Journal of Comparative Economics 40 (2012) 357–371

Contents lists available at SciVerse ScienceDirect

Journal of Comparative Economics

journal homepage: www.elsevier.com/locate/jce

The political economy of mass printing: Legitimacy and technological change in the Ottoman Empire

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ARTICLE INFO

Article history:
Received 30 January 2011
Revised 13 January 2012
Available online 8 February 2012

JEL classification:
N34
N35
N44
N45
N74
N75
O33
O38
P48
P50
Z12

Keywords:
Ottoman Empire
Printing press
Technology adoption
Legitimacy
Military technology

ABSTRACT

Coşgel, Metin M., Miceli, Thomas J., and Rubin, Jared—The political economy of mass printing: Legitimacy and technological change in the Ottoman Empire

New technologies have not always been greeted with full enthusiasm. Although the Ottomans were quick to adopt advancements in military technology, they waited almost three centuries to sanction printing in Ottoman Turkish (in Arabic characters). Printing spread relatively rapidly throughout Europe following the invention of the printing press in 1450 despite resistance by interest groups and temporary restrictions in some countries. We explain differential reaction to technology through a political economy approach centered on the legitimizing relationships between rulers and their agents (e.g., military, religious, or secular authorities). The Ottomans regulated the printing press heavily to prevent the loss it would have caused to the ruler's net revenue by undermining the legitimacy provided by religious authorities. On the other hand, the legitimizing relationship between European religious and political authorities was undermined over a century prior to the invention of the press. European rulers thus had little reason to stop the spread of printing as public policy, nor could the Church have stopped it had it wanted to. The Ottomans eventually sanctioned printing in Arabic script in the 18th century after alternative sources of legitimacy emerged. *Journal of Comparative Economics* **40** (3) (2012) 357–371. University of Connecticut, Storrs, CT 06269-1063, United States; Chapman University, Orange, CA 92866, United States.

1. Introduction

A fundamental puzzle of technological history is why some societies have foregone free lunches by failing to adopt technological advancements completely (Olson, 1982; Mokyr, 1990). In one of the best-known and most puzzling cases of foregone opportunity, it took the Ottomans nearly three centuries after the invention of the moveable type to sanction and offer explicit support for printing in Ottoman Turkish (in Arabic characters) in Istanbul in 1729. The delay has led to numerous speculations about Muslim reaction to new technologies, inviting various types of explanations. Some historians have attributed the delay to cultural values such as religious conservatism and obscurantist thought, others looking for the answer in socio-economic factors such as entrenched interests and institutional rigidity.[2]

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[2] For a review of this literature, see Ghobrial (2005), Kut (1991), Roper (2007), and Sabev (2006, pp. 47–67).

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doi:10.1016/j.jce.2012.01.002

For a satisfactory explanation of when a society adopts a new technology and why there may have been delays and restrictions, we need to identify not just the factors that may have obstructed change in some technologies but also those that have facilitated the swift adoption of technological advancements in other areas. The case of the printing press becomes even more puzzling when we consider it in relation to other technologies that were adopted quickly during the same time period. Contrary to the image of the religious and technological conservatism that seems consistent with the delayed adoption of the printing press, the Ottomans were eager to adopt the latest advancements in military technology such as the use of gunpowder and firearms (Ágoston, 2005). In adopting the printing press and gunpowder weapons, often considered the most important inventions of the late Middle Ages, the Ottomans reacted quite differently, displaying a mixed image between conservatism and openness and making it difficult to explain their reaction through ad hoc factors.

We also need to develop a framework that can explain the variation in the adoption of new technologies across societies. Although the printing press faced stiff opposition and restrictions in other societies, these regulations were not as wide-ranging, long-lasting, and publicly enforced as those in the Ottoman Empire. True, the scribes guild of Paris successfully delayed the introduction of printing press, but for only 20 years. Although the Roman Catholic Church opposed some printed works, their opposition did not result in an outright ban on printing in Latin characters, but restrictions on Protestant or other "heretical" tracts. Whereas in Europe the regulations on the technology primarily catered to interest groups and short term concerns, the equilibrium that prevailed in the Ottoman Empire was regulated by the rulers, applied to all texts in Arabic characters, and lasted much longer.

