INFLATION AND ECONOMIC POLICY IN 19th CENTURY MOROCCO: THE COMPROMISE SOLUTION

By Thomas K. Park

Summary

This paper examines the economic policies pursued by the Makhzan during the 19th century in its attempt to prevent inflation of bronze currency from affecting government revenues. It suggests that Makhzan policies were generally successful and that as a result there was not really any monetary crisis in the 19th century.

The principle monetary problem was the steady erosion of the nominal value of copper or bronze currency. This depreciation continued throughout the 19th century. After 1862, the Makhzan counteracted the depreciation rather effectively by dividing its sources of income into two types: those paid and measured in bronze or copper and those paid and measured in silver currency. In practice, the bronze measure was allowed to float on the market while the silver measure was fixed.

The basic accounting term used to measure both silver and bronze currrency was the uqiya but measures of silver and those of bronze were very carefully distinguished in practice so that uqiya from one context were not mixed with those from the other. Each was explicitly valued in proportion to the other and when sums from bronze accounts were added to those from silver accounts they were always converted at the prevailing rates of exchange. Thus, though the accounting term 'uqiya' was used for both measures the two types of uqiya were not equivalent.

The paper discusses why the term uqiya continued in use despite this dichotomy of meanings and describes the other subsidiary modifications made by the Makhzan to its economic policy during the 19th century. The conflict between European economic interests and the Makhzan's interest in preserving its economic independence form the backdrop to the financial policy decisions studied.

At times the causes of inflation are beyond a government's control even today when few governments can be considered to be in as weak an economic and political position as that of 19th century Morocco. During that century, Morocco accepted as legal tender a variety of foreign coins (mostly silver but a few gold coins as well) and also maintained a fairly minimal effort at minting, or having minted in its name, a national currency. At its most basic level after 1822, Moroccan currency formed a bimetal silver-bronze system. The greatest strictly monetary problem in this period was a prolonged depreciation of Morocco's bronze currency.[1]

The main causes of price inflation (in terms of Morocco's bronze currency) were the ease of counterfeiting and the easy acceptance counterfeit bronze currency met in the countryside: where taxes were generally assessed at fixed rates per region and were only occasionally adjusted to take into consideration dramatic changes in the annual level of production. Decreases in the market price of copper throughout the 19th century,[2] payment of government salaries at fixed rates in bronze currencies, and the use of large quantities of foreign coins also contributed to the instability of bronze currency. In order for the Makhzan to have controlled this inflation it would have needed much firmer political control of Moroccan territory and a stronger economy. Morocco's political and economic weakness vis à vis Europe was deliberately increased by France and Spain, in particular, throughout the second half of the 19th century and this helped to put control of inflation largely out of Morocco's hands.[3]

Yet, if the Makhzan could not control inflation it did manage to avoid being seriously hurt by it. The money management practiced by the Makhzan from 1862 to 1912 was quite complicated and relied on a subtle distinction between government accounting currency and the accounting currency of the market.[4] An initial consideration of the basic inflationary record will introduce the monetary terminology, used in the market, on which all accounting currencies were based.

The Inflationary Record

In any consideration of inflation it is reasonable to begin with Fisher's equation: $MV = PT$ where M is the total stock of money, V is the velocity of circulation, P is the price level and T is the volume of transactions.[5] In this context, inflation is an increase in P in terms of a given currency. In Morocco, during the 19th century the price of goods in the market place continually increased in terms of the bronze/copper currency used for the smallest denominations. According to Fisher's equation one distinct possible cause of inflation would be an increase in the available stock of money (M) with no significant changes in V or T. This would leave only P to compensate for the increase in M. This process is the most obvious cause of inflation in 19th century Morocco. Decreases in the cost of copper throughout much of the century made counterfeiting of copper or bronze coins profitable[6] and the subsequent increases in the stock of money, for bronze currency was never exported to pay for debts, led inevitably to inflation. Only a minimal effort was made to maintain an indigenous silver currency, there was usually a slight deficit in the balance of payments, and more importantly Morocco had

to pay enormous war debts to Spain,[7] so there was a slight shortage of silver and this may have added to the depreciation of bronze currency through silver's own relative scarcity.

