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Why did the Early Islamic Middle East have the highest standards of living?

Prices, Wages and Population Levels

[Early draft. Do not quote without permission]

Abstract

The evidence of prices and wages from the Early Middle East revealed an environment of comparatively high standards of living. This paper argues that various developments in population trends were responsible for economic change, economic resurgence and the high standards of living in the Middle East. It shows that serious population gap developed between the Middle East and Arabia with population levels already low before the Justinian Plague struck the region, sparing Arabia and expediting migration. A new demographic regime emerged in the Middle East, comprised of transition to individual property rights and to low fertility rates that changed income distribution and reinforced women’s property rights. The paper concludes that the role of population trends and human capital in the rise and persistence of high standards of living is underestimated.

I. INTRODUCTION

Finding out that living standards were high in a medieval society is a rare event in economic history literature. Pre-industrial societies did not enjoy high standards of living and until recently, investigation of standard of living was confined, limited to pre-Industrialized Western societies. But the development of new methodological approach to historical national accounting enlarged the measuring apparatus to include earlier societies as well. It is a telling sign of the success of the new methodology that we could apply it to the 700-1000 AD Middle East and conclude that it enjoyed the highest standards of living among contemporaries. It is

1 Angus Maddison, Contours of the World Economy, 1-2030. Essays in Macro-Economic History, (Oxford University Press, 2007)
also telling that the new living standards emerged after an episode of a Bubonic plague in the Middle East, raising wages in Iraq and Egypt to new levels. Calculation of living standards using wages expressed in adjusted 1990 U.S. dollars, a methodology used in calculations of pre-industrial GDP, it was determined that Middle Easterners had incomes equal to 2-3 times subsistence level. Subsistence level, the bare minimum income needed for survival, was determined as 325 dollars calculated in adjusted 1990 US dollars, while real wages ranged somewhere between 890 and 990 dollars. These levels were higher than those in the Babylonian period, the Roman Empire and the Byzantine Empire at their peak. For instance, Babylon 400 – 60 BCE with population of 4.65 million produced 736 G-K dollars’ per capita income, using the production approach. When using the consumption approach we get 707 G-K dollars, and with the income approach, 728 G-K dollars, using the price of crops, dates and barely. Since Mesopotamia was overwhelmingly agricultural society with low GDP per capita, Iraq GDP being higher, highlight the input from manufacturing and trade. Roman and Byzantine GDP 900 G-K. dollars and 800 G. K. dollars using wheat wages. Rome was more productive than Mesopotamia because Roman urbanization rates were 27% for the year 1 CE, which is much higher than the 10% for Mesopotamia Around 1000CE. GDP per capita in Byzantium was considerably higher. In conclusion: input of other economic factors explains the difference in GDP per capita even though little evidence for extensive manufacturing sector exists

Iraq during the ‘Golden Age’ emerged as the region with the highest GDP per capita while Medieval Egypt’s GDP per capita peaked during the 8th century with an estimated range of $800 - $910. It is also telling that they were continuously high with only minor fluctuations for the duration of the medieval period.

The findings breathed new life in the economic history of the medieval Middle East and provided a reliable groundwork to anchor new research on the Middle East economy based on the use of price and wage data. For example, it was possible to link the new evidence of high incomes, consumption and purchasing power, to plant cultivation, low wheat prices, and rise in demand for fine textiles, and consequently explain the shift in writing material from papyri to

4 Pamuk and Shatzmiller, pp. 198- 208.
5 Pamuk and Shatzmiller for references.
paper. Price evidence made it possible to demonstrate a shift from previous intensive cereals cultivation to industrial plants, cotton and flax, increasing linen production, the material mix used in making Islamic paper. Price and wage data was also useful in a study of the origins of the Middle East trade. It provided the size of the ‘National’ economy of the early Middle East to be implemented in the formula of the Gravity Theory of Trade most frequently employed in estimating trade volume and flow between nations. The formula approximates determinants such as the size of their respective economies to the distance separating them, and border effects. The study concluded that two inputs, the size of the economy and the effacement of border effects, account for much of the expansion of trade in the early Islamic Middle East.

Why and how did the early Islamic Middle East achieve the distinction of having the highest standards of living and maintain them in the long-term? This paper explores this question by investigating a demographics change in the Middle East and its consequent incidences including population levels, population trends, property rights and fertility regimes.

Economic history literature sees population as a central factor affecting economic growth and economic performance, yet we know very little about population levels in the medieval Middle East, before and after the conquest. In previous studies, by Ashtor and more recently by la Vaisière, as well as by various other scholars, several approaches to population size were suggested. These included the usage of carrying capacity and funeral inscriptions, material remains, paleodemography, measuring bone length, mortality patterns and population control. The evidence of wages and prices provides an additional approach, by linking population,

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standards of living and exogenous demographic shock. Accordingly, in the aftermath of the Justinian Plague that killed at least half of the population around the Eastern Mediterranean, wages rose in response to labour shortages. This paper proposes that the impact produced by demographic change need not be limited to a one-time exogenous demographic shock, but should include a more transitional change in demographic regime that included individual property rights and lower fertility regime. The paper argues that the demographic transition benefitted the new economy in the long-run and made it possible to maintain high living standards over the long haul.

