Silver and Trust in Mesopotamia and the Levant

Bert van der Spek (VU University Amsterdam, 12-13 December 2014)

(Preliminary paper; not to be quoted without permission)

"Feasts are made for laughter; wine gladdens life, and silver meets every need."
Ecclesiastes 10: 19

General observations.

The idea for this conference was born during the time that our VU University research team on *Market Performance from Ancient Babylonia to the Modern World* (see now Van der Spek, Van Leeuwen, Van Zanden eds. 2015 [2014]) was studying the prices of many periods and regions. Nearly all these prices were recorded in silver, from Ancient Mesopotamia and China to modern Europe. That raised several questions. First: why does humankind put so much trust in a commodity (it is after all a commodity) that may shine fine, but that cannot feed, clothe or house anyone. The answer must be that the fact this it is considered beautiful, shining, rare, small and durable. It can be fractioned, it can be used for luxury goods, an important feature in a society in which gift exchange is important (apart from exchange through trade). It should be noted that the first coins (fine objects with some distinguishing mark) had that function. But the fact remains that people put their trust in a nice and shining but useless material. It remains fascinating that people accept silver for grain. Even in the modern economy silver and gold are important, even after the abolishment of gold and silver standards. Until 1967 gulden coins in the Netherlands were struck in silver and even this week the Dutch newspaper readers learned that in a secret operation the Dutch National Bank shipped 130 tons of gold from the Unites States to Amsterdam. The Netherlands keep a reserve of 612 tons of gold, of which only 11% is in the Netherlands and 61 % in the US. The reserve in Holland has now grown to 31%. A similar measure was taken recently by Germany. The Islamic State is now issuing their own coinage: coins in gold, silver and bronze. So until now trust in gold and silver still is an important facet of trust in currency. On the other end of the spectrum we see the introduction of the bitcoin.

Trust in silver is not evident and trust in silver is not unshakable. Silver may be debased and be of low quality, may become abundant on occasion and scarce on another, and may easily be stolen. There are well-known periods in history that the trust in silver decreased, as in the later Roman Empire, when people began to prefer gold. Yet, silver is most of the time the basic means of exchange and when a society goes over to gold as the standard, this is usually a sign of weakness of economic performance. This brought us to the second question: what is actually the role of silver in the economy? What does it mean, when suddenly an increase of silver in circulation takes place? What does it mean when trust in silver diminishes? What is the relation between silver and credit, between other forms of money, like bronze or even paper?

It is these questions I like to discuss as regards ancient Mesopotamia and the Levant. What can we learn about 'trust' in silver? How did people talk about silver? Secondly what did it mean when silver was abundant or scarce? How did this influence the economy? A good example from the Greek world is classical Athens. A great part of the prosperity of Athens can be explained by the availability of silver, first thanks to the finding of silver in Laurium, second by the collection of tribute in silver. The silver of Laurium enabled the Athenians to build ships, with which they could withstand the Persians in 480 BC at Salamis, which provided work and a living for hundreds of carpenters, shipwrights, rope-makers, etc.;

it helped the Athenians to create an empire which caused the influx of more silver thanks to the contributions of the allies in the Delian League (established 477 BC). The expansion of the Roman empire was much benefitted by the influx of silver coming from the East, when the Hellenistic empires had to succumb to the Romans and when a lot of silver, some of it ultimately originating from the treasury of the Persian empire captured by Alexander the Great (cf. Van der Spek 2011), flowed into Roman Treasury and in the pockets of rich land-owners and politicians. It is one of the explanations of the economic boom in the first two centuries of our era. 'Primitivist' scholars are right in so far that the issuing of new coins and thus bringing silver into circulation, was not driven by economic motivation. Their main purpose was paying soldiers and workers on public works. Silver is also a convenient means for the collection of tribute and taxes. Nevertheless, the impact on the economy was great.

The narrow connection between silver and money is old and can be observed until today. In modern French 'money' and 'silver' are the same word, 'argent', in modern Hebrew it is *kesef*. The same is true for the Hebrew Bible. The word *kesef* (or: *kesep*) is translated as both 'silver' and 'money'. This word is directly related to Babylonian *kaspu*, also meaning both 'silver' and 'money'. This can be observed in many expressions, such as *ana kaspi nadānu*, 'to give for silver; to sell' and *ana kaspi mahāru*, 'to receive for silver; to buy'. I do not know what the etymology of the word is. In Sumerian logograms it is written as KÙ.BABBAR. The sign KÙ (or: KU_3) is already used in the late fourth millennium BC in documents from Uruk. The meaning of the word is both "shining" and as substantive "shining metal". BABBAR means "white". "Gold" is rendered as KÙ.GI = "yellow shining metal" (Krispijn, forthcoming).

In Ancient Greek there are several words for money, such as *chrēmata*, 'things that are needed (from *chraomai*, 'to need, to be in want of, to use'); assets, things, money'. The word *ho argyros* (from *argos*, 'shining') can mean both silver and money. Greek *to argyrion* means 1) coin; 2) money. *Argyrion katharon* = 'hard cash', lit. 'pure silver' (Theocr. 15.36). Then there is the word *nomisma*, referring to coinage. It means: 'anything sanctioned by current of established usage, custom'. The word is explained by Aristotle as follows: "...but money has become by convention a sort of representative of demand; and this is why it has the name 'money' (*nomisma*), because it exists not by nature but by law (*nomos*) and it is in our power to change it and make it useless." Aristotle, *Nicomachean Ethics* 1133b 1.

Latin has two words for money: *pecunia*, derived from *pecus* (genitive *pecoris*, "cattle", so it is originally property in cattle, apparently an important indicator of wealth in early Rome). But the Romans also used *argentum*, 'silver' as a term for money. English 'money' and 'mint' are both derived from Moneta, the epithet of the Roman Goddess Juno Moneta in whose temple the mint was established (*monēta*). Italian and Spanish words for money are derived from Roman coins (Sp. dinero, it. denero or soldi) from Latin *denarius* (derived from plural tantum *deni*, 'together 10') and *solidus*, a 'solid' golden coin introduced by Constantine the Great in AD 312. The denarius, which became the main silver coin of Rome for over four centuries, was introduced in 211 BC and produced in enormous quantity from the silver captured in the sack of Syracuse the year before. The coin represented 10 asses, hence the word *denarius* (from *deni*, 'tenfold').

Silver and money in the Bible.

The Hebrew Bible is the lengthiest literary source from the Ancient Near East and it provides valuable insight into the way people looked at the value and trustworthiness of silver as commodity and means of exchange. In addition, the Bible has given a strong imprint on Western civilization (which includes the world of Islam). The difficulty with using the Bible as an historical source is that it is a collection of books with a long history of coming about,

of which large parts describe an ideal society (especially as regards the laws), rather than a real society. Nevertheless it is an important window through which we can learn about mentality and world view.

In the first place we see silver as an important asset to mark wealth. It is remarkable though that silver often comes on the second place, after livestock. "Now Abram was very rich in livestock, in silver, and in gold" (Gen 13:2); "The Lord has greatly blessed my master (Abraham), and he has become wealthy; he has given him flocks and herds, **silver** and gold, male and female slaves, camels and donkeys" (Gen. 24: 35). In an admonition to the people of Israel before they reach the promised land we read: "[12] When you have eaten your fill and have built fine houses and live in them, [13] and when your herds and flocks have multiplied, and your silver and gold is multiplied, and all that you have is multiplied, [14] then do not exalt yourself, forgetting the Lord your God, who brought you out of the land of Egypt, out of the house of slavery," (Deut. 8: 12-14).

In these cases silver is more a commodity than money, but in other cases the interpretation as money is more appropriate, as in **Genesis 23**: 16 (NRSV), when Abraham buys a tract of land for the burial of his wife Sarah: "Abraham agreed with Ephron; and Abraham weighed out for Ephron the **silver** that he had named in the hearing of the Hittites, four hundred shekels of **silver**, according to the weights current among the merchants." We encounter a system of measures, or more specifically weights: a shekel of silver, and that as is "current among merchants". The shekel is commonly calculated as being c. 11.5 grams, but we observe other standards: "the shekel of the sanctuary", as in Exodus 30: 13: "This is what each one who is registered shall give: half a shekel according to the shekel of the sanctuary (*šeqel ha-qodeš*) (the shekel is twenty gerahs), half a shekel as an offering to the Lord. **[14]** Each one who is registered, from twenty years old and upward, shall give the Lord's offering." See also Exodus 38: 25 and Numbers 7: 13 and 85. A third shekel is mentioned in II Samuel 14: 26, a shekel "by the weight-stone of the king" (*be 'even ha-melek*) in the hilarious description of the hair of the handsome prince Absalom, son of Solomon, that was so beautiful and heavy that he had to cut it every year (!) and that the hair weighed 200 shekels by the weight-stone of the king.

The Israelite society was certainly not "deeply monetized" as we learn from this law: **"**When any of you commit a trespass and sin unintentionally in any of the holy things of the Lord, you shall bring, as your guilt offering to the Lord, a **ram** without blemish from the flock, **convertible into silver** by the sanctuary shekel; it is a guilt offering." (Leviticus 5: 15).

