert to the opportunity that she may produce aesthetic value out of mundane objects and resources with no such value of their own.

This model has empirical relevance concerning the circumstances under which the two functions–artistic genius and entrepreneurial alertness–will be performed by the same individual and those under which a different individual performs each function. We argue

that when market conditions are such that most art is "high art," the artist will assume both functions. Instead, when most art is "low art," the two functions will belong to distinct individuals.[2]

To substantiate our theoretical arguments, we discuss two historical case studies. Our first case study is the market for paintings in Renaissance Italy. Artistic genius assumed an unprecedented role in this industry towards the end of the Middle Ages. Painters assumed a distinctive entrepreneurial role, including that of business-owners. In contemporary visual art markets, the market-entrepreneurial role has been largely separated from that of the artistic genius and is the purview of art-gallery owners and other such figures. We attribute this development to two fundamental changes in the art market.[3] On the supply side, developments in technology have reduced the cost of

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[2] We do not take a position in the complicated debate on what constitutes high as opposed to low art (Fisher 2013). For our purposes, we use these terms as reflecting contemporaneous sensibilities. Specifically, we follow Cowen and Tabarrok (2000) in defining high art as that art that receives contemporaneous critical approval. Thus, a Renaissance patron and a contemporary art critic may not see eye-to-eye on whether an Andy Warhol painting belongs to a museum. Yet, both would understand the distinction between high forms and low forms of art. Generally speaking, Renaissance artists, theorists, and patrons emphasized the importance of technique and skills, materials, and originality, though the latter was constrained by adherence to traditional religious imagery and symbolism (Welch 2000; O'Malley 2013). In the modern visual arts, originality and abstraction have a much more significant influence on how an artwork is perceived, while materials and technique are relatively less important (Galenson 2009).

[3] We do not claim that these are the only changes in the art market between the Renaissance and now. However, changes in production technology and income are likely exogenous to the art market. This makes them better candidates for starting points in developing a causal theory of the

producing and reproducing art. On the demand side, the rise in income has led to a rightward shift in the demand for "low art." The combination of the two has meant an increase in the size of the market for "low art" relative to that for "high art." This, in turn, caused the separation of the two functions as predicted by our theoretical framework.

We contribute to two bodies of research. First, we add to the literature extending Kirzner's theory of entrepreneurship to the study of real-world markets. Leeson and Boettke (2009) stretch the notions of alertness and entrepreneurship to encompass institutional arbitrage.[4] They argue that entrepreneurs may earn a profit from introducing innovative institutional solutions as well as from "mere" market arbitrage within a given institutional environment. In a similar vein, Skarbek (2009) develops a framework to understand the role of ideology and local knowledge in shaping alertness and entrepreneurial action. He then applies this to the institutional change brought about by missionary Johnny Appleseed in the American Midwest during the first half of the

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separation of entrepreneurial and creative functions than potential alternatives like the sensibilities of consumers and artists or the degree of specialization within the industry.

[4] We use institutional arbitrage to refer to any form of arbitrage that does not take the standard form of "buying cheap and selling high." Any rearrangement of the process through which commodities are produced and exchanged that does not take the form of price-arbitrage falls within this category. Thus, for instance, we would see the move towards the vertical integration of different tasks as a form of institutional arbitrage. See the discussion in Piano and Rouanet (2020).

nineteenth century. Martin and Thomas (2013) build on Kirzner (1973) as well as Leeson and Boettke (2009) to formulate a taxonomy of institutional entrepreneurship, with special reference to constitutional and political decision making. They then apply this taxonomy to develop a theory of the introduction of the "committee system" in the US Congress.

Other recent contributions include Lucas and Fuller's (2018) work on "market-making entrepreneurship" in the context of government bounties, Candela and Geloso's studies of the economics of the English lighthouse system (Candela and Geloso 2018a, 2018b, 2019), and Candela et al.'s work on containerization and its effects on the global economy. Finally, Lucas (2021) provides a critical survey of this literature. Therein, he criticizes the tendency to assume that Kirznerian alertness necessarily exists and drives economic and social change in contexts lacking the institutional characteristics proper of a market economy. We are sympathetic to this view and believe that our argument is robust to this criticism. As we discuss in the next section, creative genius is not a form of entrepreneurial alertness. In fact, in our argument, the market provides the feedback mechanism that encourage the adoption of alternative institutional arrangements.

Moreover, although there may be analogies between the two, alertness and creative genius are distinct functions. The former allows one to perceive direct and

indirect subjective benefits from alternative courses of entrepreneurial actions in the market. The latter allows one to perceive the artistic potential of mundane objects and materials, whether or not any benefits (direct or indirect) accrue to the creative genius.

Our second contribution is to the literature on the economics of the arts. Baumol was arguably the first economist to use economic tools to study the working of art markets. In particular, he recognized the role of competitive forces behind the (artistic and commercial) success of theater in Renaissance England (Oates and Baumol 1972) and classical music in the Early Modern Austrian Empire (Baumol and Baumol 1994). Galenson (2001, 2009) develops a framework to understand modern art's evolution over the twentieth century. He argues that the first six decades of the century presented an unprecedented degree of conceptual and technical innovations in the world of the visual arts. He attributes this development in part to the rise of international and competitive art markets freed from patrons' influence and government interference. Ekelund et al. (2017) offer a complementary perspective, focusing on the mechanism and institutions (such as auctions and art galleries) of the secondary market for American paintings. One contribution that is particularly relevant for our argument is Caves (2000).[5] He uses the tools of contract theory and information economics to study the organization of

[5] See also Caves (2006).

contemporary art markets, including the movie, music, and publishing industries, and the visual arts. One theme from Caves' work that is most relevant to our argument is what he refers to as "art for art's sake." That is, artists are rewarded for showing no interest in the pursuit of material benefits. However, Caves does not explain why this feature of art markets only appeared rather recently. His explanation also relies on (some) consumers having preferences directly over production processes. Our argument differs by maintaining the (standard) assumption that the choice of how to produce a commodity affects consumers' willingness to pay only indirectly via its effect on the quality of the final product.