II. A MALTHUSIAN EQUILIBRIUM IN THE PRE-ISLAMIC MIDDLE EAST

A Malthusian Equilibrium occurs when population levels outstrip the resources, causing diminishing returns to labour and decline in GDP per capita, lowering wages, restricting consumption and preventing further economic development and growth from occurring. 11 Malthusian phases happened throughout history and were behind the two economic revolutions, the Neolithic revolution and the Industrial one. 12 Early economists, like David Ricardo, 18th century and Stuart Mill, 19th century, while admitting the genuineness of Malthus theory, suggested alternative sources of growth to alleviate pressure on agricultural resources, free trade, for instance. Ester Boserup, argued that a Malthusian Equilibrium could trigger improvements in productivity in agriculture through technological innovation and intensive land use. 13 Joel Mokyr implied that the technological innovation of the Industrial Revolution in England also offset the population pressure and thus corrected the effect of a Malthusian crisis. 14 Robert Allen offered an alternative


explanation by using wage and price data over the long-run. He accepted that wages rose in the two centuries after the Black Death and then declined again to pre-plague levels, but used the data to demonstrate the uniqueness of the demographic conditions of England and Holland. Through the examination of numerous series of wages, he concluded that,

"These investigations of the Malthusian model have important implications for the explanation of wage history. If feedback from the wage had little to do with fertility and mortality, which moved exogenously, then the lack of trend in the English real wage before 1800 was not due to Malthusian checks." 

In this study, England is shown to not suffer from the effect of growing population despite limited agricultural resources: “For the first time in western history, the economy kept pace with the population.”

However, Malthusian crisis remains a challenge for economic growth precisely because it is so empirically sound. Thus, the new economic growth theory focuses on relieving population pressure by limiting births. Oded Galor suggested that Malthusian Equilibrium conditions can only be resolved by population control, linking it to rise in per capita income and investment in children’s education. He argued that when population size is small and technological change unimportant, parents will have little incentive to invest in education and instead will have more children. As population continues to grow, technological progress will increase income per capita. The increase in income will induce parents to invest in their children’s education, subsequently having fewer, but ‘better quality’ children, lowering the rate of population growth.

When it comes to the medieval Middle East it is possible to observe the mark of Malthusian Equilibrium there before the arrival of the Muslims from Arabia. The evidence comes from archeological surveys of Iraq and Egypt. Robert Adams study of settlement in the Diyala plains in Iraq revealed that during the Sasanid period cultivation and settlement extended to the limit. However, some years before the arrival of the Muslims settlement declined by a half. Sasanid irrigation was efficient and cultivated agricultural land expanded to the limit

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16 Allan, 951.
17 Allen, p. 435.
19 Robert McCormick Adams, Land Behind Baghdad, (Chicago University Press, 1965)
reaching a historical peak in settlement density. A grid of irrigation canals in the sixth century, extended the capacity of the Tigris River to irrigate areas lying further and further away:

“It would appear that an adjusted total of occupied Sassanian settlement within the Diyala area whose subsistence needs could only be supplied by local agriculture dependent on gravity-flow canals might be about 2,900 hectares. At 200 person per hectare of built-up town or city, and at 1.4 hectares of cultivable land per person, this implies the cultivation of about 8,100 square kilometer of land—approximately the entire potential area of cultivable land on the lower Diyala plains. And, indeed, it is possible to confirm independently that virtually the entire land surface must have been utilized for agriculture during the Sassanian period.”

But by 580AD the size of the cultivated land began to shrink and by 628AD at least half of the settled area was abandoned, with population numbers collapsing. Was the collapse the result of the massive failure of the irrigation projects built and managed by the Sassanid administration, thus the decline in cultivation must be due to the failure of the Sassanid administration? Or, could there have been other reasons? Adams comprehensive archeological survey of Lower Iraq, a highly fertile region, covered a long chronological stretch beginning in 4000 BC. It was the only country-wide archeological sample of population density ever in the history of the Middle East. Adams did not think about population pressure over extended resources even though what he found and the time frame of 40 years prolonged decline point to a Malthusian crisis like the one which occurred in Europe 50 years before the arrival of the Black Death in 1348.

Archeological evidence from Egypt point to a similar situation there. An archeological survey of pre-Islamic Egypt taken by Alston, uncovered major extension of cultivation and settlement there. Like Iraq, Egypt is another region with high potential for agricultural productivity inhabited uninterruptedly since the beginning of time.