We see this conversion also in this law: "If a person consecrates to the LORD any inherited landholding, its assessment shall be in accordance with its seed requirements: fifty shekels of silver to a homer of barley seed." (Leviticus 27: 16). That converting valuables into money (silver) is especially recommended in case of long journeys, as we see in the regulations of the Deuteronomist concerning the tithes (Deuteronomy 14: 22-27):

> "**[22]** Set apart **a tithe** of all the yield of your seed that is brought in yearly from the field.**[23]** In the presence of the LORD your God, in the place that he will choose as a dwelling for his name, you shall eat the tithe of your grain, your wine, and your oil, as well as the firstlings of your herd and flock, so that you may learn to fear the LORD your God always.**[24]** But if, when the LORD your God has blessed you, the distance is so great that you are unable to transport it, because the place where the LORD your God will choose to set his name is too far away from you, **[25]** then you may turn it into money (silver). With the money secure in hand, go to the place that the LORD your God will choose; **[26]** spend the money for whatever you wish—oxen, sheep, wine, strong drink, or whatever you desire. And you shall eat there in the presence of the LORD your God, you and your household rejoicing together. **[27]** As for

the Levites resident in your towns, do not neglect them, because they have no allotment or inheritance with you."

In the book of Ezra we read how the Persian king Artaxerxes (I or II) grants silver and commodities to returning exiles:

"I, King Artaxerxes, decree to all the treasurers in the province Beyond the River: Whatever the priest Ezra, the scribe of the law of the God of heaven, requires of you, let it be done with all diligence, **22** up to one hundred talents[1] of silver, one hundred cors of wheat, one hundred baths of wine, one hundred baths of oil, and unlimited salt" (Ezra 7: 21-22).

Prices could consist of a mixture of silver and barley. When the prophet Ezekiel is urged by God to buy a slave girl in order to marry her as a living object show to expose the life style of the Judaeans, we read:" **"**The LORD said to me again, "Go, love a woman who has a lover and is an adulteress, just as the LORD loves the people of Israel, though they turn to other gods and love raisin cakes." **2** So I bought her for fifteen shekels of silver and a homer (= 'donkey' = 'donkey's load' = 400 l.) and a half of barley" (Hosea 3: 1-2).

Prices of bulk goods are, as in Mesopotamia, described in terms of the purchasing power of silver. When during a siege of Samaria in Israel by king Ben-Hadad of Aram (840s BC) an extreme famine broke out in the city so that women ate their own children, the prophet Elisha predicted: "Hear the word of the LORD: thus says the LORD: Tomorrow about this time a seah of fine flour shall be sold for a shekel, and two seahs of barley for a shekel, at the gate of Samaria."[2] This is apparently a very low price in view of the siege, but it is still high in view of Babylonian parallels.

The high value of silver and gold is also determined by the fact that it is difficult to find and to extract from ore. This is eloquently described in Job 28: 1-11. To get high quality and pure silver is an expensive process. Trust in silver is based on purity and weight. It is so important that it is part of wisdom literature and admonitions, as we can see here, in the words of the prophet Amos (c. 760-750 BC):

Hear this, you who trample on the needy
and bring the poor of the land to an end,
5 saying, "When will the new moon be over,
that we may sell grain?
And the Sabbath,
that we may offer wheat for sale,
that we may make the ephah (22 l.) small and the shekel (11.5 gr.) great
and deal deceitfully with false balances,
6 that we may buy the poor for silver
and the needy for a pair of sandals
and sell the chaff of the wheat?"
Amos 8: 4-6

The shekel is apparently not a coin or piece of silver here, but a (false) weight, so that the merchant gets too much silver for a shekel.

The fact that silver must be pure and purified in fire is an important issue and used in a metaphorical sense. We see it in the description of the instructions of Moses and the priest Eleazar to the Israelites as regards the booty taken from the Midianites. There is a strong religious component in this instruction.

---

[1] The Hebrew term for "talent" was *kikkār*, meaning a round gold or silver disk, or disk-shaped loaf, weighing about 35 kg. It consisted of 60 minas (*mnh*) or 3000 shekels (one mina being 50 shekels). See Appendix.

[2] II Kings 7:1-2. The shekel in Israel weighed about 11.3 grams and the seah was about 7.3 litres.

"[21] Eleazar the priest said to the troops who had gone to battle: "This is the statute of the law that the LORD has commanded Moses: [22] gold, silver, bronze, iron, tin, and lead— [23] everything that can withstand fire, shall be passed through fire, and it shall be clean. Nevertheless it shall also be purified with the water for purification; and whatever cannot withstand fire, shall be passed through the water." (Numbers 31: 21-23).

The prophet Jeremiah (c. 586 BC) compares the punishment of a foreign king, who will punish the people of Judah for their defection, with the tester of metals:

[27] "I have made you a tester of metals among my people,
that you may know and test their ways.
[28] They are all stubbornly rebellious,
going about with slanders;
they are bronze and iron;
all of them act corruptly.
[29] The bellows blow fiercely;
the lead is consumed by the fire;
in vain the refining goes on,
for the wicked are not removed.
[30] Rejected silver they are called,
for the Lord has rejected them." (Jeremiah 6: 27-30).

We encounter the idea also in Malachi 3:3, where the prophet predicts the coming of a messenger of God: "he will sit as a refiner and purifier of silver, and he will purify the descendants of Levi and refine them like gold and silver, until they present offerings to the Lord in righteousness." Similar in Zechariah 13: 9.

A comparable metaphor is used by the Greek comedy playwright Aristophanes:

Many times it seems to us the city has done
the same thing with the best and the brightest of its citizens
as with the old coinage (*nomisma*) and the new gold (currency).
For these, not counterfeit at all,
but the finest it seems of all coins,
and the only ones of the proper stamp, of resounding metal
amongst Greeks and foreigners everywhere,
we never use, but the inferior bronze ones instead,
minted just yesterday or the day before with the basest stamp.[3]

That the value of silver can change and is dependent on the amount of silver is acknowledged by Biblical authors. We see it in the description of king Solomon's extraordinary wealth:

"All King Solomon's drinking vessels were of gold, and all the vessels of the House of the Forest of Lebanon were of pure gold; none were of **silver**—it was not considered as anything in the days of Solomon" (1 Kings 10: 21: = 2 Chronicles 9:20)

"The king made **silver** as common in Jerusalem as stones, and he made cedars as numerous as the sycamores of the Shephelah" (1 Kings 10: 27 = 2 Chronicles 1: 15).

The money, the silver, was of course weighed and not counted as coinage did not exist before the Persian Period. We see it in the passages quoted above (Purchase of land by Abraham, Genesis 23: 16) and it is implied in Amos' admonition concerning false weights (Amos 8: 5). We see it in Jeremiah 32: 9, where the prophet buys a tract of land: "And I bought the field at

[3] Aristophanes, *Frogs*, 718-726 (according to Greek text). Translation Matthew Dillon. I owe the reference to Von Reden 1995: 114.

Anathoth from my cousin Hanamel, and weighed out the money (silver) to him, seventeen shekels of silver." The shekel was a weight measure, not only used for silver, but also for other products. It was used to weigh gold (Genesis 24:22), cinnamon and myrrh (Exodus 30:23), hair (2 Samuel 14:26), iron (2 Samuel 17:7), and food rations (Ezekiel 4:10). But it is still true after the arrival of coinage in Achaemenid Judaea, or actually we observe a mixture of counting and weighing. The book of Ezra (3: 68-9) recounts the following as regards the return of the first group of exiles when they arrive in Jerusalem:

> "Some of the heads of fathers' households, when they arrived at the house of the LORD which is in Jerusalem, offered willingly for the house of God to restore it on its foundation. According to their ability they gave to the treasury for the work 61,000 gold drachmas (*zhb drkmwnym*) and 5,000 silver minas and 100 priestly garments."

The suggestion is made that it concerns coins, 61.000 gold drachmas, which is flatly impossible, as there was no Greek currency in Judah in the beginning of the Persian era. It takes the composition or final redaction of this book to the (early) Hellenistic period, but even then gold drachmas did not exist and minas and talents were not minted. Even if we take the story at face value (some think that gold darics (*dareikoi*, Persian gold coin) were intended), then it must be assumed that the money was weighed, as we know from Babylonia (see below). A similar story is told about the return of exiles from Babylonia led by the scribe Ezra under king Artaxerxes (I or II), when Ezra weighs out the gold and silver he gets from the king, his counsellors and people and priests:

> "And I weighed out to them the silver and the gold and the vessels, the offering for the house of our God that the king and his counselors and his lords and all Israel there present had offered. **26** I weighed out into their hand 650 talents of silver, and silver vessels worth 200 talents, and 100 talents of gold, **27** 20 bowls of gold worth 1,000 drachmas (=darics[?]) and two vessels of fine bright bronze as precious as gold." (Ezra 8: 25-7).

The emerging monetization of society, triggered by the exaction of taxes in silver, is indicated by the complaints by the people against governor Nehemiah: "We are having to borrow money (silver) on our fields and vineyards to pay the king's tax." (Nehemiah 5: 4) Nehemiah then urges the nobles (among whom himself!) to remit the debts:

> "Moreover I and my brothers and my servants are lending them money and grain. Let us stop this taking of interest.**11** Restore to them, this very day, their fields, their vineyards, their olive orchards, and their houses, and the interest on money (silver), grain, wine, and oil that you have been exacting from them." (Neh. 5: 10-11).