Although the government early on tried to compensate by adjusting downwards the value of bronze/copper currency, it was usually one step behind where it mattered: in defining tax revenues. It drew some advantages from inflation in that inflation decreased the value of fixed salaries paid out in copper or bronze currency.[8] Yet, the overall impact must have been negative since salaries were only a small part of governmental expenditures. In the period before 1862 official depreciation of the bronze uqiya had some negative repercussions on customs duties as well.

Fisher's equation is a valuable way to look at the question of inflation because it shows the inter-relation between prices, money supply, velocity of monetary circulation and the levels of production. In the simple form cited above the equation makes no explicit reference to international exchange, balance of trade or a host of other factors which could be said to be subsumed in one or the other of the four terms but it nevertheless suggests that control of inflation (reflected in the equation by increases in P) would require either having control of M, V, and T or at least having control of any of these which happened to be unstable in a given time and place.

The levels of commodities produced and sold in the Moroccan market (T) were distinctly out of the Makhzan's control because on the local scene harvests were unpredictable, even demography was subject to regular variations due to epidemics and famines, while levels (and hence prices of) commodities produced in Europe were largely determined by European and world factors and were only affected in a minor way by Morocco's preferences and designs. The velocity of circulation (V) probably depended primarily on modes of communication in Morocco and these were improved dramatically during the 19th century by technological innovations such as steam ships and telegraphs. 'V' and 'M' were undoubtedly also increased by the extensive credit introduced by foreign linked merchants.[9] These factors were clearly out of Morocco's control. Each of M, V, and T was, therefore, essentially beyond control but inability to control only one of the three would have been sufficient. From this perspective it is clear it would have been unrealistic to have expected the Makhzan to be very successful in controlling inflation (or more specifically depreciation of the bronze currency since prices inflated mainly in terms of the bronze currency).

In fact throughout the 19th century there was a fairly steady but not alarming, by modern standards, depreciation of the bronze currency. The table below summarizes the situation during the 19th century by decade.[10] The depreciation is shown measured by the changing exchange rates between Moroccan bronze currency (referred to as pseudo uqiya for reasons developed later in the paper) and Spanish Rials: one of the most popular foreign currencies in use in 19th century Morocco. The yearly rate of depreciation is calculated from rough averages for the decades and according to the standard formula:

$$\text{rate} = (\text{final value}/\text{initial value})^{1/n} - 1$$

where n = number of years between initial and final values and usually has a value of ten here.

Table
Depreciation of bronze currency during 19th century

	Value of Spanish Rial in pseudo uqiya	*Index 1810 = 100*	*Yearly Rate of Depreciation*
1800–1820	10·0	100	0·0%
1821–1830	13·5	135	3·05%
1831–1840	15·0	150	1·06%
1841–1852	16·0–18·0	170	1·26%
1852–1862	18·0–20·0	200	1·64%
1862–1870	34·2–39·5	370	6·35%
1871–1880	52·6–105·0	790	7·88%
1881–1890	78·0–122·2	1000	2·39%
1891–1900	93·0–104·0	985	−1·51%
1901–1912	120·0–140·0	1300	2·81%

N.B. using the 112 year period from 1800 to 1912 we get an average rate of depreciation of 2·55% per year.

The table indicates that though there was a fairly steady depreciation of the bronze currency throughout the 19th century, the rate of depreciation was actually fairly modest when viewed on an average yearly basis and compared with rates of depreciation/inflation accepted as normal during the 20th century. The principle reason these rates of depreciation necessitated serious modifications in the Makhzan's financial policy was that the Makhzan was forced by its treaties with foreign powers and its military weakness vis à vis those powers to accept virtually unaltered levels of duties for imports and exports for many decades at a time. The Makhzan's freedom to revise rates on duties in line with inflation was consequently limited. In a unified system where both bronze and silver were legal currency for all transactions the Makhzan would have been paid the money owed it, largely import and export duties as well as taxes, almost entirely in the depreciating currency. Initially, this would have meant only a minor loss of revenue but as the years went on it would have caused major losses in state revenues.