Cowen and Tabarrok (2000) come closest to the approach and subject of our paper. Theirs is a theory of artists' choice of the quality of the art they produce. In their framework, the artist faces a trade-off between indulging in her own preferences for producing high art and the monetary benefits of producing low art. They argue that as societies grow richer, artists experience an income effect that encourages them to indulge in the production of higher quality artworks. However, this effect is counteracted by the growth in the market for low or popular art. On the demand side, wealthier societies will demand more such art, increasing the revenues one can realize from serving this market. On the supply side, technological innovations have made mass production possible,

which allowed artists to reach a much larger audience. However, since mass tastes and those of the artist do not coincide, this favors the production of low or popular art over high or *avant garde* art. There are several commonalities between their argument and ours. For instance, we both consider the effect of changes in market conditions on the artist's solution to her tradeoff. Moreover, we both assume that artists have the ability and desire to pursue aesthetic value and that their choice not to pursue it even further is due to the effect of market forces. However, the two approaches differ in one important way. Their argument does not speak to the separation of the two functions we identify (creative genius and market entrepreneur). Thus, for instance, they cannot account for the decline of commissions in the market for paintings nor can they explain why modern painters are not involved directly in negotiations over the price of their art.

2. Entrepreneurial alertness and artistic genius

(i) The Kirznerian entrepreneur

Kirzner developed his theory of entrepreneurship over time. While a review of his contribution is beyond the scope of this paper, we summarize some of the theory's fundamental elements as they relate to our argument.

The first element is Kirzner's view of the entrepreneurial function in a market economy: To bring about equilibrium in a world of change and uncertainty. For Kirzner, "the entrepreneurial role, although of course the source of movement within the system, has an equilibrating influence" (Kirzner 1973, 81). If it wasn't for entrepreneurs, the very notion of "equilibrium prices" (and "equilibrium quantities") and their relationship to value and scarcity would be nonsensical. It is only because entrepreneurs act upon existing disequilibrium prices (and quantities) that standard economic models approximate the behavior of real-world markets. According to him, "competition offers the incentive and the pressure which alert entrepreneurs to the opportunities created by such errors of over-optimism and over-pessimism" (Kirzner 1997b, 59).

Alertness is what allows entrepreneurs to fulfill this function. Alertness refers to an entrepreneur's ability to perceive the presence of opportunities for pure profit (Kirzner 1973, 7). It is what Kirzner (1997a, 72) refers to as "an attitude of receptiveness to available, but hitherto overlooked, opportunities." The simplest instance of entrepreneurial action driven by alertness is that of an entrepreneur who buys a commodity from a seller offering it a price $p1$ and then sells it to a willing buyer at price $p2$, where $p2 > p1$ and the act of buying and selling are of no cost to the entrepreneur. Thus, in this scenario, the entrepreneur captures $p2-p1$, pure entrepreneurial profits.

Entrepreneurial alertness doesn't apply just to the case of market arbitrage over a commodity at one point in time. The "incentive for market entrepreneurship along the inter-temporal dimension is provided not by arbitrage profits generated by imperfectly coordinated present markets but more generally, by the speculative profits generated by the as yet imperfectly coordinated market situations in the sequence of time" (Kirzner 1982, 154). Consider the case of the same commodity as in the previous paragraph. Our entrepreneur observes current prices and sees that the commodity sells at price $p1$, however, she becomes alert to the existence of a method for the production of the same commodity and sell it profitably below $p1$. The entrepreneur hires labor and capital and from the combination of their services produces the commodity at marginal cost where $mc < p1$. The entrepreneur may then set the price just below $p1$, realizing pure entrepreneurial profits.

Finally, entrepreneurial alertness may extend to the market for commodities that do not yet exist. The entrepreneur observes current input and output prices and judges that consumers may be willing to pay price $p1$ for some new commodity when input prices for the same commodity are such that $mc < p1$. Once again, if the entrepreneur's expectations materialize, she will realize pure entrepreneurial profits. Much real-world entrepreneurship takes this form. The introduction of television, and then color television,

or smartphones and smartwatches, are all instances of innovative commodities, fulfilling consumers' demands and yielding riches to the innovators. As Kirzner writes, to succeed, the entrepreneur "must introduce . . . his own creative actions, in fact construct the future as he wishes it to be" (Kirzner 1982, 63).

Because of his understanding of the entrepreneurial function, Kirzner sees the market process as having the beneficial effect of channeling entrepreneurial alertness towards the continuous realignment of the reality of (relative) scarcity with the values of consumers. The realized entrepreneurial profits and the increase in consumer surplus give us a measure of the beneficial effects of markets. These crucially rely on a regime of property rights, contractual exchange, and the rule of law. Under this regime, markets generate both an incentive effect and a selection effect in the performance of the entrepreneurial function. First, because she gains from being alert to profit opportunities, the entrepreneur has an incentive to act upon them and resolve any existent misallocation of resources. Second, because successful entrepreneurs are rewarded with profits and unsuccessful ones are punished with losses, the market process filters out the latter and encourages the former. This evolutionary process is what ensures that, in the long run, markets show a tendency towards convergence between real-world prices and the market variables predicted by equilibrium models (Alchian 1950).