Silver and money in Mesopotamia

Silver was already a means of payment in the third millennium BC (cf. Krispijn forthcoming; Powell 1996). The world of the Assyrian merchant colony in Kanesh (Anatolia) is a prime example of early sophisticated use of money in the early first millennium. It is discussed by Gerritsen at this conference. It is impossible to give an overview of the use of silver in Mesopotamia in the course of three millennia. There has been a lively debate on the role of (coined and uncoined) silver as money in the Antiquity (Powell 1996; Von Reden 1995 and 2007; Le Rider 2001; Jursa 2010: 469-753). We shall not go into this debate, but it is our contention (following Jursa) that silver was used as money (means of payment, means of account, means of storing wealth) already in the Ancient Near East and that it reached a fairly deep level of monetization in the Neo-Babylonian period. The standard unit of measuring silver was the shekel (*šiqlu* from *šaqālu*, 'to weigh', but also 'to pay', cf. e.g. Dercksen, forthcoming; many examples in the CAD s.v. *šaqālu*) weighing 8.33 gr. Especially in the

Neo-Babylonian period fractions of the shekel were in use (up to 1/24 (*girû*, 'carob-seed') and 1/40 (*halluru*, 'chick-pea') and were indeed used in daily transactions (see Appmedix). Jursa argues for a fairly deep monetization in the Neo-Babylonian period, esp. in the long sixth century (Jursa 2010: 630-1 and his paper for this conference, taking into account Jan Lucassen's definition).
I shall confine myself to indicate how people looked at the role of silver in their society, much as I have done in the previous chapter on the Bible.

As in the Bible silver and gold are desirable goods, are used for luxury items and are prime targets of getting booty. It is also a means to store wealth. This is poetically illustrated by the description of "The Poor Man of Nippur":

> *The Tale of The Poor man of Nippur*
> There was a man, a citizen of Nippur, destitute and poor,
> Gimil-Ninurta was his name, an unhappy man,
> In his city, Nippur, he lived, working hard, but
> Had not the silver befitting his class,
> Had not the gold befitting people (of his stature).
> His storage bins lacked pure grain,
> His insides burned, craving food, and
> His face was unhappy, craving meat and first-class beer;
> Having no food, he lay hungry every day, and
> Was dressed in garments that had no change.[4]

Assyrian and Babylonian kings boasted that they collected huge amounts of booty and tribute, among which silver and gold are ubiquitous. We read the same boasts as regards Solomon. We see this in an observation made by king Sargon II of Assyria (722-705 BC) in one of his royal inscriptions. In this period copper, bronze and silver were used as money in Assyria, but before 712 BC copper was preponderant. In 712 Sargon II conquered Carchemish and brought home a huge amount of silver. After that campaign, silver replaced copper as the main currency and silver is measured in the mina of Carchemish (Postgate 1979: 18, Müller 1997: 120; Radner 1999: 129). We observe this in Assyrian letters to king Sargon:

> "To the king, my lord: Your servant Adda-hati. Good health to the king, my lord! [4] The silver dues of the prefects and village managers imposed on the local population have been handed over: two talents and 18 minas of silver according to the standard of Carchemish (*ina ma-né-/e\ š*[*a* uru *gar-g*]*a-mis*). In addition I have sent to the king, my lord, half a shekel of gold, two [tog]as and three tunics with my messenger" (SAA I 176: 1-9).

The mina of Carchemish (on the Euphrates, now in southern Turkey on the border with Syria) probably represented the western weight system, current in the Levant (see Appendix).

Sargon II plundered so much booty in that campaign that he boasted that from that time on the exchange value (*mahīru*) of silver was to equal that of bronze (Annals from

[4] Clay tablet from Sultantepe from the Neo-Assyrian (ca. 911-612 BC), Archaeological Museum, Ankara. Cf. O. Gurney, The Sultantepe Tablets, V: The Tale of the Poor Man of Nippur, AnSt. 6 (1956) 145-162 (Transliteration, translation, commentary), 7 (1957) 135-136 (to STT I, 38-39 and K 3478); Maria deJ. Ellis. *A New Fragment of the Tale of the Poor Man of Nippur.* Journal of Cuneiform Studies, Vol. 26, No. 2 (Apr., 1974), pp. 88-89. Translation: Jean Bottéro.

Khorsabad 232–4 = Fuchs 1994: 130 ff.). Actually he boasts here a reversal of Gresham's law that good money drives out bad money which underscores his achievement. Modern economists would perhaps doubt if a sudden devaluation of the silver is really so good.

Many Mesopotamian texts give testimony of concern for the **purchasing power of silver**. Prices were in the Near East expressed as the purchasing power of silver rather than as prices of products, as we observed in preceding quotation from the Bible on the siege of Samaria by Ben-Hadad. Concern for it is expressed in royal propaganda texts. From Assurbanipal's Coronation Hymn we can deduce how desirable a good exchange value of the shekel was:

> "[5-7] Just as grain and silver, oil, [the catt]le of Šakkan and the salt of Bariku are good, so may Assurbanipal, king of Assyria, be agreeable to the gods [of his] land! (…) [9-11] May the people of Assur buy 30 kor (= 5400 litres) of grain for one shekel of silver! May [the people]e of Assur buy 3 seah (18 litres) of oil for one shekel of silver! May [the people]e of Assur buy 30 minas (15 kg.) of wool for one shekel of silver!" (SAA III 11)

These are pious wishful thoughts with no relation to reality. More close to real life is the Neo-Babylonian king Nabonidus (556-539 BC). He boasts in his so-called Tariff Stela from Babylon that favourable exchange values were realized during his reign:

> "At the command of Sîn (moon god, supreme deity for Nabonidus), king of the gods, Adad (weather god) released the rain for me and Ea (god of sweet water under the earth) opened for me lavishly his sources; wealth, fertility and plenty he established in my country. 234 litres of barley for one shekel, 270 litres of dates for one shekel, 66 litres of sesame for one shekel, [x+]18 litres of oil for one shekel, 5 pounds of wool for one shekel, 1 pound of tin[?] for one shekel, wine, the beer of the mountains, that does not exist in my country: 18 litres of wine for one shekel of silver was the exchange value (KI.LAM) in my country." (Schaudig 2001: 530-2, No. 3.4:2'- 12').

Now this is a propaganda text, but actually not far from the mark. The ideal exchange value was 180 litres for both barley and dates for 1 shekel and these equivalencies occurred, but prices fluctuated. In Nabonidus' reign the rate of barley fluctuated between 90 to 257.1 litres (Jursa 2010: 445) and the rate of dates up to 259.5 litres of dates per shekel are attested (cf. Jursa 2010: 585: n. 3179 and p. 593-4). The Tariff Stela shows the real concern of the king as regards the purchasing power of the shekel.

The same concern for the purchasing power of silver we find in the work of Babylonian scholars, versed in the art of divination, futurology by interpretation of omens. The study of the abundant corpus of Mesopotamian omen texts is an extremely valuable tool in understanding the concerns of ancient Mesopotamian man. Many omens mention the purchasing power of the shekel, which means that the volatility of prices was a major concern indeed. However, it is often misunderstood by Assyriologists. It is good to note that the word *mahīru*, written epigraphically KI.LAM, is often incorrectly translated in the dictionaries, especially the Chicago Assyrian Dictionary. The basic meaning is "receiving" = "what is received" in exchange for something else and in particular for silver. The basic meaning, correctly observed in the *Akkadisches Handwörterbuch* of Wolfram von Soden, "exchange value" (AHw: "Gegenwert, Kurs"). As a derivative the term may mean: "Market, market place; business" (as short for *nadānu u mahīru*, "give and receive").[5] The CAD, however

[5] In the Hellenistic period the Akkadian reading of KI.LAM seems to be representing *nadānu*, 'to give', rather than *mahāru*, 'to receive'. See an interest-bearing promissory note arising from a deposit (277/6 BC): KÙ.BABBAR *ši-mi dan-nu* KAŠ.SAG-*a'* | 5-ta *lìb-bu-ú na-dan šá ina* E.KI *ina* ITI.SIG *u* ITI.ŠU *in-na-an-din-nu ina-an-din-u'*, "the silver, the price of the aforementioned 5 vats of beer, they will give (pay) according to the exchange value (*na-dan*) that is given in Babylon in months III and IV": CT 49, 111: 7 (= Stolper 1993, text 13 + comm. p. 44; Jursa 2006: 183; n.b.: Stolper incorrectly deletes *ina-an-din-u'* as scribal error); same text: "If