19th Century Monetary Terminology

The table outlined the rate of depreciation in terms of the exchange rate between two currencies: the Spanish Rial and the pseudo uqiya. The latter is my term for a quantity of bronze coin considered equal to 24 flus (singular fils).[11] In fact, there were numerous denominations of bronze currency in the market but each coin had a known relationship to standard flus. The actual term used for this quantity was 'uqiya' but this term was also used to refer to a government accounting currency which after 1862 was adjusted for depreciation of the bronze currency and so referred to an increasing number of actual bronze flus each year. This has caused considerable confusion to those who have tried to make sense of Makhzan archives, yet it was demonstrably the general practice of Makhzan officials after 1862. In order to avoid confusion, I use pseudo uqiya to refer to the market accounting currency which referred

to a measure of bronze equal in value to 24 flus, and uqiya to refer to the government accounting currency which was one tenth part of a mithqal. Thus, the rate of depreciation of pseudo uqiya in Table above reflects the increasing amount of bronze currency needed to equal a silver Spanish Rial. Before 1862 there was, in fact, no difference between the value of a (government accounting) uqiya and the value of 24 flus. Thus, but for the change in 1862, there would be no need to distinguish the pseudo uqiya equal to 24 flus from the traditional government accounting uqiya.[12]

19th century Moroccan markets accepted a large number of foreign coins and almost all Moroccan coins: including those long out of production as well as those recently minted. The Makhzan records were, however, kept in accounting currency. The principle function of accounting currrency was traditionally to facilitate the collection of taxes and duties. The particular turns to which accounting currencies were put in the 19th century were only variations on a tradition. Islamic monetary systems in the Middle East were usually based on a bi-metal gold-silver standard (though the Fatimids had a gold standard).[13] Morocco inherited this system and the accompanying normal mode of coping with inflation. Thus, the Almohads had a bi-metal gold-silver standard based around the gold dinar worth 20 silver dirham.[14] The silver currency of the period had a tendency to depreciate, no doubt due in some part to counterfeiting, in much the same way as the bronze currency during the 19th century.

This depreciation meant that where ever possible payments would be made in the lesser valued currency and this would drive the more valuable currency out of circulation and into the market as a commodity.[15] The traditional cure in Islamic states was to remint the gold currency at a lesser intrinsic value—making it equal in value to the depreciated silver currency. The cure was ephemeral in that it necessitated reminting every time there was serious depreciation of silver. Each reminting lowered the intrinsic value of the gold currency, provided the same terminology and value ratios between coins were maintained. In practice, Moroccan governments seem to have put a high priority on maintaining terminologies and the relative value of their currency. Historically, this meant that at some point gold currency became so small, or contained so little gold, as to be virtually useless and was, in point of fact, abandoned.

In 1766 the Moroccan gold coin was the bunduqi, worth 20 dirham, while the silver coins were the mithqal, worth 10 dirham, and the dirham, worth 1 uqiya of bronze.[16] The uqiya itself was simply a measure: the weight of bronze worth one dirham. The mithqal was a gold coin during the Sa'dian era; having at first 4·729 grams of gold then it was devalued to 3·549 grams and finally it was further decreased to 3 grams during the 18th century. In 1760 the mithqal became a silver coin for the first time.[17] At this point, Morocco had the potential for a bi-metal silver-bronze standard; though there were still a few indigenous gold coins in circulation.

Gold coins became increasingly rare and saw little use by early in the 19th century. The sign that for all intents and purposes the monetary system was a bi-metal silver/bronze one from 1822 on is that at this point silver currency began undergoing the same process that gold had undergone in earlier centuries. By 1822, an uqiya of bronze (a weight of bronze not a coin) began to decrease seriously in value but rather than reminting the mithqal, the Makhzan allowed two foreign coins to take its place. The mithqal had contained 29·116 grams of silver while the new coins, the Spanish Rial and the French 5F piece (French Rial) conveniently contained 26·316 and 25 grams of silver respectively.[18]