(ii) Alertness and the artistic genius

An artistic genius is someone who can, in her imagination, picture a unique combination of resources that generates aesthetic value. In the visual arts, a painter may see that, by combining paint of different colors, applying them on a surface using a specific technique and specialized tools, she can produce a painting that can stimulate a set of anticipated emotional responses from the viewer. A composer does something similar when she writes down a sonata. In her imagination, she expects that the sounds, produced through different instruments in the designed order, will generate a series of emotional states (sorrow, agitation, joy) in the listener. The creative genius wishes, through her art, to produce the highest possible aesthetic value out of the resources available to her. Our definition of aesthetic value is comparable to the one employed by the current mainstream approach in art theory (known as externalism) which claims that "an object has aesthetic value in so far as it affords valuable experience when correctly perceived" (Shelley 2017). It follows that the creative genius is the ability to identify the characteristics of such an artwork that will lead to the desired anticipated reactions as well as what combination of mundane resources and materials and production processes will lead to them.

The artistic genius and the Kirznerian entrepreneur share several commonalities. Both take the form of rearranging existing resources. Both are informed by subjective expectations. In the case of the entrepreneur, these expectations pertain to the consumers' willingness to pay for a commodity. In the case of the creative genius, these are expectations about the ability of the artwork to generate certain emotional responses on those exposed to it. Another parallel between the two is that their abilities are in many respects innate and unequally distributed in society. In Kirzner's theory, one cannot cultivate her ability to perceive price differentials. Alertness is not human capital and entrepreneurial profits are neither the return to an investment nor the rent paid out to a fixed asset (Kirzner 1973). A similar case can be made for the creative genius. Technique and taste, while necessary to the production of aesthetic value, are not sufficient.

Consider how artists, art critics, and the public perceive the case of an exact copy of some famous painting. Most people, perhaps even the author herself, may not be able to easily tell the original from the replica. Yet, it's common understanding that the former is much more valuable than the latter–as is suggested by the fact that they sell at drastically different prices (Ekelund et al. 2017). Thus, technique–which can be learned via practice–is not by itself the cause of art's aesthetic value. Nor is taste. If it were, then sophisticated art-critics and art-lovers would make successful artistic geniuses. Like

technique, taste can also be acquired. What cannot be acquired is the artist's vision, her ability to imagine a final product that, if she has the technique necessary for realizing her vision, will stimulate the expected reaction in the minds of those who get to experience it.

Kirznerian entrepreneurship and creative genius differ in important ways as well. A key difference lies in the fact that they aim for different goals. The former's objective is to maximize economic value net of resource costs. The latter is only interested in creating aesthetic value. While both economic and aesthetic value are fundamentally subjective variables, they are distinct theoretical concepts.[6] A creative genius' estimation of a potential piece of art's aesthetic value may not coincide with her (or anyone's) willingness to pay for the same. For instance, a creative genius may very well estimate that an artwork will have very high aesthetic value and still refuse to produce it since she expects its economic value to be insufficient to cover its resource costs. Indeed, the two "values" cannot even be expressed in the same units. Subjective economic value can, in a market economy, be expressed in objective dollar terms. There is no equivalent for aesthetic value. Yet aesthetic value is real. People do recognize that the aesthetic value of

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[6] Economic value is subjective in that any commodity is only valuable in connection to its ability to contribute to an individual's goal of reducing perceived uneasiness. Aesthetic value is subjective in that it pertains to the emotional response an artwork generates in an individual observer. Neither value is "intrinsic" to the object and only exists because of its relationship to one or more subjects.

Beethoven's Ninth Symphony is fundamentally higher than that of the resources that went into its composition. In this sense, artistic geniuses and Kirznerian entrepreneurs are both "alert," however they are alert to radically different objects. The latter is able see that she can buy low and sell high. The former can see that she is able to create a thing of beauty out of mundane objects.

Because they maximize different variables, the Kirznerian entrepreneur and the creative genius serve separate functions. The former, by pursuing economic profits, brings supply and demand conditions into alignment, leading to a state of affairs that is the most beneficial for society. The competitive market system encourages this process by rewarding the agent of (positive) social change with profits. When a Kirznerian entrepreneur makes a profit, society gains as well. Indeed, the larger the profits to the entrepreneur, the large the benefits to society.

The same is not true of the actions of the creative genius. The creative genius qua creative genius has only one goal: to create artwork of the highest possible aesthetic value. Caves (2000) refers to this property as "art for art's sake." Unlike the Kirznerian entrepreneur in an economy governed by private property rights, the function of the artistic genius has no built-in incentive to keep the welfare of society into consideration when planning her course of action. If given the chance, the artist would use larger and

larger amounts of resources to bring about ever-larger aesthetic value in the world. Unbridled by economic consideration, she would make society a lot poorer, but surrounded by beauty.

For this reason, no society would ever let artistic geniuses run the show. Kirznerian entrepreneurship will ensure that the creation of aesthetic value–and thus the actions of creative geniuses–conforms to the reality of scarcity in society. This "entrepreneurial check" on creative genius may take one of two forms.