Yet another piece of the puzzle is why some of the initially suppressed technologies were eventually adopted. Although the Ottomans regulated the printing press heavily for a long time, they eventually relaxed the constraints and allowed it. We thus need to consider not just the swift adoption of some technologies or the heavy regulation of others but also the differential adoption of technologies among the states and the initial suppression and eventual adoption of some technologies. For a complete explanation of technological change, we need a framework that will help identify the reasons for the differential reaction of the Ottomans to available technologies and how their reaction differed from European states and changed over time.

We examine these issues by adopting a political economy approach centered on the legitimizing relationship between the rulers, their agents, and the general public (Coşgel et al., 2009). We develop a simple analytical framework to capture the basic elements of the interaction between rulers and legitimizing (e.g., religious, secular, military) agents, using the framework to generate comparative statics that explain observed outcomes. Although in reality legitimacy can affect the ruler's objective function in many ways, we focus on its effect on the ruler's revenue. That is, a ruler who is viewed as more legitimate has access to a greater share of the surplus produced by society. However, the ruler's share of the surplus depends on technology, and since the introduction of a new technology could change these payoffs – especially when they affect the ability of agents to legitimize the ruler – it could sometimes be in the best interest of the ruler to regulate the new technology to preserve the status quo. We use the model to describe the legitimizing relationship between the Ottoman rulers and religious authorities (*şeyhülislam* and the *ulamā*), military authorities (the *sipāhī* and janissary organizations), and secular authorities (*a'yān*) and discuss how new technologies changed the abilities of these agents to legitimize the ruler.

The effect of technology on legitimizing relationships explains the differential reaction of the Ottomans to advancements in printing and military technologies. They regulated printing technology heavily to ensure that it did not decrease the ruler's net revenue by undermining the legitimacy provided by religious authorities. But they readily accepted new military technologies such as gunpowder and firearms because they increased the net revenue the ruler could collect from the citizenry while having a positive effect on the military's ability to legitimize. Our approach also explains why the Europeans were quicker to accept the printing press and why the Ottomans eventually adopted it. Heavy regulations did not last as long in Europe as they did in the Ottoman Empire because different, non-religious sources of legitimacy had already emerged. Although religious legitimacy was still important to European rulers, other important sources of legitimacy were available by the advent of the press. In the same way, the Ottomans sanctioned printing in Arabic characters in the 18th century only after alternative sources of legitimacy emerged.

Our approach shares insights with the literature on how interest groups influence the choice of technology. Powerful groups with vested economic interests in the prevailing technology may oppose a new technology in order to protect their rents, and their opposition may succeed if the ruler or the political process prevents the new technology from being established (Krusell and Rios-Rull, 1996; Mokyr, 2002). Our approach is also related to work emphasizing the political replacement effect, where the introduction of a new technology may erode the incumbency advantage and political power of the elites. Using this approach, Acemoglu and Robinson (2006) have shown how political leaders, fearing replacement, have blocked economic development in history and how as a result England, Germany, Russia and Austria–Hungary have displayed different patterns of industrialization.

Although our approach is similar to studies emphasizing the roles of interest groups and political elites, we differ in our stress on their ability to legitimize the ruler – which in turn augments the ruler's revenue and incentives. Rather than take the ruler's relationship with these groups as independent of technology, we examine how technological change may alter the legitimizing relation between them. Although blocking a technological development may appear to be protecting the interest of a certain group, the ruler's reaction to the new technology could more fundamentally be shaped by its influence on his legitimacy. This approach accounts for the salient interactions between institutions or other players who are likely to determine the degree to which innovation is "harmful" to the political authority. This paper therefore falls into a broader literature which analyzes the interactions between institutional authorities and agents in order to seek the conditions under