In abandoning production of the mithqal, which had been defined as the value of 10 uqiya of bronze, the mithqal joined the uqiya as an accounting currency and kept its original value of 10 uqiya. At this point while accounts began to be kept in strictly accounting currency the value of bronze continued to slip. This meant that groups of bronze coins weighing an uqiya became worth collectively less and less. Because an uqiya of bronze was traditionally composed of 24 flus, while this amount of bronze currency depreciated in value it kept its original designation as an uqiya. Until 1862 the actual depreciation of bronze was accepted as a depreciation of the government accounting uqiya as well (before 1862 the same accounting uqiya was used in the market and by the government). After 1862, there were strong incentives in Morocco to maintain the two conceptually separate 'uqiya' because, on the one hand, the 24 flus definition was widespread and accepted, and on the other, import and export duties were defined in terms of the government accounting uqiya (or mithqal for the two were definitionally linked together in the ratio of ten to one).

From 1828 to 1852 the bronze flus depreciated with respect to the Spanish Rial which went from a value of 13·5 uqiya to 20 uqiya. By 1861, this rate was inadequate because prices had risen in terms of bronze so much that the Makhzan was loosing an important part of its rural tax revenues to inflation. Initially, the Makhzan revised the rural exchange rates to 32·5 uqiya to a French Rial (5F piece) with the Spanish Rial maintaining its traditional ratio (20/19) to the French Rial. At the same time it kept the old exchange rates in customs and other areas where payments to the Makhzan were made in silver and defined in uqiya. To generalize the exchange rate would have meant that duty defined as a certain number of uqiya could have been paid in fewer silver coins than before and so would have decreased revenues in this area.

Although they had lost nothing by the change, the foreign merchants stood to gain if the new exchange rate were generalized so they protested vigorously to their respective Consuls.[19] In 1862, therefore, the Mazkhzan succumbed to pressure and made the change a general one. This set the stage for the pseudo uqiya. Realizing that it could be forced by Europe to accept lower real customs revenues if it simply reevaluated exchange rates to take bronze depreciation into account, the Makhzan devised a new monetary policy.[20]

The goal of the monetary system practiced after 1862 was to keep revenues from customs duties and rural taxes unaffected by depreciation of the bronze currency. The way to do this was to keep customs exchange rates the same while allowing rural tax rates to float at the market rate. The solution developed by the Makhzan was traditional in character but highly successful. The solution relied on the distinction between governmental accounting currency (uqiya) and market accounting currency (pseudo uqiya). Rates of duty and rural taxes could remain fixed in terms of governmental accounting uqiya if the exchange rate between uqiya and silver currrency was independent from the rate between pseudo uqiya and silver currency.

Hitherto an uqiya had been an uqiya and so rural taxes were definitionally payable in units of 24 flus because that was the definition of an uqiya. After this point in 1862, 24 flus (now only the definition of a pseudo uqiya) were still referred to as an uqiya in the market but were not accepted in payment of an uqiya's taxes. The government accounting uqiya was continually adjusted to the depreciation of the bronze currency so that pseudo uqiya were worth less and less of a government accounting uqiya as the 19th century wore on. I use the term 'pseudo uqiya' to emphasize that written materials from the period use the word 'uqiya' both to refer to a measure based on market currency and to a traditional accounting currency yet take great pains to distinguish between the two for accounting purposes. The term also seems appropriate because it reminds one that during this period there was no actual market coin called an uqiya yet the market-derived uqiya represented something just as ephemeral yet useful as the standard government accounting uqiya. Registers which record rents from the city of Essaouira keep those collected in bronze carefully distinct from those collected in silver (the latter were from houses rented to foreigners in the qasba). Though both types of payment are listed as uqiya, when they are converted to rial it is at completely distinct rates of exchange.[21]

In fact, the uqiya (or mithqal as units of 10 uqiya were called) was not the only accounting currency used. Two other major accounting currencies were also in use during the 19th century: accounting rial and bilyun.[22]

The accounting rial was either the equivalent of the Spanish Rial or the French 5F piece depending on the part of the 19th century in question. It is not a simple matter to elucidate which was meant in some periods because, as in the case of the uqiya, the records usually do not specify which rial is meant. The accounting rial was not in use until 1862 and then was defined as equal to the 5F piece. This is so despite a basic orientation of Moroccan indigenous currency around the Spanish Rial and its subdivisions. In 1877, the accounting rial became the equivalent of the Spanish Rial and remained so through a period of severe depreciation for the Spanish Rial until the accounting rial became the equivalent of the 5F piece again in 1896. Yet, until 1893 rials were little used as a general accounting currency and it was not until 1903 that some revenues such as customs duties and qasba rents were recorded in accounting rial.