First, the same individual may perform both functions (entrepreneurial and artistic) directly. In this case, the artist would be alert to both the possibility of profit opportunities and the creation of aesthetic value. Such an artist would undertake the production of only those artworks that she expects will generate revenues above resource costs. From our discussion of the properties of competitive markets, we know that these actions will be encouraged by the promise of pure profits and that artists who adopt them have an evolutionary advantage over those who don't. Artists who keep producing art that does not sell above resource cost simply will not be able to stay in business for long.

Alternatively, the two functions may be performed separately. In this case, artists still strive to maximize their resources' aesthetic value while market entrepreneurs will attempt to maximize the profits from the sale of the artwork. For instance, an

entrepreneur may become alert to the fact that the output of a certain artist's genius could sell at a price such that, after having compensated the artist and paid for all the inputs, she is left with a significant surplus. Practically speaking, this coincides with the practice of art commissions, a popular practice in the industry between the Middle Ages and the Modern Era. The entrepreneur may also purchase a finished artwork that is currently priced below what she expects the market to be willing to pay. This second scenario resembles the practices–like the auction and the art gallery–that dominate modern art markets and the visual art industry in particular.

In both scenarios, regardless of who performs the entrepreneurial function, economic considerations are not sacrificed to maximize aesthetic value. Also in both scenarios, artistic geniuses producing art of aesthetic and economic value survive–and sometimes prosper–while those who do not are unable to pay for the inputs necessary to the production of art.

Yet, the two scenarios differ in important ways. They differ in their allocative consequences for artists. When the artist performs both functions (the first scenario), she captures the entrepreneurial profits generated by the arbitraging of low-priced resources. When the two functions are severed, by definition, the artist sells resources at a price lower than what the alert entrepreneur perceives they can command. All pure profits go

to the entrepreneur while the artistic genius receives compensation for her resources' opportunity cost.

A second, more significant source of difference between the two lies in their implications for the quality of the art they produce. Consider first the case of an artist-entrepreneur–an artist performing both functions–who inhabits a world in which demand for art is such that profits from the sale of art of higher aesthetic value are at least as high as those from the sale of art of lower aesthetic value. If the profits from the making of high art were higher, her choice would be straightforward: her wish to maximize aesthetic value and the lure of higher profits she is alert to push her in the same direction. Because she expects to obtain pure profits in the same amount from the making of either high or low art, but the former generates higher aesthetic value, she would produce high art. However, a conflict emerges when “art-for-art’s sake” and “art-for-profit’s sake” do not coincide. In this case, the lure of profit may lead the artist to sacrifice aesthetic value for profits.

The issue is not just with the artist’s will, but with the market system’s evolutionary properties. As they accumulate more profits from the making of low art, artist-entrepreneurs can outbid those artists who choose to make aesthetic value a

priority. Over time, the art-market will be dominated by low art the average aesthetic value of artworks will be lower–though perhaps more art is produced overall.

When artistic genius and market entrepreneurship are performed separately, a different result emerges. Because the artistic genius is not aware of the profit opportunities available in the art market, she always produces artwork of the highest aesthetic value she can, given the resources available to her. If profit opportunities favor high art, separating the two functions has little effect on the overall quality of art. However, if profit opportunities exist in the market for low art, separation prevents artistic geniuses from sacrificing aesthetic value to profits. Thus, while much low art will still exist–since that's the most aesthetic value some artists can produce–more higher quality art will exist when the creative genius and the alert entrepreneur are not the same person.

3. Evidence on the performance of artistic and entrepreneurial functions

To provide substance to our theoretical framework, we discuss the organization of real-world art-markets, with special attention to the market for the visual arts, in two historical settings. The first setting is Renaissance Italy. During this period, institutional patrons–such as churches, local governments, and professional associations–and wealthy

families–dominated the demand side of the market for paintings. In most circumstances, only the very top of the income distribution was interested in or could afford a painting. Thus, an entrepreneur would find most opportunities for profits in the sale of high art. The second setting is the contemporary market for the visual arts. From the Renaissance, changes in standards of living, technology, and market institutions have made a more wide-spread demand for art-products possible. Low and high art coexist and the former dominates the latter in terms of quantity and total revenue. Our theoretical discussion suggests that separation of artistic genius and market entrepreneur functions be the norm in contemporary visual-art markets. At the same time, a Renaissance artist will be more likely to perform both at once.

(i) The Renaissance art market

In art history, the term Renaissance identifies the two hundred years–more or less– between the end of the medieval period at end of the thirteenth century and the beginning of the mannerist movement in the 1520's. The period is associated with several consequential episodes in art history. First, it is during the Renaissance that we see the artist move to the foreground. Throughout the Middle Ages the artist did not make his identity known by developing a unique style, technique, and set of motifs or adding a

signature to his work. Indeed, the practice of signing one's work started only late in the thirteenth century and became widespread in the fourteenth (Welch 2000, 124). The artist also moved physically, from the castles and monasteries of the countryside to the growing cities of the Italian center-north. This development was in response to the economic forces set in motion by the commercial revolution of the Late Middle Ages. Cities like Bologna, Perugia, Siena, and more importantly Florence, Venice, and–later on–Rome had rapidly turned into regional and in some cases international hubs of commerce and culture. Their population growing in number and wealth, they required the services of artists to ornate the walls of new churches and public buildings.

Much like Medieval art, Renaissance art was religious in its subject and sensitivity. Most art was for churches, including private chapels sponsored by wealthy families. Indeed, the most popular and lucrative artform during this period was the altarpiece. Usually made out of wood, an altarpiece consisted in one panel or more panels plastered with layers of limewater and ashes and painted over with tempera colors. A popular subject for an altarpiece was the Madonna with Child, usually depicted alongside a couple of Saints beloved by local parishioners. Altarpieces were mounted on expensive frames and then erected over an altar or in some cases hung on the church's walls.