“Roman Egypt experienced a slow rise from the first century AD with a very sharp peak in the first half of the 6th century followed first half of a very sharp decline on the 7th century, bring population level to its lowest level of the 1st century BCE”. “Cities and

20 Adams, Land, 74
villages were occupied continuously and prospered from the fourth century until the seventh century. By the 8th century, 12 out of the 16 towns and villages were either abandoned, deserted or show signs of decline.” 23

Alston concluded,

“that there was a significant demographic transition in Egypt in the centuries surrounding the Arab invasion,” 24 “Although the period abounds in possible causes, economic and political division in the Mediterranean, wars and, most obviously, plague, I suggest that this pattern can only be explained by a reversal of the social and economic conditions that had fuelled growth in the fourth and fifth centuries”, “a ‘fundamental transformation in social and economic organization is the only likely explanation for the changes in settlement pattern observed” 25

In the case of Egypt, we know of an early plague, the Antonine plague, after which population would be assumed to have increased considerably, which explains the extension of cultivation. Sometime between 530-630AD in both Iraq and Egypt population and settlement reached a peak and cities and villages began to disappear. The similarity between Iraq and Egypt, two rivers irrigated agricultural economies, points to an impact of a shared factor. Both Adams and Alston fall short of explaining what they saw. They do not suggest Malthusian crisis nor the Justinian Plague, an exogenous demographic shock, but instead point to an institutional failure, maintaining irrigation. But this is a standard explanation which only refers to the outcome of population decline not to its reason. Furthermore, there is no sign in Egypt’s evidence that the canals maintenance was the problem. Instead, as was the case of Europe before the Black Death, population grew unchecked and cultivation extended to the limit. As in the case of Europe, the Black Death, like the Justinian Plague in the Middle East completed the process of population leverage.

III. THE EXOGENOUS DEMOGRAPHIC SHOCK IN THE MIDDLE EAST

The experience of the Black Death inspired the model of an economic growth triggered by an exogenous demographic shock. It was applied to the Justinian Plague by Findlay and Lundahl, and extended by Pamuk and Shatzmiller to the Middle East with overwhelming

23 Alston, p. 169 and Table 2. Alston, p. 178 and Figure 3.
evidence. 26 But not everyone believes in the severity of the Justinian plague. Chris Wickham expressed the view that no matter how dramatic were the local outbreaks, the Justinian plague was a marginal event in the demographic history of early medieval Europe. 27 He concluded that since no uniform pattern of demographic decline was attested for the period in question, and given that population decline has begun a hundred years prior to the Justinian plague, “The population fall that we do see, in a variety of different periods, must have had local causes.” As we have seen earlier, a pattern of population decline triggered by all kinds of positive checks historically preceded an epidemic. Jairus Banaji, clearly unaware of the findings of Adams and Alston, has this to say,

“…there is no archeological evidence of a major catastrophe in the 7th century East Mediterranean. Nor was the economy of either empire substantially affected in a negative way”. 28

Others doubted whether the Justinian plague was indeed a Bubonic plague, and therefore not as lethal. Still others accuse the contemporaries of the Plague of being ‘hysterical’, disregarding evidence of mass graves which provide perfect explanation as to why no tomb stones and inscriptions were found to commemorate the dead. 29 Clive Foss was of similar opinion. After reviewing the excavations in Syria-Palestine he recognized that there was a period of stagnation beginning in the sixth century and then a steady decline through the seventh and eighth centuries, but was unwilling to consider the Justinian Plague as a possible clause. 30 Foss suggests wars, which “probably contributed to the destabilization of the old economic and demographic system,” but acknowledges that the defeats in the Persian wars did not sufficiently destabilize the

Byzantine government as to prevent it from mobilizing large armies in the wars against the Arabs.

Laiou and Morrison cautiously state that population decline in the Middle East occurred only later, in the seventh century, for some reason oblivious to the impact of the Justinian Plague which struck Constantinople in 541AD: “A general decline in the number of settlements is assumed to have taken place in many other areas, Asia Minor, Cyprus and Northern Syria from 650 onwards.”31 Yet, Findlay and Lundahl endorsed the evidence of a long-term effect of the plague on the center of the Byzantine Empire manifested in Constantinople and surrounding areas.32 By the eighth century the picture is one of depopulation, de-urbanization, diminished production, reduced trade, etc. on an unparalleled scale.33 De-urbanization continued in the ninth and tenth centuries and the number of cities declined. Constantinople’s population shrank to 40,000 from 70,000, even though reports say that Greeks moved there from the coastal cities of Sidon, Beirut, Byblos, Arka, Tripoli and Alexandria after the Islamic conquest.34

Hugh Kennedy maintains that,

“Although there is neither enough nor thorough archeological work on every village and city in Byzantine Syria, Egypt or Iraq to allow a definitive answer, the archeological evidence which is there is entirely consistent with a pandemic which caused a massive loss of life on repeated occasions, expansion of both urban and rural settlements ended abruptly after the middle of the sixth century, that housing start ceased.”35