I have examined the reasons for these changes in some detail elsewhere,[23] but in brief one can say that each change was designed, usually successfully, to compensate for some monetary variation caused by the changing values of silver, the changing intrinsic values of the foreign coins in use in Morocco or the changing relative value of Moroccan coins versus foreign coins.

In order to cope with international monetary pressures the Makhzan found it necessary to rely increasingly on a third type of accounting currency: the bilyun. The bilyun was originally defined as one twentieth of a Spanish Rial (and hence the equivalent of a small Spanish silver coin called the Rial Vellon) as early as 1862 and first appears to have been used regularly in accounts around 1889. This corresponds to the beginnings of a drastic depreciation of the Spanish Rial with respect to the 5F piece in and after 1888.[24]

In this context, increased reliance on the bilyun became necessary to keep track of the dramatic non-traditional differences between the value of the 5F piece and that of the Spanish Rial. Adjustments to the uqiya/pseudo uqiya exchange rate were continually being made to keep rural taxes at as stable a value, in depreciation adjusted terms, as possible and it would have been hazardous to make further adjustments in the exchange rate for the uqiya to compensate for depreciation of Spanish currency since this would have jeopardized the financial policy followed after 1862 and perhaps elicited further demands to reduce customs duties. The solution devised was to recognize explicitly the difference in value between the two rials and use the bilyun to keep track of these differences.[25]

Relative Success of the Makhzan's Policies

At the beginning of the 19th century, the Makhzan practiced traditional mutation to cure inflation. In Europe mutation had often been engaged in by monarchs who needed a quick fix for their debts.[26] As practiced, reminting currencies at a lower intrinsic value had usually had a long term negative effect because the first thing that happened was that taxes were paid in the depreciated currency and the national debt was further aggravated. In the Moroccan case, mutation was a much less harmful practice because it was primarily used to counteract inflation rather than to get out of debt.

With the transition to a bi-metal silver-bronze standard around 1822, the Makhzan ran a higher risk from an inflationary process because of the greater prominence of the easily counterfeited bronze currency. At the same time it could not afford to continue the practice of mutation since it had to pay its international debts in silver. This greater involvement in the international scene and the need at first for European armaments and other goods and then later the crushing burden of international debt imposed on Morocco by European powers (especially the debt to Spain incurred in 1860 for daring to challenge Spain's claim to parts of Morocco) would have made continuance of a monetary policy based on mutation virtually catastrophic.[27]

The context in which the new policies were developed is important. During the entire 19th century, Morocco practiced a system of taxation that included tax farming as a principle component. In Europe, tax farming was regularly practiced until the late 17th century and seems to have been used where it was unremunerative or impossible to develop a consolidated state-run system of taxes.[28] 19th century Morocco was in this same sort of position. Control over the country was fairly minimal, the funds were not available to pay for a massive administration—and the tax base was inadequate to make such a system remunerative.[29] Thus, possible reforms of the monetary system and the Makhzan's financial policies were severely conditioned at the local level. Beyond this there were important international pressures embodied in treaties and vociferously defended by the foreign-linked merchant community.

The Makhzan's monetary policies after 1862 were sufficiently well thought out to allow the Makhzan to continue to collect customs duties, and other payments in silver, as well as rural taxes at stable levels until 1896.[30] By this time, the Spanish Rial, to which Moroccan market currency was tied, had ben drastically depreciated. The Makhzan therefore decided on a change back to the 5F piece as the accounting rial and needed to recognize that the market value of the 5F piece was considerably higher than that of the Spanish Rial. Thus, when it made the switch to the 5F piece it changed the exchange rate to the accounting uqiya from 32·5, which had held true since 1862, to 40 uqiya to an accounting rial.[31] In effect, this merely maintained revenues paid in silver at their past levels and accepted the losses which had occurred due to the depreciation of the Spanish Rial. 19th century Makhzan registers and reports can only be understood in a formal sense if one is aware of the policy changes outlined above. From 1862 to 1878 the accounting rial, though conceptually important, was inappropriate as a general accounting currency because there were no suitable subdivisions. The accounting rial was equivalent to the 5F piece but the latter was worth only 19 uqiya while the Spanish Rial was worth 20 uqiya.[32] When the accounting rial became the equivalent of the Spanish Rial in 1878 the bilyun could have served as a suitable subdivision but there were no strong reasons for replacing the uqiya (and its higher denomination the mithqal) as the major government accounting currency. In this context it is worth recalling that a large proportion of Makhzan revenues would always have been paid in bronze so to keep accounts in a silver currency would have been a bit artificial and would have necessitated complicated conversions.