Another popular Renaissance art form was the fresco, which involved the application of pigments directly on a wall's surface before the plaster had dried. Most frescoes were also religious in subject, although they were also the go-to medium for the artwork covering the walls of government buildings, in which case they may have historical, patriotic, and ideological themes.

The popularity of altarpieces and frescoes testify to the leading role painting achieved during the Renaissance, a role reserved for tapestry and mosaics for most of the Middle Ages. Moreover, Renaissance artists made their most important contributions to the progression of the arts in the production of paintings. These included the development of linear perspective and innovative techniques to give paintings a more realistic look. Finally, Renaissance painters were innovators in the making of pigments and the use of colors.

The innovativeness characteristic of Renaissance art markets, especially in the major Italian cities, was partially the result of the significant degree of competition on the supply side. Artists in general and painters in particular enjoyed much more freedom from the traditional anti-competitive influences of guilds and local governments than other craftsmen and professionals (Goldthwaite 2009: 344). The market for frescoes and altarpieces was at least regional and often national in scope. To receive a hefty

commission for a painting, a master from Florence had to beat the competition of dozens of other Florentine workshops, that of the members of the neighboring rival Sienese school, a few painters from Perugia, and even some from far away towns like Bologna and Venice. Competition was even more severe when the commission originated in a city or region with no significant painting tradition, as were Rome and Milan. Etro and Pagani (2012) and Etro (2018) have argued that the data on the prices of Renaissance paintings are consistent with a rivalrous and dynamic market in which price differentials between regional markers were driven down by the artists' entrepreneurial arbitraging. For instance, marginal revenues were equalized between major art markets-like Venice and Florence-and secondary ones-like Arezzo and Padova-as masters relocated to whichever market remunerated them most for their services. While rivalrous and entrepreneurial, this market was by no means perfectly competitive. Informational asymmetries, market power, appropriable quasi-rents clearly existed. However, they did not result in the unraveling of the market. Artist-and school-specific reputation, informal adjudication systems, and other institutions emerged to mitigate opportunism on both sides of the market. Monopolies were contestable and consistently challenged by enterprising rivals and newcomers (Baxandall 1998; Thomas 1995; Welch 2000).

Competition also existed on a demand side dominated by institutional patrons like professional associations, local governments, and religious orders commissioning art works to decorate local churches' walls and altars. Later on, art assumed a more private dimension as the wealthy began hiring masters to decorate their palaces. For instance, many of the most admired Florentine painters of the fifteenth century–including Botticelli, Ghirlandaio, and Raphael–frescoed the rooms of the Papal palaces in the Vatican. These high-paying commissions for unique, high-quality work were Renaissance painters' most lucrative source of revenues. Renaissance artists spent most of their time and efforts conceiving, researching, designing and overseeing the production of original paintings for high-paying commissions. Originality was of the foremost importance and painters accused of putting little thought into improving upon their previous work to produce something new were ridiculed by their peers and risked losing their reputation and with it demand for their services (O'Malley 2013: 182; Shearman 1983: 44).

Other sources of revenues existed. For instance, O'Malley (2013) notes that it was not unusual for even an accomplished master to accept less remunerative commissions and less-prestigious work, especially in their hometowns and from institutions (like religious orders) of lesser means, a strategy consistent with price discrimination by the

painter. A final minor source of revenue was the market for private art. A master may have his assistants produce smaller, lower-quality copies of original altarpieces known as *tondi* for their round shape. Buyers would purchase them ready made directly at the workshop. While the master was generally not involved in producing these items, they offered his assistants opportunity for practice and the chance to earn some extra money (Thomas 1995, 46; O'Malley 2013, 195).[7]

Consistent with our framework's prediction, we find that Renaissance artists combined the functions of creative genius and entrepreneur. And creative geniuses they were. One of the defining traits of Renaissance art, setting it apart from its Medieval predecessor, was the emphasis on creativity and innovation. The most celebrated painters of the period were individuals who patrons and connoisseurs alike recognized to have the innate ability to create beautiful visions of complete paintings in their mind. Renaissance artists and art theorists referred to this as *ingenio*, which they contrasted with mere *arte*,

[7] Unfortunately, there is no empirical evidence we are aware of that would help us estimate the size of the market for low art in Renaissance Italy. This lack of evidence on this market may itself indicate that it did not constitute a major source of workshop revenues. Moreover, artistic commodities, including low art, are very likely normal or superior goods (Skinner et al. 2009). Given that Renaissance Italy, wealthy as it was by historical standards, was still operating in a Malthusian equilibrium, it seems reasonable to assume that most households did not allocate any significant share of their income to the consumption of any art, including low art. Given how most high art was public and easily accessible at least in urban areas, we suspect that revenues from low art were but a small fraction of those from high art.

the technical skills required to execute the vision inspired by an artist's *ingenio*. Good *ingenio* was believed scarcer than *arte*, mostly because unlike the latter, the former could not be learned even after many years of practice and apprenticeship.

The making of a masterpiece required both *arte* and *ingenio*. However, the artist was responsible for the *ingenio* who received the patron's commission and assumed liability over the complete painting (Piano 2020). Implicitly or explicitly, Renaissance art contracts included the obligation that the master painter signing them would be entirely responsible for the design of the artwork and overseeing its execution. There was no expectation that he would actually be performing the execution himself, or at least, not beyond those sections of the painting that most crucially embodied his *ingenio*, such as the faces of all main figures. Most of the painting beyond these sections were left to his assistants, whose work he directed and closely supervised. Renaissance art consumers had no conception of "autograph" work and did not care much about who did the actual painting, as long as this was executed well and inspired by the master's beautiful vision.