starts with this interpretation and applies it to circumstances that does not fit, as e.g. in the omen texts. The omens are concerned with "good exchange values = people receive much grain for one shekel", referring to low prices, and with "bad exchange values = people receiving little grain for a shekel = high prices". I shall discuss a few omen apodoses, discussed by the CAD[6]: KI.LAM *ina* KUR ŠUB *kaspu ul ibašši*, "the exchange value (of the shekel) will be annihilated, (because) there will be no silver." (KAR 427: 4). In the above quoted passage, the CAD translates "business will collapse", which is not the issue. It stresses the role of silver: when there is no silver, there can be no exchange. *Māt šarri ša sunqa īmuru* KI.LAM *napša mātu ikkal* (BRM 4 13: 58) does not mean "the king's country that has experienced hard times will enjoy good business", but "the country will enjoy (lit. "eat" (!)) abundant exchange value (= receive abundant grain for a shekel)". My point is quite clear in these passages: DU_D+DU (=E_{11} = *elû*) KI.LAM *napāš Nisaba* (ZA 52 238: 15a) does not mean "upswing of business, abundance of cereals", but "rising exchange value, abundance of cereals" (Nisaba is the goddess of grain, accounting and writing) and *ebūru iššir* KI.LAM SIG_5 GAR-*an* (KUB 4 63 iii 21), does not mean "the crop will prosper, the business will be good", but ""the crop will prosper, (hence) the exchange value will be good (= the p[rices will be low)". KI.LAM GI.NA (or *ke-e-nu*) does not mean "business will remain stable", but "the exchange value will be fair". Bad omens also occur of course and low exchange values = high prices belong to predicted bad omens and the interpretation is more than clear: KI.LAM TUR-*ir mēništu ibašši*, does not mean "business will be reduced, there will be scarcity", but "the exchange value will be low, (because) there will be scarcity" (Boissier DA 232 r. 44) and even more clear in "there will be famine in the country KI.LAM TUR-*ir* (so that) the exchange value will be low (= the prices will be high)" (Leichty *Izbu* XI 68) and "the enemy will 'eat' the possessions of my country KI.LAM ŠUB-*ut* , the exchange value will collapse" (not: "business will collapse") (KAR 427: 4). Finally I will show how this led to the misunderstanding of a letter of a certain Baysar to the governor of Nippur: Cole 1996, No. 59: 11-14:"Concerning the property of my lord – in terms of silver it has gone up in value. I have not given (=sold) it to anyone." [(11) *áš-šú* níg.šu./meš\ *šá be-lí-iá* (12) *a-na /muh-hi* kù.babbar\ (13) *i-lu-ú a-/na-mam*\-*ma* (14) *ul ad-di-si*], should be translated as: "Since my lord's property went up against (one shekel of) silver, I did not sell it to anyone." He did not sell, because the price fell. Hence the interpretation is opposite the one proposed by Steven Cole.

Hellenistic Babylonia: the introduction of coinage

The situation changed when Mesopotamia suddenly went over from payments with bullion into payments with coins immediately after Alexander's conquest in October 331 BC. The Macedonian conqueror introduced Greek coinage of the Attic weight standard and this became the standard in the Seleucid Empire. As Meadows convincingly pointed out, this innovation was not led by economic motives, but by propagandistic motives: the whole world could see who was the new king; soldiers, who travelled all over the world could use the

---

they do not pay at the appointed time for them, they will pay *lìb-bu-ú na-dan ma-ṭu-ú šá* MU 43.KAM, according to the lowest exchange value of year 43 (= according to the highest price)", CT 49, 111: 8-9 (= Stolper 1993, text 13 + comm. p. 44); in a so-called Astronomical Diary from 108 BC, Parthian period, (discussed below): *na-dan ina* SILA.MEŠ E.KI TAR-*is*, "the exchange in the streets of Babylon was interrupted." Diary -107D 32'; perhaps we might translate here: the supply (of grain) was interrupted. It is a month of a peak price in grain (December 108 BC; cf. Van der Spek e.a. 2014. Appendix for the price). Note the phrase in a diary from Uruk, 464 BC: [so and so much grain etc. for one shekel of silver] *šá ina* KUR *a-na* KI.LAM SUM-*nu*, "which was given in the land for exchange." Diary -463: 4'. Cf. Van der Spek 2014: 7 and p. 13, n. 7.

[6] See Chicago Assyrian Dictionary s.v. *mahīru* 2 c)

same money everywhere, in the empire, and beyond, esp. in the Greek world where the use of the Attic drachm was dominant. Very important for soldiers returning home (cf. Meadows 2014).

The metrical unit was the drachma (weighing c. 4.31 g); the didrachm (8.62 g) more or less equalled the shekel; the four drachma piece, the tetradrachm, weighing 17.25 g, also called *statēr*, was a kind of standard unit (see Appendix). A mint was established in Babylon which was very productive, as is summarized by Meadows (2014: 178): "The mint of Babylon from c. 333–318 BC probably used just over 200 tetradrachm obverse dies. At 20,000 coins struck per die that is 4 million tetradrachms (2,600 Talents or 70 tonnes of silver) entering circulation within a period of 15 years. To these figures we must add those for the gold. Using Callataÿ's methods and figures, it seems likely that approximately 14 % of all Alexander's gold coin was produced at Babylon, using approximately 140 obverse dies. At 10,000 coins per die this equates to a production of 1.4 million gold staters, 12 tonnes of gold, equivalent in value to almost 4,666 Talents (120 tonnes) of silver. These two denominations - tetradrachm and stater - alone, therefore, may have put some 7,266 Talents into circulation in the new monetary medium of coinage." The bullion from which Alexander produced the coins was taken from the Persian treasuries, which valued nearly 5000 tonnes of silver.

Is this reflected in the Babylonian cuneiform sources? One of the most important sources for our knowledge on silver and exchange values is the collection of the Astronomical Diaries from Babylon (ADART). It was the main source for the VU project on Babylonian prices which eventually led to the above mentioned volume on the history of market performance from ancient Babylonia to the modern world. The astronomical diaries constitute a collection of data for the research into divination / futurology. One of their major concerns apparently was: the purchasing power of the shekel in relation to five basic foodstuffs: barley, dates, *kasû* (variously translated as mustard or cuscuta (dodder), used as spice for the preparation of date beer), watercress (or cardamom) and sesame, all in litres, and wool, in *mina*s (pounds). The full formula is as follows: 'That month: the exchange value of barley (was): *n* litres, dates *n* litres, cuscuta *n* litres., cress *n* litres, sesame *n* litres, wool *n* pounds, for one shekel of (refined) silver, (that was given in the land[7])'. Most often the formula was abbreviated to: 'That month: the exchange value was: barley *n* litres, dates: *n* litres; etc.' Sometimes there is reference to scarcity, as e.g. in Diary-324B 12': '[That month (II, c. May 325 BC)] the sale of barley and the sale of everything else was interrupted in the streets of Babylon until the fifth; (the exchange value of) barley: 9 litres, on the sixth and seventh: 24[+ litres ….]; in the middle of the month, barley: 36 litres; at the end of the month: 48 litres; dates, in the middle of the month 36 litres, at the end of the month 42 litres; etc.' These prices exhibit hardship and extreme high prices in the time of Alexander the Great. The supply of food fell to (nearly) zero until the fifth of the month; conditions improved somewhat on the sixth day, possibly owing to the arrival of a new harvest.

Administrative documents right from Alexander's reign use the formula 'x shekels of silver in staters of Alexander' and under later kings always the reigning king. Sometimes specific coins are mentioned, such as the 'elephant staters' and the 'lion staters'. Some texts add: 'according to the counting (*manûtu*) of Babylon' (possibly referring to the exchange rate between shekels and drachmas; see for more information Doty 1979: 69ff; Van der Spek 1982: 218f; 2005; 1998: 211, 246–7; Stolper 1993: 22–3).

[7] Cf. Slotsky 1997: 12. It is not quite clear to me what this formula, added on occasion, means: it refers either to the exchange value, 'that was given in the land', i.e. the price that was paid in the land (but I do not think that the astronomers would argue that the prices were valid in all of Babylonia), or it refers to the silver 'that was given in the land', i.e. to the silver that circulated as currency in Babylonia; cf. n 5 above.

It is difficult to be sure if coins were always weighed (that is what the texts suggest), but it seems as though a rule of thumb emerged that one shekel equalled two drachms. See for this idea the Appendix.

In two cases an exact equation one shekel = two drachmas (or one didrachm) can be deduced from the texts. In 2002, a document was published by Michael Jursa, dated to 7 January 321 B.C., recording the wages paid to five hired workers who removed the debris of the temple[8], apparently as part of the job undertaken by Alexander the Great for the reconstruction of the temple tower (mentioned in Astronomical Diary No. –321 Rev. 14': "the debris of Esagila was removed to the west bank" (August 322 B.C.)). The tablet mentions the wages for 15th of month X to the 16th of month XI = 10 January to 9 February 321 B.C. The way the salary is expressed is unique in that it is given both in shekels and staters: "1/3 mina (= 20 shekels) of silver, the weight of 10 staters". It means that the weight of a Babylonian *stater* (= tetradrachm) was set at 2 shekels (16.67 gr.). This is lower than the standard attic weight of 17.2 grams, although the staters struck in the early Hellenistic period in Babylon were somewhat lighter, e.g. 16.8 gr. and thus amounting to two shekels indeed; but even lighter staters were found. Weighing of the coins remained advisable. It should be noted that in hoards from Mesopotamia coins were sometimes cut and collected with silver objects and *Hacksilber* (cf. Duyrat 2014: 375).