The Archeological work carried on Syria/ Palestine is impressive but opinions wary as to the demographic impact caused by the Justinian Plague but this is not the case of the recurrences, which are expected in the aftermath of a plague and were recorded in the Middle East. The plague visited Egypt in 669, 673, 686, 688/689 and 699, Syria and Küfa in 688/689, Basra in 706

31 Laiou and Morisson, p. 40.
32 Findlay and Lundahl, pp. 175-180.
33 Laiou and Morisson, pp. 43-49.
34 E. Ashtor, A social and economic history of the near east in the middle ages, (Los Angeles, University of California Press, 1976), pp. 12-13. Ashtor also says that “many Persians left the country” as well during the invasion though it is not clear what is “many”.
and 716/717, Iraq and Syria in 717, Syria in 725-726 and 733/734, Syria and Iraq in 734-735, 744/745 and Basra again in 749 773-774 and 841-843. Basra experienced so many recurrences of the plague that the subject became a literary genre for which it was renowned. The Syriac chronicles from the Jazîra and Iraq confirm the accounts given by the Arabic chroniclers, reporting hundreds of thousands of dead in each of the above-mentioned recurrences.

Despite the disagreement over the severity of the Justinian Plague, recent research done on DNA derived from human remains (teeth) of plague victims of sixth century Europe concluded that the Yersinian pathogen of the Justinian plague was much more severe than the strain which was identified in victims of the Black Death plague in the fourteenth century. It is estimated that the Justinian plague have killed 100 million compared to the 60 million victims decimated by the Black Death. We may also gain more insight to the severity of the Justinian Plague by comparing evidence from the recurrences of the Black Death in Europe. Livi-Bacci compared death rates in normal years to those in recurrences years and showed that an increase of at least three times the normal death rate, occurred every 11 years, to bring the average increase in deaths to at least sevenfold. In the period 1400-1450 occurrences took place every 13 years on average and deaths increased fivefold. In the following half century, 1450-1500, the average frequency declined to every 37 years and the average increase to fourfold. Five occurrences followed in the same century and the death total increase between five and ten times the norm. Taking the normal mortality of about 35 per thousand, an increase of eleven-fold would mean about 420 per thousand, or the death of more than four persons in ten. A tenfold increase means, approximately, the elimination of one-third of the population, an increase of fivefold, the elimination of one-sixth. The evidence from Italy suggest to us that the plague impact on the Middle East population was at least equally severe over the long run. Despite its

38 Michael G. Morony. “‘For Whom Does the Writer Write?’
39 http://www.thelancet.com/journals/laninf/article/PIIS1473-3099(13)70323-2/abstract?_eventId=login#back-cor1
severity, epidemiologists maintain that the Justinian plague died out and disappeared for the next eight hundred years, while the strain of the Black Death continued to exist in the rat population up to the twentieth century.

III. ‘GO NORTH, YOUNG MAN’ – ARABIA AND MIGRATION THEORY

Seeing the conquest of the Middle East as an emigration, is not new but one which never won over scholars enamoured with military campaigns. With new evidence of the importance of the demographic factor in the new economic growth in the Middle East, a second look at the origins of the conquest as anchored in population pressures may be warranted. But what do we know about the population in Arabia before the invasion of the Middle East?

The demographers McEvedy and Jones estimated a population of 5.25 million in Arabia in 600AD, numbers higher than those of either Egypt at 4.5 million, or Iraq at 1 million at 600 AD. Ch. Pellat suggested a high birth rate prevailing during the time of the Prophet by using the Arabic sources, biographies of members of the Quraish, the Prophet’s clan. He suggested an annual population growth of between 2.5% to 4% like that of nowadays Egypt. In a recent book, Greg Fisher documented two Arab state formations in the Middle East before the conquest of the 7th century. Two different groups of Arab tribes, the Jafnids, or Ghassanids, converted to Christianity and were clients of the Byzantines, and the Nasrids, who were clients of the Sasanids. The Arabic sources report that 30,000 local Christian Arabs from the Banū Ghassān tribe fled to Byzantium. Finally, the Muslim armies initially dispatched to conquer the Middle East under Caliph ‘Uthmān, 644-656, were estimated as being between 50,000-300,000 strong, and were reinforced by an additional army of 35,000-40,000 dispatched to aid

43 McEvedy and Jones, p. 227
44 McEvedy and Jones, p. 151
47 Heidemann, p. 47.
While numbers reported by the chroniclers are not to be trusted, the evidence may be taken as pointing to a population increase in Arabia. Yet, even more significant is the lack of evidence of plague in Arabia. There is no evidence that the Arabs were affected by the plague prior to their entry to the Middle East. The only reference to a Plague outbreak affecting the troops was during the Arab march on Syria, at Amwās, in 638, where some 25,000 Muslim soldiers perished. In fact, most of the conquest took place during a lull between plagues which lasted until 670, and suggest to us that the Arabs were not immune to the disease. In other words, it suggests that if the Arabs remained outside the Middle East, they were not affected. Why and how were the Arabs spared and why were their numbers allowed to grow unhindered?