This situation changed substantially in 1897 after the switch to the 40 uqiya accounting rial. At this point bilyun, uqiya, and rial were easily interchanged and the accounting rial became more generally accepted as an accounting currency. In 1897, the monthly reports sent to the Makhzan by the Essaouiran administrators included for the first time both customs and mustafad revenues in one report with both given in rial and bilyun. Nevertheless, some accounts were still maintained in uqiya until 1912. The chief of these was imports—no doubt because they were defined by treaty in terms of uqiya it was easier simply to continue keeping them in uqiya.

If one had to characterize the Moroccan monetary system during the 19th century it might best be described as a conditioned bi-metal silver-bronze system. It was conditioned in a dual sense: there were restrictions, made deliberately by the Makhzan, on which payments to the government could be made in bronze and which had to be paid in silver and the Makhzan was forced by European countries to maintain customs duties at levels largely defined in an 1856 treaty. This foreign constraint as well as manifold other pressures from Europe, such as the need to pay half of its customs revenues (in silver) to Spain from 1860 to 1884 in payment for alleged war damages, makes it impossible to consider the silver-bronze bi-metal system as an entirely unified one.

In the circumstances which confronted 19th century Morocco, the Makhzan must be considered to have handled a potentially catastrophic monetary situation exceedingly well. Certainly the Makhzan managed inflation and avoided being hurt by it in the 19th century better than France did much later from say 1920 to 1960.[33] The solution found by the Makhzan was, of necessity, a compromise but it was indisputably successful within its limitations. By separating traditional government accounting uqiya from market-derived accounting uqiya (pseudo uqiya) the Makhzan was able to maintain its customs revenues and its revenues from the rural areas. The solution sacrificed the advantages of a fully unified system and made the dominance of foreign currencies within Morocco almost unavoidable and this obviously implied some foreign exchange disadvantages and a further dependence on Europe. Nevertheless, it allowed Morocco to avoid most of the ravages of inflation and some degree of exploitation from Europe.

FOOTNOTES

[1] Depreciation of Morocco's bronze currency in the nineteenth century has been noted generally in the literature, but its real scale has been greatly overstated. The question is considered in detail in Chap. 3 of my Ph.D. thesis, *Administration and the Economy: Morocco 1880 to 1980. The Case of Essaouira*, University of Wisconsin—Madison 1983. The original miscalculation seems to have been made by Michaux-Bellaire, 'L'organisation des finances au Maroc', *Archives Marocaines*, Vol. II, 1907, p. 220 who claimed a 120% depreciation! when he in fact meant a 55·357% depreciation: when figured over a number of years this becomes quite modest. Unfortunately, Michaux-Bellaire's weakness in mathematics has not been generally remarked in the literature. To the best of my knowledge, this paper and my thesis represent the first attempt to consider inflation and depreciation in 19th century Morocco both using copious Makhzan archives and a moderate level of mathematical/economic sophistication.

[2] Miège, *Le Maroc et l'Europe*, Vol. III, p. 432 notes that copper lost half of its value on the world market in the space of five years during the 1880s. This is reflected in the much higher than normal depreciation for the two decades of the 1870s and the 1880s—see table above.

[3] There is a lot of historical evidence that Spain and France pursued policies toward Morocco that were designed to weaken Morocco and to prepare Morocco for Protectorate status. See Parsons, *The Origins of the Morocco Question 1880–1900*, London, 1976, p. 485 ff.