The other text is a price list from Babylon recording prices of barley, dates, mustard, sesame, cress, sesame and wool (just as in the astronomical diaries – see below) of the years 173 -175 of the Seleucid era (Slotsky – Wallenfels 2009: 83-97, text 6 r. 12'- 15'). It gives two distinct exchange values of barley (for two shekels of silver = c. 1 tetradrachm!) for month III 175 SEB = 27 May – 25 June 137 BC: 84 litres in staters of Demetrius and 72 litres in staters of Arsaces[9]. Wallenfels makes the interesting observation (2009: 94, n. 65): "The increased purchasing power (+6%) of the Demetrius staters is almost identical to the greater average weight of silver tetradrachms minted at Seleucia on the Tigris by Demetrius II (+6.7%) over those of Mithradates." The document refers to the time shortly after the abortive attempt of Demetrius in 138 BC to reconquer Babylonia from the Parthians. In his short reign a few months he was able to introduce new coins, which had a higher weight than the Parthian coins. After the demise of Demetrius (he was captured), his coins remained in use for some time. The strange thing is that coins, produced by a foreign enemy, enjoyed more trust than coins of the reigning king. But the issue might simply be weight of the coin and the two shekel measure of this tablet apparently is simply the coin: a two shekel piece = tetradrachm of Demetrius buys you 84 litres of barley, while the lighter two shekel piece = tetradrachm of Arsaces is good for 72 litres. We must conclude that the shekel, at least in this period, wasn't a weight measure of silver bullion anymore, but a coin. It partly explains the higher prices in the Parthian period, as the weight (and content) of the Arsacid coins further deteriorated (though this cannot explain everything).

Apart from the numerous passages recording the prices, silver and gold are mentioned a few times more, unfortunately mostly not with much context. An intriguing text is the diary concerning month VIII (November) 303 BC: "113 talents of silver, 2 talents of gold of Nabû, which at the disposal of x [.. .. to/from[?]] the house of the craftsmen and the streets of Borsippa they brought x [.. .. ..]". It is an enormous amount of money enough to feed an army of 18,620 soldiers at the rate of one litre of barley per day at the exceptional high prices that were current in 309 and 308 BC. It is not unthinkable that this money was taken by the government to be melted down for the minting of money for the army of Seleucus I who was

[8] Jursa 2002: 120 Nr. 8.
[9] All Parthian kings had the throne name Arsaces.

preparing the final battle of Ipsus in 301 BC against his rival Antigonus the One-eyed. Another interesting passage is the expression "silver of the heads" which probably stands for a poll tax.

r7': ... . That month, one G[ree]k man
r8': [.. .. .. "the silver] of the heads" from month I to Babylon [.. .. ..]
r9': [.. .. ..] rai[sed] a complaint [.. .. ..]
r10': [.. .. ..] of the 'silver of the heads'; every single person [*should pay*[?]] ½ shekel [.. .. ..]

(Diary – 183A, concerning month II of Seleucid year 128 = 8 May – 6 June 184 BC)

I deduce that half a shekel of silver (= 1 drachma) was raised, perhaps as a war tax; cf. fragment of diary -183C concerning same month: "of the silver of the heads he brought out". It seems as though a certain Greek was raising taxes to the dismay of the Babylonian population. The same expression occurs in the so-called Lehmann text, the record of a royal land grant to Babylonians, in which royal land is parcelled out to inhabitants of Babylon and the tracts are freed from all kind s of taxes, among which the kù.babbar *šá* /sag\[du].meš, "the silver of the head tax" (CTMMA IV, no. 148A: 14). I mention finally AD -261C, r11: "That year, silver and gold, garments and linen [.. .. ..]|[.. .. ..] was placed in the royal palace in Babylon for protection against the enemy."

Bronze money is mentioned only once, and that in the time of famine, high exactions of tribute in silver and commodities from king Antiochus I in view of his military campaign against Egyptian forces in the first Syrian war. It is a diary concerning the 38th year of the Seleucid Era (274/3 BC) (Diary no. -273B; full passage at http://www.cgeh.nl/translation-astronomical-diary :

30': Month XII, day 24 (26 March 273 BC): the satrap of Babylonia, sent[l. 32] much silver, clothing, goods and equipment[?]
31': from Babylon and Seleucia, the royal city, and 20 elephants, which the satrap of Bactria has sent to the king, to Syria
32': to the king. That month, the general assembled the royal army which was in Babylonia, from its beginning to its end, and he went to the aid of the king in Month I to Syria.
33': That year, purchases in Babylon and the (other) cities were made with Greek bronze coins. That year, there was much *ekketu*-disease in the land.
…

Upper edge of the tablet:
1: [That year] there was [fa]mine in Babylonia, people sold their children for silver. People died of [.. .. ..]. That year, [there was much] *ekketu*-disease [in the land.]
2: [Pur]chases in Babylon and the cities were made with Greek bronze coins. Year [38], Seleucus and Antiochus king[s].
3: Regular observations from month VII of year 38 to the end of month XII of year 38, Antiochus and Seleucus (being) kings.

Nevertheless the barley prices were given in silver (36 litres for one shekel, which is an extremely low exchange value and means famine, as is indicated by the astronomer. An exchange value of 120 litres is more or less standard, but with enormous deviations). Also the children were sold for silver, which seems strange in such a scarcity of silver. I have discussed this text at length in Van der Spek 2000: 305-7. For now I want to make the following observations.

1. Although silver is scarce (but see below 5), people do not turn to barter, but to bronze, which is a sign of a highly monetized economy.
2. The barley prices are given in silver, in spite of the fact that purchases (the Akkadian has KI.LAM = *mahīru*, which in this case indeed must mean 'exchange of goods; purchase') are made in bronze. It means that in normal times bread was bought with silver (tiny silver coins of 0.09 grams, the *hemitartemorion* = 1/8 of an obol, which is 1/6 of a drachma existed), but now it was converted into bronze coins, which happened elsewhere too. In this period of high prices (October 274 to April 273, when a litre of barley cost 0.23 grams this could be paid with one *trihemitartemorion*, which weighs 0.27 grams.
3. The phrase 'people sold their children for silver' should not be taken too literally. In the first place: it is a well-known omen apodosis and is thus formulated here in the relevant formula. What actually did happen is that people could not pay their debts in silver and gave their children instead. Not without reason the verb *pašāru* (BÚR) is used here, what literally means "to make loose"; they had to hand over their children for silver.
4. One would expect low prices of silver in times when silver is scarce. That this is not the case here, I explained by assuming, that not only silver was scarce but grain as well. There was famine. It was a time that the General of Babylonia was raising an army for Antiochus' campaign. It must have resulted in thousands of extra mouths in and around Babylon in this period, while at the same time grain was stored in view of the campaign for the baggage train of the army.
5. Reinhard Pirngruber argued in his dissertation (Pirngruber 2012: 74-76 and forthcoming) that it is very doubtful if there was a scarcity of silver in this time. In times of war the government usually mints a lot of money to pay soldiers and he indeed argues for this, as the mint of Seleucia on the Tigris throughout the reign of Antiochus I was very productive (see now also the paper by Panos Iossif). In addition, bronze coins were not new. The high requisitions of money may have encouraged the Babylonians to use bronze instead of silver, that they hided. In other words bad money drove out good money. From Panos Iossif's paper (figure 5) we learn that hoarding of silver had begun already in 281, when Seleucus led his abortive campaign to conquer Macedonia, but was killed. The period around 274 also witnessed a sizable hoarding. One should, however, not ignore the express statement of the astronomer that much silver from Babylon drained off to Syria!

Summarizing the evidence from Hellenistic Babylonia one may conclude that Babylonian scholars had a keen interest in the purchasing power of silver. This clear from the diaries, where they meticulously noted down the exchange value between silver and a couple of foodstuffs and wool. In addition they produced lists of these equivalences, which demonstrate their interest in this particular topic. The fact that they used the shekel is explained by the fact that they continued a practice that was centuries old. This conservatism we also encounter in the use of ancient geographical names. It fits in with the language of age old omen collections. But it also shows an intensive concern for the role of silver in society and the consequences of the volatility of it for the welfare of the people. The interest is also apparent in the omen texts. They were well aware of the relation between currency and crisis.

The impact of silver on the economy

It is widely acknowledged that the production of coinage by states in Antiquity was not motivated by economic reasoning, but by the wish to pay soldiers and labourers on public

works and finally to facilitate taxation. The fact that Alexander introduced coinage in a world where trade with silver bullion had been successfully conducted for millennia, was led by motives of political propaganda and the standardization of payments to soldiers, who mainly came from the west, where coinage was common. The choice for coinage was taken much earlier in the Greek world; the reason for this is discussed in the paper by John Mooring. Alexander's policy created a large unified area from Greece, where the Attic weight standard prevailed, to Afghanistan. This had an economic advantage over the different currencies of the Greek and former Persian world and diminished transaction costs. Yet it was not motivated by that, as Meadows (2014) rightly observes. After the demise of this empire, local currencies emerged again (among other regions in the Ptolemaic empire) for reasons of national pride. There is, by the way, nothing new in this. In all countries of the European Union one can find people and parties who long for the return to local currencies. The fact that the United Kingdom did not opt for the Euro was not dictated by economic motives (although they were presented of course), but was dictated by national pride. Modern man, including the modern politician, does not really fit in with the ideal-type of the *homo oeconomicus*. The difference between the currency of the Euro and the Hellenistic world is, that silver was the standard money stuff which allowed comparison by weight of different currencies and denomination. And this happened on a large scale in the Seleucid empire. But fiduciary money was not absent in Antiquity. The silver's purity must be trusted (was more or less guaranteed by the coin legends) and bronze coinage was not based on intrinsic value at all. In addition, bonds, checks and credit notes were used as means of payment throughout Mesopotamian history.