Epidemiology would suggest to us that nomads were immune to the plague because of their ecology. Unlike city dwellers and villagers, nomads do not hoard grains, nor do they carry loads of grain with them. Grain storage, the natural habitat of the rats and their fleas, transmitters of the Bubonic plague, were common to the urban economy of the Middle East. Hoarding and storage of grains, facilitated transmission of the bacillus from rats to humans and were responsible for the rapid spread of the plague in the cities. House rats, which lived in grain storage, and near people, were absent in the nomadic environment. Unaffected, the population of Arabia was free to grow. Could this explain a Malthusian situation in Arabia to which migration offered a ‘positive check’?

Demographers have long viewed emigration, immigration and colonialism as solutions to a Malthusian equilibrium, relieving pressure on the resources in the old country, and increasing resources by making new lands available in the new country. Macro theory of neoclassical economics explains migration based on geographic differences among regions in the supply and

demand for labour.\footnote{Massey et al., p. 433 et sq.} Workers with low wages will migrate towards markets where wages are higher. But demographers also have something to say about the human quality of the migrants. Economists and demographers agree that most migrations start with young economically active people. Livi-Bacci holds that both migration and its social and economic adaptations are closely tied to selective processes, one which must do with the human quality of the migrants.

“There are historical proofs that migrants are not a random sample of the original population but are selected for several characteristics. Age, health, physical strength, endurance, and inclination for new experiences are qualities which the migrant population.”\footnote{Livi-Bacci, 99-100).} Several models of historical migrations for settlement as well as land reclamation on the ‘frontier’ suggest meaningful and methodological observations for the structural change in demographic patterns in the Middle East.\footnote{Livi-Bacci, 103} Most theories of migration hold that the individual or household’s decisions on income maximization determine who will migrate,\footnote{For a survey of recent theories see Massey et al.” Theories of International Migration’} and that labour migration is followed by settlement, family and community formations.\footnote{Stephen Castles and Mark J. Miller, \textit{The Age of Migration. International Population Movements in the Modern World.} (MacMillan Press, 1998), pp. 28-29.} The process of migration as described by demographers, involves either occupation of sparsely populated regions within a settled area or the transformation of the space by land reclamation. Like the Arabian Muslims, migrants were for the most part young workers, many without families, and a significant portion of the reproductive-age population. By migrating they provided a relief from population growth in the old country and a new factor of demographic increase in the new one. Such was the case of the nomads pressing on the Roman Empire frontiers, and of the medieval ‘drive to the east’ in Europe which fueled the European demographic growth of the eleventh to thirteenth centuries.\footnote{Land reclamation was also suggested for Western Europe reaction to population growth after the Justinian Plague by Findlay and Lundahl.}

What happened in the Middle East correspond to what we expect based on migration theory. A robust demographic growth which occurred among the tribes in Arabia pushed them to travel, migrate and colonize. By the time the Arab troops moved from Arabia and entered the Middle East, around 630AD, evidence of abandoned land is everywhere. The Arab chronicles show that Mecca gave orders to begin the settlement of Iraq well before the conquest was
completed. As early as 636 AD Muslim soldiers were told to settle in Iraq and during the 640s immigrants from Arabia were directed to the garrison cities of Kūfa, Basra and all the way up to Mawsil.58 In 644, soldiers from Arabia were ordered to settle in the coastal and interior cities of Syria-Palestine, and were offered land grants and gifts of houses.59 In 656, the move of the Islamic administration from Mecca to Damascus, signals a change in the official settlement policies and more settlers were directed to Syria. The ċīwān, bureau responsible for land distribution, began carrying out censuses of the local population, which included one survey of fugitives in Syria.60 The censuses were conducted regularly during the 90 years of Umayyad rule, 656-750 AD at first every 18 years, later, more frequently.

But the chronology is not at all clear at to which of the regions was hit. After the initial visitation, Stathakopoulos states that “the sources are limited and difficult to use”61/. He notes recurrences in 558 Constantinople and again in 573-574, Syria and Iraq 560-561, Antioch, 593, Thesalonica 597, Constantinople 599 and again in 618-619. On the other hand, Dols believed that the plague was more active in Syria-Palestine than in Egypt and Persia.62 This supports the hypothesis that the decline in both may have been the result of a positive check, and not a demographic event.