Renaissance painters were very enterprising in finding business for themselves and their workshops. As we mention above, all paintings were the result of a commission. The commissioning process could begin in one of two ways. A wealthy individual or association may decide to sponsor the making of an altarpiece or a fresco painting,

possibly to enhance their prestige or pursue some political strategy. They would then rely on merchants, local artists, and their social network to identify potential candidates (Nethersole 2019). Thus, reputation and word of mouth played a crucial role in this market. Alternatively, a painter may reach out to potential patrons to offer their services unsolicited (Thomas 1995, 98). Patrons may then ask candidates for quick sketches of the complete painting and estimates of the final price, and the final choice of whom to assign the commission would depend on both aesthetic and economic considerations. The patron and the selected artist would then draft a contract binding parties to their respective obligations. However, these contracts were far from complete. They often specified the deadline for completion and the amount and method for the artist's compensation. Seldom did these contracts include references to the painting's subject, the painter's style, or the number of figures. The commission may simply state that a fresco or an altarpiece had to be "beautiful" or "at least as beautiful" as some previous work by the painter (Thomas 1995, 91).

This contractual incompleteness was partly the result of the high contracting costs typical of the arts more generally (Caves 2000, 2006) and partly a way to give painters the creative freedom they needed. Commissioned masters faced few restrictions on their artistic choices, including the painting's subject. In these cases, tradition and expectations

about quality were the only real constraints on his genius. For instance, one could not produce an altarpiece with a non-religious (or even blasphemous) subject and expect to receive the expected compensation. Nor could he justify errors and imperfections as creative elements or artistic licenses. If the patron was not happy with the final look, he could demand that the artist fix the painting at his expense. The reputational consequences of delivering low-quality work could be even more damaging (Shearman 1983, 44).

Another key entrepreneurial function of Renaissance painters was that of business owners. As we mention above, artists were not expected to and did not produce the whole painting. A master left most tasks-from the preparation of the materials (like pigments, glues, gessoes) to the transfer of the preparatory drawings to a wall or *tavola* and the painting of backgrounds and secondary figures-to the employees of his *bottega* or workshop (Thomas 1995, 76). Their numbers varied from *bottega* to *bottega* and depended on the number and size of commissions received by a master at any given time. At the beginning of his career, a painter may employ one or two assistants. Their number would grow with his reputation, which in turn increased the demand for his services. The most popular masters of the fourteenth and fifteenth centuries employed up to six assistants. Assistants were not the only workers under a master's supervision. He also

employed unskilled workers (*garzoni*) and very young apprentices (*discepoli*) to perform menial tasks. A master's managing abilities in "organiz[ing] materials and men" (Welch 200, 79) were just as important as his *ingenio* in determining the success of his enterprise. Hence, he spent much effort training them in the necessary techniques of his craft, directing their contribution to the production of the paintings, and monitoring their efforts to prevent shirking (O'Malley 2013; Piano 2020). If the diaries (*Ricordanze*)-the only surviving source of its kind from this period-of fifteenth century Florentine painter Neri di Bicci are any indication, masters took their business responsibilities very seriously. They handled their *bottega's* accounting directly by keeping extremely detailed notes of all expenses and revenues (Thomas 1995).

(ii) The contemporary market for the visual arts

A comprehensive overview of the evolution of the market for the visual arts since the Renaissance is beyond the scope of this article. However, a summary of some of the most significant developments is needed to understand the evolution of the artistic and entrepreneurial functions in this market.

A major difference between Renaissance and contemporary visual art lies in its subject. The former, recall, was mostly religiously themed. Over time, religious art

declined while other subjects became more popular, such as portraits, landscapes, and still-lifes. Eventually, abstract themes came to dominate the visual arts. Possibly due to the diffusion of photography in the late nineteenth century, painters abandoned rapidly the traditional tenets of their craft, including linear perspective and naturalism (Galenson 2009).

The decline of religiously themed art in absolute and relative terms reflected changes in the demand for paintings starting in the sixteenth century. The protestant reformation reduced the demand for religious paintings across Europe. Italy, which had provided fertile ground to the growth of this market, experienced an economic decline that limited the income society would spend on building new churches and making them beautiful. In the rest of Europe, the rise of a merchant class democratized the demand for paintings. Paintings from established artists stopped being the purview of churches and public palaces but adorned the walls of the new rich's private residences. The democratization of art only accelerated over the past century: "The truth is that there has never been, at any time in history, more art demanded and consumed per capita in the entire world" (Ekelund et al. 2017, 258).[8] Today, the demand side of contemporary high

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[8] The demand for high art has assumed another dimension over the past century, as paintings and other works of art have become profitable avenues for investment (Ekelund et al. 2017, 255). This phenomenon has been driven by the prospect of fast and unexpected surges in the value of

art shows a combination of institutional and private buyers. Museums that specialize in contemporary visual art–such as the MOMA in New York City, the Tate Museum in London, and the Centre Pompidou in Paris–are the most important institutional buyers in the market competing against private collectors, like the Lebanese billionaire brothers David and Ezra Nahmad.