Thanks to die-studies and other expedients (discussed in the paper by Panagiottis Iossif) one might get an idea of the amount of money in circulations and the consequences of shortages and abundance of silver. I have no time to make an extensive study of this. It has been done by Reinhard Pirngruber in his dissertation and much more study, numismatic and historical, is required. Allow me to make a few remarks.

1. It is a well-known fact that Alexander brought an enormous amount of silver (5000 tonnes) in circulation. We mentioned this above. But what are the consequences? Modern politicians are cautious in bringing new money into circulation in fear of high inflation. And this fear is justified. There examples of souring inflation as in the Republic of Weimar. It is especially the case when production does not go in tandem with production. On the other hand: economic growth can be hampered by lack of money. In the introduction to this paper I gave some examples of the beneficial effects of growing silver stock in classical Athens and Rome and Babylonia in the sixth century BC. What about Alexander?

Thanks to the information of the prices in the Astronomical Diaries we can observe an enormous spike in the prices of grain from his reign to about 300 BC. It is not difficult to imagine that this has something to do with the bringing of so much silver (and gold) into circulation in this very period. The fact that armies traversed the country, which necessitated feeding thousands of unproductive soldiers, did not help either. Yet the prices recovered after 300 and a more normal price level was established. This may be ascribed to the fact that part of the silver left Babylonia in the pockets of the mercenaries who went home (Greek world) or to other campaigns. For long Babylonia did not suffer from major battles. But the availability of silver may also well have encouraged growth, not only in Babylonia, but also elsewhere. First of all I want to point at the massive foundation of new and big cities. Alexandria in Egypt is of course a prime example, but Alexander founded his Alexandrias in many places, of which Iskenderun and Kandahar are remnants in modern times. An Alexandria was also established at the Persian Gulf. The Seleucids continued this building

activity. Seleucia on the Tigris, not far from modern Bagdad, was founded around 300 BC, and was an ambitious enterprise. It had a surface of 500 hectares, which is more than twice the size of classical Athens and larger than Babylon (400 hectares). It attracted many people from various regions (Macedonians, Greeks, Babylonians, Jews) and reportedly acquired 600,000 inhabitants in the first century AD. This may have been an exaggeration, but the agricultural hinterland was certainly able to feed these inhabitants. Archaeological surveys demonstrate a growing network of canals and settlements (all discussed in Van der Spek 2008).

2. Iossif's paper at this conference presents a startling reconstruction of the annual production of silver coins and the amount of silver in circulation. For the years 300 – 240/35 BC he arrives at a production of 180 talents per year, which is 4644 kg at a talent of 25.8 kg and a total circulation of silver at 5 times that amount, 900 talents = 23,220 kg. This amount is especially based on silver larger denominations, but I assume that the smaller denominations are massively lost. In addition, daily transactions often took place with bronze coins. I have no opinion yet if this is enough to speak of 'deep monetization' in the sense of Lucassen.

3. Iossif observes another spike of coin circulation in Mesopotamia, viz. 281-271. This can be explained by the coining of money for the payment of the army that was mustered for the First Syrian War, as we discussed above. Part of the money may also have been used for the continuing building activities in Babylon. The Babylonian Chronicles (BCHP 5-9) show that Antiochus was often in Babylon and the so-called Antiochus Cylinder[10] from Borsippa testifies to his building activity on the temples in Borsippa and Babylon (268 BC). Actual payment may have been done with bronze coins. Under the reign of Antiochus II (261-246) and later major building projects were carried out in the city of Uruk in southern Mesopotamia. Uruk was a sizable city since the fourth millennium BC encompassing c. 300 hectares. The area had not always been entirely inhabited, but in het Hellenistic period 2/3 was built up. But the most amazing thing is that two giant temples were built. One is the so-called Resh temple for the sky god Anu, which had a *ziqqurratu* (temple tower) that was larger than the famous ziqqurrat of Babylon, built by Nebuchadnezzar, known as the Tower of Babel in Genesis 11. In 244 a cylinder was buried in the foundations of the new temple, written not by the king, but by a wealthy Urukean citizen, Anu-uballit, who says to have received the Greek name Nikarchos from king Antiochus II. Construction work on it continued until at least 200 BC, instigated by another Anu-uballit, whose second name was Kephalon. These activities are testimony of wealth and investment of Urukean citizens. And if this wasn't yet enough, another temple, even larger, was built in 201 BC for the goddess Ishtar (the Irigal temple). (Downey 1988; Krul 2014). Surveys by Robert Adams and McGuire Gibson in the 1960s and 1970s attest to an active work on canalization and irrigation (discussed in Van der Spek 2008).

4. The third huge peak Iossif observed is dated to 190 – 181. It is a period of extreme low prices, which contradicts my thoughts that much silver was retrieved for Antiochus' war against the Romans (Van der Spek 2000), which led to his defeat in Asia Minor at Magnesia in 189 and an unfavourable peace of Apamea with the Romans, which stipulated that Antiochus had to pay 15,000 talents of silver, 3000 at once and 12,000 in twelve annual instalments. I assumed a high purchasing power of silver, due to its scarcity. I have no explanation for this. Note that it is also a period of extreme hoarding of silver (see below).

[10] See M. Stol and R.j. van der Spek on the Livius website:
http://www.livius.org/cg-cm/chronicles/antiochus_cylinder/antiochus_cylinder1.html

5. An extreme high circulation Iossif observes in the decade 140-139. It is the first decade that the Parthians control Mesopotamia, but also the period of intensive warfare, especially as regards the abortive attempt of Demetrius II to reconquer Babylonia in 138 BC. We discussed the presence of coins of Demetrius in Babylonia next to Parthian coins above. Prices rise considerably, but the peak is there especially in the next decade. It is remarkable that the spike in coin circulation is occurring a decade earlier (150-140) in Asia Minor. As if Demetrius carried much silver from the west to the east because of his campaign.

Hoarding

Gresham's law prescribes that good money (silver) drives out bad money (bronze). We see this procedure perhaps at work in the year 274-3 in Babylon (discussed above). Removal of silver from the market takes place in times of war, when people hide their most valuable possessions. In that light Iossif's figure 5 is really telling. He sees peaks in hoarding in the years 281, 249-235, 225/4, 209, 190, 175 and 138. There can be hardly doubt that this has something to do with insecure political situations. 281 is the year of death of Seleucus I after his massive campaign to reconquer Asia Minor and to cross over to Macedonia, where he was murdered by his own protégé Ptolemy Keraunos. The years 249-235 are also particularly alarming. In 253 BC peace was concluded after the Second Syrian war (260-253), which was sealed with a political marriage in which the Seleucid king Antiochus II married the Ptolemaic princess Berenice, much to the dismay of course of Antiochus' first wife Laodice and her two sons Seleucus and Antiochus Hierax. To make things worse: Berenice bore a son, a potential successor to the throne. Everybody could expect that this would go wrong and it went wrong. Antiochus II died (perhaps murdered by Laodice) in Ephesus in 246 and Seleucus succeeded to the throne and was immediately accepted as such in Babylon. Ptolemy III, who had ascended the Egyptian throne in January 246 BC, attacked immediately in order to rescue his sister Berenice, which led to the Third Syrian War (246 – 241), conquered Antioch in Syria and even advanced as far as Babylon. A recently published Babylonian Chronicle sheds light on this invasion and street fighting in Babylon.[11] Ptolemy had to return in 245, but the situation remained troubled. Antiochus Hierax revolted against his brother, and this led to the "War of the Brothers". The Babylonian astronomical diaries give testimony of an unruly period with fighting in the city until c. 235 BC. Seleucus II's measure of 238 BC to grant perpetual ownership to Babylonians of land once granted by Laodice and allow freedom of taxation (CT MMA 148, the so-called Lehmann Text), may have helped to bring back peace at least in Babylon. Another disturbing fact was the rise of Parthia (Iran). The Parthians declared themselves independent from the Seleucid overlordship, probably in 247 BC.

The spike in 225/4 may have to do with the death of this King Seleucus II. The spike of 209 and ensuing years can be related to the massive campaign organized by Antiochus III to reconquer the East (212 – 205). He returned in Babylon in 205 and participated in the New Year Festival there. The year 190 can easily be related to again a massive military campaign, this time in western direction. He invaded in Greece, but was defeated in 191 at Thermopylae in Greece by the Romans, was once again defeated at Magnesia on the Meander in Asia Minor in 190, after which he had to renounce Asia Minor west of the Taurus mountains to Pergamum and Rhodes. At the Peace of Apamea, 188 BC, he was obliged to pay heavy indemnities to the Romans and had to surrender his son Antiochus as a hostage. In 187 he

[11] BCHP 11 at the Livius website: http://www.livius.org/cg-cm/chronicles/bchp-ptolemy_iii/bchp_ptolemy_iii_01.html

was again in Babylon for a start of a new eastern campaign, but he died in SE Iran in the same year. He was succeeded by his son Seleucus IV. The murder of this king in 175 by his vizier Heliodorus may explain the spike of that year. The huge peak of 143/2 BC can easily be explained by the advance of the Parthian armies under the leadership of their king Mithridates I. Fear was justified, as this king invaded Mesopotamia and conquered Babylon in spring 140 BC. The spike of 138 can be related to the above discussed invasion by king Demetrius II in order to reconquer Babylonia, in which he was successful at first, but was taken prisoner in that same year. As we have seen above, the reign of Demetrius is also characterized by excessive coin production.