There was also convergence of ideology. Within decades after the death of the Prophet Muhammad in 632AD, emigration has become a dogma embodied in the term Hijra, the


61 Stathakopoulos, pp. 102-03.

62 Dols, p. 381.
emigration par excellence.\textsuperscript{63} Capital investment from the ‘old country’ in the new colonies facilitated settlement, \textsuperscript{64} and the Umayyad Caliph \textsuperscript{\textcircled{c}}Umar II was particularly attentive to migration from the ‘old country’. In his fiscal rescript, written somewhere between 717 and 720AD he revised taxation rules and land holding, reminding the settlers that the Prophet has said that “The gate of emigration should be opened to all the people of al-Islam.” He re-iterated: “As for emigration (\textit{al-higra}), we open it up to whosoever may emigrate of the Bedouin, and who sells his cattle and removes from his Bedouin abode to the abode of emigration…”\textsuperscript{65} To encourage migration, Umar promised regular maintenance for those who did so. He addressed the problems of fugitives by decreeing that peasants, who fled to the cities, were not ordered to return but that the remaining peasants would be held responsible for the fugitives’ taxes, and their lands should be returned to the Muslims for cultivation.\textsuperscript{66} The recurrent outbreaks of the plague in the seventh and eighth centuries significantly retarded population recovery and weakened Muslim society in Syria and Iraq during the Umayyad period, 656-750AD. As suggested by Michael Dols, population recovery was slower and drawn-out and deliberate and official encouragement of migration continued.\textsuperscript{67} Recurrences occurred in Southern Iraq in 688-89 in Basra, in Kufa in 699, in Basra in 706, 716-17, in Kufa in 669, 670, 673, 773. In Syria-Palestine in 627-28, 676, 698, 716-17, 734-35 and in Egypt, 686, 689, 699.

In conclusion, Arabia may have had its own Malthusian crisis with the ratio of population to resources changing but without the plague to provide a check on population growth the only relief was in migration. The Arab conquest of the Middle East extended the frontier and provided a ‘safety valve’ to population pressure but the settlement patterns of the new immigrants were significant to the economy in other ways too. In accordance with migration theory, immigrants drift to sectors which offer better wages, and this meant settling in the cities. Indeed, the Arabs settled in the cities. When forced to settle in rural areas, as was the case in Egypt, attempts to


\textsuperscript{64} Livi-Bacci, 100-105.


\textsuperscript{66} Gibb “The Fiscal,” 2, 7.

settle tribes on agricultural land ended in rebellion.\textsuperscript{68} As recent work has shown, urbanization rates in the Middle East increased between 800 and 1000 AD and were the highest among contemporary societies. \textsuperscript{69} Furthermore, since population levels in the Middle East were already low and the settlement of the Arabs did not remedy manpower shortages in the agricultural sector, the drive for technological innovation in agriculture, intensified. Together, migration and urbanization, encouraged the rise of manufacturing and encouraged productivity in the agricultural sector. On the human capital front, the Arab labour force, the immigrants, was young, dynamic, fit and with no family attachments. \textsuperscript{70} It was a beginning of a transition to a new demographic regime.

IV. LABOUR PRODUCTIVITY, CHANGE IN PROPERTY RIGHTS, FERTILITY REGIME

As previously stated, Arab emigration and colonization of new territories did not fundamentally alter population levels in the rural Middle East and with the recurrences manpower shortages continued for at least 200 years after the conquest. The prolonged demographic crisis had important consequences. We know that standards of living rose in the early Islamic Middle East, a sign of an economic growth, but there were other consequences to the prolonged new demographic conditions: rising productivity, emergence of individual property rights and change in fertility regime.

In the absence of a quantitative work on productivity in agriculture, a rise in rural labour productivity maybe linked to technological innovation. For instance, changes in irrigation technology to extend cultivation to areas previously unirrigated by canals in response to growing demand as using \textit{Qanats} to irrigate cotton fields.\textsuperscript{71} Change in plant cultivation involved not only new food crops and food plants,\textsuperscript{72} but also industrial plants, cotton and flax. \textsuperscript{73} Manpower shortages also contributed to improved efficiency in urban production. A rise in purchasing

\textsuperscript{68} Gladys Frantz-Murphy, \textit{Arabic Agricultural Leases and Tax Receipts from Egypt, 1484-27A.H./765-1035 A.D.}, (Wien 2001)
\textsuperscript{70} Maya Shatzmiller, \textit{Labour in the Medieval Islamic World} (Brill, Leiden, 1994).
\textsuperscript{72} Andrew M. Watson, \textit{Agricultural Innovation in the Early Islamic World}, Cambridge, Cambridge University Press, 1983)
\textsuperscript{73} Watson, \textit{Agricultural}, Maya Shatzmiller, “The Adoption of Paper in the Middle East, 700-1300 AD - JESHO, 61/3 (2018)
power and a change in consumers’ taste triggered specialization in manufacturing. Demand for income elastic goods, such as luxuries, fine textiles, fine foods, imported spices and fancy dishes, rose. A rise in aggregate demand for manufactured goods fueled an increase in specialization, division of labour and the extent of markets in the cities. 74, 75 So far we have focused on the impact of the productivity increases associated with the Golden Age on wages, in the aftermath of the Justinian plague. It may also be useful to explore the possibility that there were other causal linkages between the conditions in the aftermath of the Justinian plague and at least some aspects of this episode of intensive growth and economic efflorescence. We can point out to at least one such possible causal linkage. It is possible that the high levels of wages and per capita wealth in the aftermath of the Justinian plague may have facilitated the emergence of new tastes in food and clothing and demand for new products and income elastic items or luxuries, both domestically produced and imported. This tendency may have encouraged the introduction of new crops and the rise of productivity in agriculture. It may also have helped expand the division of labor in the urban economy and created demand for imports and long distance trade. In many respects, this may have been a process similar to the emergence of new tastes and demand for luxuries in Europe in the aftermath of the Black Death.[1] Another issue concerns the fertility rate and population recovery. We do not know whether this high wage environment influenced the fertility rate and population recovery in the early centuries of Islam but this is a question future research may explore. [2] [1] Watson (1983), Herlihy (1997) and Voigtlander and Voth (2009). [2] For an argument and a model that explains how fertility rates in western Europe may have declined in the aftermath of the Black Death, see Voigtlander and Voth (2012).