While social change and the rise of real income transformed the demand for the visual arts, technology transformed its supply. Colors, canvasses, brushes and all the other necessary tools for the production of a painting are so cheap that many people from all social backgrounds take on this craft as a hobby. Indeed, developments in digital technology have made these tools obsolete and many visual artists work with digital tablets. The production process behind much contemporary high art would be unrecognizable by any nineteenth century painters: "Today some of the greatest artists do not touch their paintings, and some do not even supervise those who do touch these works" (Galenson 2009, 185). One of the most successful painters of the past century, Andy Warhol, admitted to hating the act of painting, embraced mechanization and other industrial practices to mass produce his paintings, and moved his operation to an actual

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"underappreciated" artists whose work may go from commanding prices in the hundreds of dollars to several hundred thousand or even millions in the span of just a few years (Galenson 2009, 22-3).

factory (Galenson 2009, 192). In one extreme instance of separation of artistic genius and the production of her artwork, the American painter Solomon LeWitt left the actual drawing of some of his pieces to the buyers (Galenson 2009, 194).

If the cost of producing new art declined, that of reproducing the same art has fallen even more (Cowen and Tabarrok 2000). Technological innovations and the rise in income levels over the past two hundred years have also contributed to the multiplication of avenues for fruitful employment of artistic geniuses. Visual artists can choose among a larger number of remunerative uses of their talents. They may work as independent painters or visual artists, but they may also cater to the large demand for “lower” forms of art as graphic designers, photographers, cinematographers, cartoonists, and illustrators.[9] These are very lucrative industries that offer artistic geniuses profitable alternatives to the contemporary art market's uncertain prospects. For example, Caves (2000, 47) notes that a significant share of visual artists are lured out of the high-art world and into one of “galleries offering decorative art” by the lure of higher and more secure compensation.

[9] Some modern visual artists have gone so far as to challenge the very distinction between high art and low art, and even the notion that we can separate art from non-art. For example, one of the most consequential contribution to twentieth century art was Marcel Duchamp’s *Fountain*, a porcelain urinal to which he had only added the signature “R. Mutt.” The pop-art movement's major figures took a similar stance as they adopted and endorsed the use of industrial practices for the mass-production of their artwork and “by making original works that pretended to be copies of the commercial originals” (Galenson 2009, 54).

These changes contributed to the rapid and radical transformation of market for the visual arts over the twentieth century. On the demand side, the generalized increase in income over the past two centuries has led to a rise in the demand for popular or "low" art. On the supply side, the increase in reproducibility of one's artwork has increased one's ability to cater to larger markets. Combined, these two effects have increased the artist's opportunity cost of pursuing higher levels of aesthetic value at the margin (Cowen and Tabarrok 2000, 244).[10] Consistent with our framework, the market for high art has adjusted by separating the entrepreneurial function from the creative function of the artist. Perhaps the most significant embodiment of this change is the decline of the commission system. Unlike her Renaissance counterpart, the contemporary visual artist seldom interacts directly with the final buyer on the primary art market (Caves 2000, 38). Nor is she constrained in the style, theme, or even form of her art by the buyer's demands. She makes these choices independently, before she even knows the identity of the buyer. This feature of contemporary art markets gives the visual artist an unprecedented degree of creative freedom, preserving what Caves (2000) refers to as "art for art's sake." Thus,

[10] In Cowen and Tabarrok's (2000) framework, a generalized increase in income may also lead to a higher indulgence in the realization of aesthetic value by artists. Their argument is that the income effect of economic growth may more than compensate for the substitution effect of higher compensations available from the satisfaction of the demand for low art. Nevertheless, they find that this effect should be weaker for artists who already operate in the market for high art.

“in a number of respects, advanced artists in the twentieth century have enjoyed dramatically greater creative freedom than their predecessors” (Galenson 2009, 17).

The separation of entrepreneurial and artistic functions has coincided with the most remarkable period of stylistic, technical, and philosophical innovation since the Renaissance. Change has come to characterize the contemporary scene in the visual arts more than any other period in art history. Galenson (2009) identifies forty-nine separate artistic genres introduced during the twentieth century, mostly over the six decades between 1911 and 1970, although many of these were only ever employed by the artist who “invented” them. It is unlikely that many of these would have been possible without the separation of the entrepreneurial and artistic functions, as exemplified by the resistance of the artistic establishment–including experts, institutional patrons, and other artists–to the rise of Impressionism, Fauvism, Cubism, Expressionism, and so forth (Galenson 2009). By partially insulating visual artists from the profit and loss mechanism of the market, the institutions of contemporary art have encouraged them to focus on esthetic value rather than revenues (Caves 2000). This is not to say that market forces play no role in this industry. Real resources must provide enough income to some visual artists to discourage them from exiting the market. The magnitude of these resources must ultimately be responsive to the demand of consumers. Artists who consistently fail

to meet the expectations of even a small niche market face unflattering chances of survival.

While the visual artist focuses on maximizing aesthetic value, the entrepreneurial function of allocating her work to its highest-valued use is left to a series of intermediate institutions. Most important among them are the independent art gallery and its manager, the art dealer. The function of the art dealer is to discover individual artists, advertise and find potential buyers for their work:

The dealer spends time with prospective clients articulating the artist's intent providing context for her work, and formulating a best case for its significance. […] The dealer promotes the artist with such certifiers as art writers and museum curators, supplies illustrations to art publications, tries to place the artist's work in museum exhibitions and encourages purchases by museums and major collectors, whose judgments provide counsel to less well-informed buyers. He arranges loans to museums and other exhibitors and seeks representation for the artist with friendly galleries in other cities.[11]

Talent-scouting and recruitment are key to the success of the dealer's operation. By recruiting underrated artists, the dealer is exercising the (Kirznerian) entrepreneurial

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[11] Caves (2000, 38).

function of selecting those artists whose work she believes in currently underappreciated. The dealer believes that, thanks to her promotion and her skills in identifying future trends in the art market, she will be able to earn entrepreneurial profits above the costs of running her operation. Indeed, successful dealers show a combination of entrepreneurial talent and a taste (and knowledge) of the art world (Caves 2000, 44).