[4] Both accounting currencies are referred to in government archives as uqiya but I hope to show that their separation as two accounting currencies is critical to an understanding of Moroccan 19th century monetary policy. As will be made clear in the text, I therefore refer to them as uqiya and pseudo uqiya.

[5] Fisher's equation, or the equation of exchange, is the standard starting

point for modern theories of money. Each of the terms can be interpreted in a narrow or broad sense so that the equation can be applied to the whole or a discrete part of an economy. See Schumpeter, *History of Economic Analysis*, New York, Oxford, 1974, p. 314, n. 4. Schumpeter makes the point that the equation need not be seen as a simple identity: there may be independent factors affecting one of the terms so each term should not be viewed as completely defined by the other three.

[6] A letter (KD-4-53—see the Appendix on Sources in my thesis) from 'Ali Rashiri, Governor of Taroudant, to the sultan and dated 19 Hija 1307H (6 August 1890) describes the regularity of bronze counterfeiting in the Sous. This involved regulars who got rid of the coins in the countryside as well as Jewish merchants from Essaouira who helped unload the coins in the rural areas of what is now the Province of Essaouira.

[7] The Hispano-Moroccan War of 1859–1860 resulted in a Moroccan debt toward Spain of 100 million pesetas which was obtained by Spain by garnishing one half of Morocco's customs duties from 1860 to 1884. There is evidence that repayment took so long in part because Spanish customs officials connived with Moroccan customs officials to divert one-third to two-thirds of the revenues to their own pockets: see Chaps. 4 and 5 of my thesis. See Burke, *Prelude to Protectorate in Morocco*, Chicago, 1976, Chap. 2 for an outline of the Hispano-Moroccan War and the rest of his book for the various debts imposed on Morocco by European governments.

[8] Government salaries fell into two categories in practice. Since upper level officials were largely responsible for the payments they seem, at least in Essaouira, to have made sure that they were paid in non-depreciated silver specie while the majority of employees were paid a fixed salary in depreciating pseudo uqiya and this salary was only intermittently adjusted to take depreciation into account.

[9] Foreign linked merchants is simply a brief way of saying those merchants operating in Morocco who had close ties to Europe or other foreign countries and usually also had some form of protégé status. That is to say, they had foreign passports and could insist on being tried or sued only before their Consul and so in practice operated outside the law which applied to the majority of Moroccan citizens.

[10] The rate for each decade is the average yearly rate for that decade. Since the rate is calculated much like compound interest it is necessarily lower than a simple average. A rate of 6·35% as from 1862 to 1870 means that the currency depreciated an average of 6·35% a year for each of the 9 years.

[11] The term 'pseudo uqiya' is most needed when one is working with government registers from the 19th century during the period after 1862. There are serious problems with any other formulation I have tried. Thus, if one simply uses 'government accounting uqiya' and 'market accounting uqiya' the terms are misleading though accurate because 'uqiya' was used in the two distinct senses precisely within the government registers and so was in a way two types of government accounting 'uqiya' not a government and a market version of the 'uqiya'. I use the term pseudo uqiya to refer to the 'market accounting uqiya' because it is a new type of uqiya; appearing only after 1862 and, though similar, is not the traditional uqiya used to measure the value of silver coins and so by extension the amount of customs duty due on imports. Furthermore, since the value of the pseudo uqiya changed regularly, even as it remained equal to 24 flus, it was in no sense a stable measure of value in the way the uqiya traditionally had been. It seems appropriate, therefore, to keep 'uqiya' for the more traditional uqiya and use 'pseudo uqiya' for the new uqiya.

[12] My analysis of the change in monetary policy after 1862 is derived from a fairly thorough study of hundreds of exchange rates in Makhzan registers and correspondence for Essaouira, Rabat, and Casablanca. These are listed in the Appendix on Sources of my thesis. Because my conclusions are fairly different from those reached by others (on the basis of much less evidence to be sure), I would like to point out that the evidence for this change is examined carefully in Chap. 3 of my thesis but is too detailed to be summarized here.

[13] See Maurice Lombard, *Monnaie et Histoire d'Alexandre à Mahomet*, Paris, 1971, esp. pp. 149–155 and Eliyahu Ashtor, *Les métaux précieux et la balance des payements du proche-orient à la basse époque*, Paris, 1971.