This brief survey shows the close relation between political unrest and wars. Silver money circulated widely, but had intrinsic value and was as such liable to disappearance from the market. Fear of heavy taxation and looting armies will have had its effects.

Concluding remarks

This conference deals with the question **to what degree monetary systems prevented economic crises, from ancient Mesopotamian times until the present**. We have seen that in Mesopotamia and the Levant the role of silver is basic for the functioning of the economy from the third millennium BC through the Hellenistic period. Silver and to a lesser extent gold were the basic anchors of the economy. They provided confidence, trust, in negotiating transactions, in establishing values of goods and in storing of wealth. Silver and gold are important items in literature, admonitions, propaganda texts and scholarly work, such as the astronomical diaries and price lists. Purity is an ongoing concern. Availability of silver is on continuous target for kings and governments. Purchasing power of silver is something that fascinated all kinds of people.

Silver is sought and found in regions far away and mined in difficult circumstances (see Job 28). Very often we do not know where the silver comes from. We know that silver was not found in Mesopotamia; nevertheless even there silver was the main currency. It was obtained mainly by conquest, plunder, taxation and international trade. Babylonian textiles were an important export product throughout ancient history. The relative importance of these factors is hard to establish.

Availability of silver is the motor of the economy. Dearth of silver coincides with periods of economic and political weakness. We see this in the Late Bronze Age in Babylonia under the Kassites, when silver was scarce and gold became more important (see Kleber forthcoming). This is usually a sign of weakness, as it was in the Later Roman Empire when silver decreased in value and trust and gold became the leading metal.

Silver as currency can hardly work well without institutions. Kings and temples establish fixed weights and guard purity. Kings procure the import. Kings stimulate (unintentionally) the economy by investing in city building, canalization, military campaigns. The campaigns are to a large extent destructive of course, but successful warfare is the basis of the wealth of many ancient states, such as Assyria and the Persian empire. Evidently not for everyone: what is good for the core, is not good for the periphery; Babylonia suffered from the fact that it changed from core to province. Babylonia was again core of the Seleucid empire, but gradually lost its pre-eminence to the west, to Syria. The author of the book Ecclesiastes (Judaea, Hellenistic period) saw it correctly: silver meets every need.

Appendix

The silver weight systems of Mesopotamia, the Levant and Greece.
The weight systems of Mesopotamia, the Levant and Greece are quite similar and originate from Mesopotamia.

Mesopotamia (source: livius.org)

1 talent (GÚN; *biltu*)	= 60 mina	= 3600 shekel	= 30.00 kg
	1 mina (MA.NA; *manû*)	= 60 shekel	= 500 gr
		1 shekel (GÍN; *šiqlu*)	= 8.333 gr

Four weights found in Persepolis indicate that the mina was 499.80 gr.
Subdivisions of the shekel:

- 1 shekel = 2 divisions (*zûzu*) or half shekels
  - 1 division = 4.17 gr = ca. 1 Greek drachm
- 1 shekel is 8 slices (*bitqu*)
  - 1 slice = 1.04 gr
- 1 shekel = 12 grains (*mahat*)
  - 1 grain = 0.69 gr (Parthian, Late Achaemenid?)
- 1 shekel = 24 carat (*girû*)
  - 1 carat = 0.35 gr
- 1 shekel = 40 chickpeas? (*hallūru*)
  - 1 chickpea = 0.208 gr
- 1 shekel = 180 barleycorn (ŠE, *uṭṭetu*)
  - 1 barleycorn = 0.0463 gr

The purity of silver:
Silver in the Neo-Babylonian and Achaemenid period contained 1/8 alloy, i.e. silver had 87.5 % purity. Sometimes silver is characterized as *qalû*, "pure". The tetradrachms of the Hellenistic period had purity well above 90%. Cf. Vargyas (2001) 13-17; Mørkholm (1991) 5; Jursa 2010: 474-90. N.B.: *halluru* = 1/24 of a shekel, not 1/10 as is indicated by the dictionaries AHw and CAD; for the correction: see Powell 1987-90: 511-2.

Weights in the Hebrew Bible (based on Levantine custom)

	talent	mina	shekel	beka	gerah
talent	1				
mina	60	1			
shekel	3,000	50	1		
beka	6,000	100	2	1	
gerah	60,000	1,000	20	10	1

Note that the ratio of the Mesopotamian to the Levantine shekel is 60:50 to the mina, like the ratios 3600:3000 shekel to the talent and 24:20 girû/gerah to the shekel.[12]

[12] But note Tal's observation: "According to the Bible one *sheqel* denomination equals twenty *gera* (Exodus 30:13; Leviticus 27:25; Numbers 3:47; 18:16; Ezekiel 45:12). The archaeological evidence favors one *sheqel* equaling 24 *gera* (Kletter 1998:80–83, 140, Fig. 11). The two ratios for the *sheqel* / *gera* relationship—biblical

N.B.: Ezekiel 45: 12, an admonition to use honest weight standards, is enigmatic and seems to imply a Babylonian subdivision of the mina: "**12** The shekel shall be twenty gerahs. Twenty shekels, twenty-five shekels, and fifteen shekels shall make a mina for you." This amounts to 60 shekel for a mina, but note that the Greek translation of the Hebrew Bible, the Septuaginta, reads: "five shekels shall be five shekels, and ten shekels shall be ten shekels, and your mina shall be fifty shekels". This interpretation can best be understood by the habit of the Septuaginta to translate Hebrew measures into Greek ones:
Kikkar (*kkr*) = *talanton*
Maneh (*mnh*) = *mnâ*
Shekel (*šql*) = *didrachmon* (sometimes *siglos*)
Beqa^{c} (*bq*^{c}) = *drachmē*
Gerah (*grh*) = *obolos*

The problem with this is that this roughly fits the Babylonian weights, but not the Hebrew weight system. The Hebrew shekel was about 11.5 grams, the Babylonian shekel 8.33 grams, while the weight of the didrachm was 8.62 gr according to the Attic weight system prevailing in the Seleucid empire, but only 7.14 gr. in the Ptolemaic standard. I see two explanations for this. Either the translators did not care much about weight and wanted to translate Hebrew words to a terminology that was understandable for the target group (and indeed the system of subdivision of the Greek and Hebrew weights is similar indeed), or they took over an equation between the shekel = two drachmas, that seems to have got a general acceptance in the Near East. We see this in Babylonia, but also in Elephantine (Upper-Egypt, close to Assuan). Two Elephantine papyri from the end of the fifth century BC equate one stater (= tetradrachm) with two shekels (Tal 2007: 22, n. 11; Powell 1987-90: 511). One text adds that the stater is "Greek silver" (*ksp ywn*). Tal ascribes this equation to Babylonian influence (Tal 2007: 24). The influence may effectively Persian-Babylonian, as 10 Babylonian shekels equate 1 Persian *karša* (83.3 gr.) and are equal to 5 Greek staters according to one of the papyri. 6 *karša* = 1 Babylonian mina. Other evidence, assembled by Powell 1987-90: 513: 1/24 shekel is assumed by Isidorus of Sevilla (AD 600-36), *Etymologiae* XVI 25.10: *ceratum oboli pars media est*, "the gerah is a half obol". Pollux (time of emperor Commodus), *Onomasticon*, IX 62, refers to the 5th century comic poet Crates, where 1/12 daric=shekel of gold is equated with 8 obols of silver, a way of telling that the gold : silver ratio was 1:8.

Greek (Attic) Coins (source: www.livius.org)

1 talent (*to talanton*)	= 60 minae	= 6000 drachms	= 36,000 obols	= 25.86 kg
	1 mina (*hē mnâ*)	= 100 drachms	= 600 obols	= 431 gr
		1 drachm (*hē drachmē*)	= 6 obols	= 4.31 gr
			1 obol (*ho obolos*)	= 0.72 gr

- Alternative values:
  - 1 talent = 21.45 kg
  - 1 mina = 357.5 gr
  - 1 drachm = 3.58 gr

1:20 and archaeological 1:24—suggests there were two different denominations, a *sheqel haqodesh* and an (unqualified) *sheqel*, the latter used in daily transactions." Tal 2007: 19, n. 5.

    - 1 obol = 0.60 gr
- 1 stater (*ho statēr*) or tetradrachm = 4 drachms = 17.24 gr
- 1 didrachm = 2 drachms = 12 obols = 8.62 gr
- 1 obol = 8 chalkoi
- 1 *deben* silver (Ptolemaic demotic) = 20 drachms

Persian coinage
Persian coinage is relatively recent. King Darius I (522-486) introduced a golden *dareikos* weighing one Babylonian shekel (8.33 gr.). The *dareikos* was subdivided into 20 silver *sigloi* (Greek word apparently derived from shekel) weighing 5.4, later 5.6 gr. (cf. Tuplin 2014), thus far from any other shekel in the Near East. To distinguish it from the regular shekel, it was termed *siglos Mēdikos* by the Greeks. It probably represented the half Croesus stater, which weighed 10.75-10.90 gr. It is also roughly equates 2/3 of a Babylonian shekel (= 5.55 gr.). At a siglos of 5.6 gr. the ratio gold – silver is 1:13.45, the rate at a siglos of 5.4 gr is 1:12.96. The last figure comes closest to Herodotus (III 95), but he gives an order of magnitude I would say. Note also that the weight of the shekel is not exactly 8.33, but it cannot be far off the mark. Cf. Le Rider 2001: 154-64 for a discussion of the weights and the gold-silver relation.