That between the artist and the dealer is a partnership governed almost entirely via informal means as "formal contracts are simply avoided" (Caves 2000, 41). Instead, the two sides rely on reputation to ensure that a dealer supplies enough effort to promote the artist, while the latter promise not to shop their work around through independent channels. Revenues from art sales are split between the two according to the terms of the informal agreement, with the artist obtaining between half and two-thirds of the final proceeds, the rest going to the dealer (Caves 2000, 41).

Dealers exercise their function via the operation of private galleries, where an artist's work is displayed.[12] The private gallery first emerged in France, where the state had a de facto monopoly over the circulation of high art (Galenson 2009, 17). The break-down of this monopoly led to the rise of the independent art gallery in France. In the

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[12] Running a gallery is a very expensive endeavor, Caves (2000, 45) reports the estimate that in the 1980s in New York City starting an art gallery required one to incur a fixed cost of $250,000. It is also a risky one, as only twenty five percent of new art galleries survive after five years.

United States in the early nineteenth century, art galleries started as a way for dealers to sell imported European art, especially paintings from the "Old Masters," to the elites of the newly founded country (Ekelund et al. 2017, 18). Today, the average American art dealer operates a small independent gallery in a large urban area and represents a lineup of one to two dozen artists, who among other things can expect their work to be featured in the gallery for a solo show approximately every other year (Caves 2000, 38).

The other major player in contemporary art markets is the auction house.[13] Unlike dealers, auction houses operate mostly in the secondary art market. The function of auction houses is twofold. First, through their reputation, and expertise, auction houses mitigate the "credence" property of the visual arts by guaranteeing that the artwork is in fact authentic (Ekelund et al. 2017, 51, 106). Second, they "perform the market-making function that prices and reallocate [the] evolving stock" of the supply of paintings (Caves 2000, 334). In so doing, they match paintings from living or deceased artists that may now be experiencing a broader appeal–and thus can potentially command a much higher price than they did in the primary market–to those buyers who are willing to pay the highest prices. This function is socially beneficial since artists may spend much or even

[13] See Ekelund et al. (2017) for a discussion of the economics of auctions for paintings and other artworks.

all of their career without their art getting much traction until sudden changes in the market environment make their work more valuable. The function of auction houses is to allow current and potential owners to find each other and ease the artwork's allocation to the collector who values it the most.

The secondary market for the visual arts is international in scope and is dominated by two auction houses, Sotheby's and Christie's, and two cities, New York and London (Ekelund et al. 2017; Caves 2000).[14] However, only the work of a very small share of all visual artists, dead or alive, is traded in this market. Hence, in the market for the visual arts "success is primarily defined by being included in *secondary art markets*" (Ekelund et al. 2017, 36). Auction houses profit from their entrepreneurial function by levying fees from both buyers and sellers. Generally, these fees consist of some percentage of the "hammer price" (Caves 2000, 336). Though a handful of auction houses dominate the secondary art market, rivalry is fierce as they must compete for the ability to auction off the artwork, which leads them to offer very favorable terms to the current owners of the art (Ekelund et al. 2017, 49).

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[14] According to Ekelund et al. (2017, 46) there are currently over two hundred auction houses in the United States alone, mostly concentrated in the American Northeast.

4. Conclusion

In this paper, we expand on Kirzner's (1973) theory of entrepreneurial alertness to develop a framework to study creative genius. We argue that alert entrepreneurs and creative geniuses are similar in their characteristics and functions. Where the former have the ability to perceive resource misallocations that, when resolved, will generate pure entrepreneurial profits, the latter have the ability to perceive the potential aesthetic value of combining mundane objects like paint, blocks or marble, and pieces of cloth. We identify the conditions under which market forces will favor the performance of both functions (the entrepreneurial and the artistic) by the same person and those under which a different person performs each task. Specifically, we claim that when most demand for artistic commodities is demand for "high art," the artistic genius will also take on the role of the entrepreneur. However, when profit opportunities emerge from producing "low art," the market for "high art" will see a separation of the two functions and the emergence of pure creative geniuses and pure market entrepreneurs. We substantiate our claims with evidence from the historical records on the markets for paintings in the Italian Renaissance and those on the contemporary market for the visual arts. These records are consistent with our framework's prediction: Renaissance Italian painters dealt

directly with their industry's business side, while this role is generally performed by professionals (like gallery directors and agents) in contemporary art markets.

Lacking a clean natural experiment, we cannot claim with absolute certainty that the mechanism this paper identifies is solely responsible for the separation of the entrepreneurial and creative function in the market for visual arts. Indeed, complementary explanations that focus on other variables (changes in the sensibility of consumers and artists, greater division of labor in the economy, and so forth) may have also played a role. However, our focus on changes in technology (on the supply side) and income (on the demand side) have the advantage of a high likelihood of being exogenous to the art market. Nevertheless, the framework should be tested against the historical record for other creative endeavors to verify its validity. For instance, the cases of non-fiction writing, poetry, and cinema present parallel dynamics to the visual arts. As such, they provide fruitful grounds for future applications of our framework.

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