Watson (1983), pp. 129-33 has argued that growing urban demand for agricultural products stimulated productivity increases in agriculture which, in turn, was able to feed the growing population in the urban areas during this period; also Shatzmiller (2011).

In contrast, Richard Bulliett has argued that high levels of urbanization in Iraq were not accompanied by increases in agricultural productivity. (Bulliett, 1994) However, he has not been able to explain how the urban areas in Iraq obtained their food.

SP: what is B’s argument about how the cities fed themselves? growing their own food crops? He must have an argument.

74 Shatzmiller, Labour,
A shift in property rights regime also occurred among the Arab population once in the Middle East, as suggested by Douglass North. Property rights, in evidence in settled societies, existed in the Middle East but not among the nomadic Arab tribes. There a common property regime prevailed giving unconstrained access to property held together by the tribe. Members of the tribe ignore constraints and tend to abuse free access to the property until its gradual elimination. When the tribes were no longer on move it became possible to delineate property and exclude others from deriving benefits from it and thus exclusive property rights regime emerged. But North also linked the formation of exclusive property rights to population check. A group living in a common property regime, will not engage in limiting births since it has no incentive to increase its numbers and power to share limited resources, while a group with exclusive property rights has an incentive to limit its fertility to increase, or keep stable, the rate of return to its members’ labour. A group in exclusive property rights regime, which achieved equilibrium between return on fixed resources and population size, will strive to curtail birth rate through “taboos, infanticide, and various other means.” A change in reproductive behaviour will occur. The evidence seems to suggest that such was the case in the Middle East.

A transition to exclusive property rights may have begun with accumulation of profits from trade and Meccan elites felt the need to develop means to protect it and exclude others and experimented with a body of law to organize, specify and adjudicate property rights. Umar’s visit to the Middle East after Amwas to divide the property of the dead is a good illustration of the shift. Significantly enough, when Islamic law appears in the 10th century it contains individual property rights, but more significantly specific property rights were given to women, including


77 The Islamic environment of property rights offers evidence to both cases, including the ‘free rider’ problem, see Maya Shatzmiller, “Islamic Institutions and Property Rights: The Case of the ‘Public Good’ Waqf” *Journal of the Economic and Social History of the Orient*, 44/1(2001): 44-74.

78 North, *Structures*, p. 80 et sq.


rights over reproductive behaviour. 81 Two sets of unique women’s property rights, one dealing with income and property, the other, rights over the body, demonstrate the link. 82

The law names four sources of women’s property and defines women’s rights over them: bride price (husband gifts,) dowry (family gifts), wages and inheritance. The first group of assets are dictated by mandatory transfer rule include the mandatory gifts of marriage and share in the inheritance. The transfer of cash and property from the groom to the bride, referred to next as bride price in agreement with the literature on marriage gifts, are defined as belonging to the category of generic gifts, yet subject to specific rules. The family gifts to the bride, the dowry of the literature, non-mandatory but customarily registered in the marriage contract fall under the generic law of gifts and judged accordingly. Female inheritance was mandatory with females inheriting a pre-determined share of the estate. Final source of female property was employment income earned in manufacturing or service, subject to specific laws but protected. Husband and wife’s properties and incomes were legally held in separated legal entities, inherited and gifted independently with the protection of the law. The law determined that assets should be transferred to women in a timely manner over a lifetime.

Simultaneously, Islamic law views females’ property rights as embedded in their persona not only from birth but from the moment of conception. 83 ‘Dormant’, during minority they need to be activated upon reaching majority around puberty. Males and females are entitled to receive gifts at any age, but cannot dispose before reaching the age of majority and going through ‘release from ‘interdiction’ by the father. The law gives women rights over their reproductive behaviour which by exercising them will affect fertility rates and the rhythm of birth. Procreation was regulated through the timing of consummation of the marriage, the use of birth control, and the length of breast feeding. The wife is entitled to make decisions over timing of marriage and consummation, breastfeeding and maintenance.