[14] Robert Brunschvig, 'Esqisse d'histoire monétaire Almohado-Hafside' in *Mélanges William Marçais*, Paris, 1950.

[15] This is usually known as Gresham's Law. Sir Thomas Gresham (1519–1579) seems to have first formulated this idea as a general principle though obviously processes that fit his description had been remarked before.

[16] Germaine Ayache, *Etudes d'Histoire Marocaine*, Rabat, 1979, p. 130 and An-Nāsirī, 'Kitāb al-Istiqsā Li-akhbār duwal al-maghrib', *al-ASQsa*, Vol. 9, Casablanca, 1954–1956, p. 64.

[17] Roger le Tourneau, *Fes avant le Protectorat*, Casablanca, 1949, p. 283.

[18] These values are from Ayache and An-Nāsirī above.

[19] Drummond-Hay cited in Miège, *Documents d'Histoire Economique et Sociale Marocaine au XIXe Siècle*, Paris, 1969, pp. 124–127.

[20] My description of the new monetary policy after 1862 is based on study of several hundred documents dealing with exchange rates and many government registers that I was able to consult in the Royal Archives and the Directorate of Royal Archives in Rabat. A more complete discussion and full documentation can be found in Chap. 3 of my thesis.

[21] These registers are examined in detail in Chap. 5 of my thesis.

[22] The following sketch of the role these accounting currencies played in Makhzan monetary policy leaves out a great deal of detail. The reader who is interested in the question should refer to Chap. 3 of my thesis where a much fuller account is given and where ample documentation can also be found.

[23] See Chap. 3 of my thesis.

[24] This depreciation is documented in Miège, *Le Maroc et l'Europe*, Vol. IV, pp. 116–120. In Table 3–10 of Chap. 3 of my thesis I show the depreciation on a year by year basis as it appears from Makhzan archives.

[25] The solution I describe is my deduction from official practice as it is documented primarily by several hundred reports sent from Essaouira to Marrakesh by Makhzan administrators in Essaouira and by numerous registers. See my 'Report on the State of Moroccan Archives' in *History in Africa*, 10 (1983), pp. 395–409 for a complete account of these sources.

[26] Thomas Crump, *The Phenomenon of Money*, London, 1981, p. 136.

[27] In the first place it would have inevitably led to the complete elimination of Moroccan national silver currency since the European powers were no longer practising mutation. In the second place, it would then have resulted in even greater deficits and debts toward Europe. Without any national silver currency the Makhzan would have been forced to obtain European currency with commodities to pay its debts and, given the Makhzan's negotiating position of inferiority, it would have been able to do so only at a premium.

[28] Thomas Crump, *The Phenomenon of Money*, p. 138.

[29] At-tūzāni, Na'īma Harrâj, *al-umanā' bi-l-maghrib fi 'ahd, Mawlāy al-Hasan*, 1290–1311/1873–1894, Rabat, 1979, pp. 123–125 describes the use of tax farming.

[30] The Spanish Rial depreciated seriously from 1889 to 1896 and this caused Makhzan revenues to decrease because at the time the accounting rial was considered the equivalent of the Spanish Rial. This depreciation was something, however, that was entirely out of the Makhzan's control. Apart from depreciation linked to the vagaries of European silver currencies, the Makhzan's policy was successful in maintaining revenues at stable levels.

[31] See Chap. 3 of my thesis, pp. 140–141, for full documentation of this change.

[32] Germaine Ayache, *Etudes d'histoire marocaine*, pp. 128–129, was the first to point out that in 1862 the accounting rial was equivalent to the 5F piece. He seems, however, to have failed to notice that the ratio between the Spanish Rial and the 5F piece was actually 19/20. He also did not attempt to show how long the 5F piece remained the accounting rial.

[33] France during this period suffered exceptionally high levels of inflation, particularly after World War II, but the Moroccan 19th century data are probably better than a large majority of countries during the 20th century. Table 3–15 of my thesis provides conversion rates to the pound sterling for Moroccan, French, Spanish, and German currencies from 1914 to 1980 which illustrate this point.