81 Maya Shatzmiller, Her Day in Court. Women’s Property Rights in Fifteenth Century Granada. (Cambridge, Harvard University Press, 2007)


83 On the inheritance rights of the unborn child see Shatzmiller, Her Day.
How and why did these rights emerge and why did they become a law? These rights express the new social and economic norms, created and shaped by new realities. The new demographic conditions in the Middle East were responsible for a change. There can be no doubt that the demand for labour force opened the door to women’s entrance into the labour market. The disappearance of servile labour in the Middle East and the demand for luxury items, increasing specialization and division of labour, created opportunities for women and increased equity in their hands. The new economic conditions explain the accumulation of wealth from dowries and rent collected from properties and market activities, from wages, gifts and income from inheritance and commercial transactions. The social norms express protection for it. Women’s incomes and the new individual property rights made it possible to create a legal environment protecting the gains in their hands, for the benefit of the household and future generations.

Demographers, anthropologists, developmental biologists and economic historians all agree that the role of female labour in lowering fertility rate was crucial. For instance, recent studies suggested that in the aftermath of the Black Death a pasture economy emerged which improved women’s employment and made it possible for them to live away from the family hearth. Referred to as the ‘European Marriage Pattern’ or EMP, Europeans were credited with the invention of voluntary limit on births by postponing marriage and reducing fertility. In the Middle East with the rise of standards of living came possibilities to make other choices, favouring a small number of children with better opportunities. In the case of women in the Islamic Middle East the rights over the body permitted women, and men, to affect fertility rate by limiting the rhythm of births. Basim Musallam interpreted the lax attitude in Islamic law towards birth control as emanating from despair and nihilism in the aftermath of the Black Death, but in fact the laws governing birth control were formulated well before and were codified in the 10th century. The laws which gave women power over reproductive behaviour may have come as a reaction to the Justinian plague, but above all were the result of the new demographic regime. The Islamic Middle East developed a new demographic regime that

84 Details in Shatzmiller, Her Day.
maintained population in check for the long haul. Since population pressure was one of the most powerful factors determining economic growth and decline in historical societies, keeping it in check facilitated growth and maintained it. 87

V. CONCLUSION

This paper suggested that the answer to the question of ‘why did the Early Islamic Middle East have the highest standards of living’ may be found in new evidence on population levels and demographic transition in the Middle East. The paper presented evidence that for 50 years prior to the Islamic conquest, Iraq and Egypt suffered from a Malthusian crisis, that crippled the economy. Undermined by population pressure on critically exhausted land resources, human settlements collapsed. The paper also evidenced a parallel process taking place in Arabia, where population growth outstripped the resources. While the Justinian Plague further lowered population levels in the Middle East, it did not affect population levels in Arabia. The nomadic tribes in Arabia lived under ecological conditions that helped them evade the plague. Nomadic way of life with no permanent grain storage made it impossible for the rat population to be carriers of the disease and prevented the spread of the plague. Arabian population continued to grow unhindered, placing further pressure on limited resources. It was relieved by migration to the settled Middle East.

The paper proceeded to examine further evidence to argue that developments in the demographic regime in the Middle East and the transition to lower fertility rate, which followed, caused lower population levels to be maintained, and positively impacted economic developments. A transition from common property rights regime to one of individual property rights which occurred in Arab society once it settled, and a rise in employment opportunities for women, helped to change fertility rate. The new property rights protected wealth accumulation by creating generational transfer conduit along male and female lines. Women’s rights over property and bodies entered the law. The extension of legal permission to use birth control and other means of control over procreation, facilitated control of the rhythm of births. Since these rights were formulated and codified in the law well before the Black Death, they need to be linked to the new demographic regime.

87 North, 65, for a brief review of historical societies and how population pressures affected their economic performance.
The demographic transition from a high fertility regime to one of lower fertility over the long run had consequences to earnings and standards of living in the Middle East. The combined effect of plague recurrences and lower fertility rate which lasted until the ninth century, contributed to easing population pressure in the Middle East, while the slow rate of population growth helped maintain wages and standards of living at their initial high level. As population rose so did aggregate demand and with it division of labour, higher productivity rates, and trade activities. Literacy rates increased, driving improvements in human capital and innovation in technology. 88

In conclusion, population trends and human capital played a much bigger role than previously thought. In an economy suffering from manpower shortages but rich in human capital the quality, size and composition of human capital, stirred innovation in technology and an early knowledge economy. Instead of adopting the ‘path dependency’ explanation attributed to the Middle East economy, namely, loyalty to past practices associated with the ‘continuity’ pattern, the Islamic Middle East economy that emerged after the conquest was a model of renewal and dynamism. The validity of change coming from the impact of demographic exogenous shock is not challenged by new evidence of previous and later shifts in population levels and trends, but is rather complemented and strengthened by it.