Abbreviations:

ADART (or: Diary) = Sachs, A.J., Hunger, H. (1988, 1989, 1996) *Astronomical Diaries and Related Texts from Babylonia.* Vol. I. *Diaries from 652 B.C. to 262 B.C.,* Vol. II *Diaries from 261 B.C. to 165 B.C.,* Vol. III, *Diaries from 164 B.C. to 61 B.C.* (Vienna).
CAD = The Assyrian Dictionary of the Oriental Institute of the University of Chicago.
CTMMA IV: *The Ebabbar temple archive and other texts from the fourth to the first millennium B.C.* Cuneiform Texts in the Metropolitan Museum of Art, Vol. IV. Edited by Ira Spar and Michael Jursa. New York: The Metropolitan Museum of Art; Winona Lake, Indiana: Eisenbrauns, inc. 2014).

Bibliography

Bernholz, P. & Vaubel, R. eds., 2014, *Explaining Monetary and Financial Innovetaion. A Historical Analysis.* Cham, Switzerland: Springer.
Cole, S.W. 1996, *The Early Neo-Babylonian Governor's Archive from Nippur*. The University of Chicago Oriental Institute Publications 114. Chicago Ill.: The Oriental Institute of the University of Chicago.
Dercksen, J.G. forthcoming, '*Kaspam lašqul*. "Let me weigh out the silver". Mesopotamian and Anatolian Weights during the Old Assyrian Period.' In: Kleber & Pirngruber, forthcoming: 13-25.
Doty, L.T. 1977, *Cuneiform Archives from Hellenistic Uruk.* PhD dissertation, Yale University (Michigan).
Downey, Susan 1988, *Mesopotamian Religious Architecture: Alexander through the Parthians* (Princeton N.J.).
Ebeling, E. 1953, *Glossar zu den neubabylonsichen Briefen*. München: Verlag der Bayerischen Akademie der Wissenschaften.
Finkbeiner, U. 1987, "Uruk-Warka. The late periods" *Mesopotamia* 22: 233-50.

--- 1991, *Uruk. Kampagne 35-37, 1982-1984. Die archäologische Oberflächenuntersuchung (survey).* AUWE 4 *Text* + 4 *Tafeln, Beilagen* (Mainz an Rhein).
Fuchs, A. 1994, *Die Inschriften Sargons II. aus Khorsabad.* Göttingen: Cuvillier.
Jursa, M. 2002 ‚Florilegium babyloniacum: Neue Texte aus hellenistischer und spätachämenidischer Zeit' in: Cornelia Wunsch ed., *Mining the Archives. Festschrift for Christopher Walker on the Occasion of His 60th Birthday.* (Dresden) 107-130.
--- 2010, *Aspects of the Economic History of Babylonia in the First Millennium BC: Economic Geography, Economic Mentalities, Agriculture, the Use of Money and the Problem of Economic Growth*, Münster: Ugarit Verlag.
Kleber, K. forthcoming, 'The Kassite gold and the Post-Kassite silver standards revisited' in: Kleber & Pirngruber eds., forthcoming.
Kleber, K. & R. Pirngruber eds., forthcoming, *Studies in Silver, Money and Credit. A Tribute to Robartus J. van der Spek on Occasion of his 65th Birthday on 18th September 2014*. PIHANS no. ///. Leiden: Nederlands Instituut voor the Nabije Oosten.
Krul, Julia 2014, *"The Beautiful Image Has Come Out." The Nocturnal Fire Ceremony and the Revival of the Anu Cult at Late Babylonian Uruk.* Unpublished PhD-thesis: Westfälische Wilhelms-Universität, Münster.
Krispijn, Th.J.H. forthcoming, 'Early Silver: Thoughts about the sign KU_3 in the Earliest documents from Uruk' in: K. Kleber & R. Pirngruber eds., *Studies in Silver, Money and Credit. A Tribute to Robartus J. van der Spek on Occasion of his 65th Birthday on 18th September 2014*. PIHANS no. ///. Leiden: Nederlands Instituut voor the Nabije Oosten.
Le Rider, G. 2001, *La Naissance de la monnaie. Pratiques monétaires de l'Orient ancien*. Paris: Presses Universitaires de France.
Le Rider, G., and **De Callataÿ, F.** 2006**,** *Les Séleucides et les Ptolémées. L'héritage monétaire et financier d'Alexandre le Grand.* Paris: Éditions du Rocher.
Livingstone, A. 1989, *Court Poetry and Literary Miscellanea*. State Archives of Assyria III. Helsinki: Helsinki University Press.
Mayer, W.R. 1988, 'Ergänzendes zur Unterteilung des Sekels in spätzeitlichen Babylon,' *Orientalia* 57: 70-75.
Meadows, A. 2014,The spread of coins in the Hellenistic World,' in: Bernholz & Vaubel eds. 2014: 169-194,
Müller, G. 1997, 'Gedanken zur neuassyrischen Geldwirtschaft', in H. Waetzoldt and H. Hauptmann (eds) *Assyrien im Wandel der Zeiten*, Heidelberg: Heidelberger Orientverlag: 115–21
Parpola, S. 1987, *The Correspondence of Sargon II,* Part I, *Letters from Assyrian and the West.* State Archives of Assyria I. Helsinki: Helsinki University Press.
Pirngruber, R. 2012, *The Impact of Empire on Market Prices in Babylon in the Late Achaemenid and Seleucid Periods, ca. 400 – 140 BC.* Unpublished PhD-thesis, VU University Amsterdam.
Postgate, J.N. (1979) 'The Economic Structure of the Assyrian Empire', in M.T. Larsen (ed.) *Power and Propaganda. A Symposium on Ancient Empires*, Copenhagen: Akademisk Forlag: 193–221.
Powell, M.A. 1989-1990, ‚Masse und Gewichte' [Measures and Weights; article in English], in: *Reallexikon der Assyriologie* VII, p. 457-517
--- 1996, "Money in Mesopotamia" *JESHO* 39: 224-242.
Radner, K. (1999) 'Money in the Neo-Assyrian Empire', in J.G. Dercksen (ed.) *Trade and Finance in Ancient Mesopotamia*, Istanbul and Leiden: Nederlands Archaeologisch-Historisch Instituut te Istanbul: 127–57.

Schaudig, H. 2001**,** *Die Inschriften Nabonids von Babylon und Kyros' des Großen samt den in ihrem Umfeld entstandenen Tendenzschriften. Textausgabe und Grammatik*. AOAT 256. Münster: Ugarit Verlag.
Slotsky, A.L. (1997) *The Bourse of Babylon. Market Quotations in the Astronomical Diaries of Babylonia* (Bethesda MD).
Slotsky, A.L. and **Wallenfels, R**. (2010) *Tallies and trends. The Late Babylonian commodity price lists*, Bethesda MD: CDL Press.
Tal, O. 2007, 'Coin Denominations and Weight Standards in Fourth-Century BCE Palestine,' *INR* 2: 17–28. http://archaeology.tau.ac.il/arch_files/info/orens%20papers/inr2_Tal.pdf
Theurl, E. 2004, 'Konkurrierende Theorien der Geldentstehung: Einige Überlegungen zur Vereinbarkeit,' in: R. Rollinger & Chr. Ulf eds., *Commerce and Monetary Systems in the Ancient World: Means of Transmission and Cultural Interaction.* Melammu Symposia 5. Occidens et Oriens 6. (Stuttgart: Franz Steiner Verlag), 33-53.
Van der Spek, R.J. 1998, 'Cuneiform Documents on Parthian History: The Raḫimesu Archive. Materials for the study of the standard of living,' in: J. Wiesehöfer ed., *Das Partherreich und seine Zeugnisse. The Arsacid empire: sources and documentation. Beiträge des internationalen Colloquiums, Eutin (27. - 30. Juni 1996)*. Historia Einzelschriften 122 (Stuttgart: Franz Steiner Verlag 1998) 205-258.
--- 2000, 'The effect of war on the prices of barley and agricultural land in Hellenistic Babylonia,' in: J. Andreau, P. Briant, R. Descat edd., *Economie antique. La guerre dans les économies antiques.* Entretiens d'Archéologie et d'Histoire / Saint-Bertrand-de-Comminges 5 (Saint-Bertrand-de-Comminges 2000) 293-313.
--- 2004, 'Palace, temple and market in Seleucid Babylonia,' in: Chankowski, V., Duyrat, F. eds., *Le roi et l'économie. Autonomies locales et structures royales dans l'économie de l'empire séleucide. Actes des rencontres de Lille (23 juin 2003) et d'Orléans (29-30 janvier 2004)* Topoi, Suppl. 6 (Paris) 303-332.
--- 2008, 'Feeding Hellenistic Seleucia on the Tigris and Babylon,' in: Richard Alston, O.M. van Nijf, eds., *Feeding the Ancient City* (Leuven: Peeters), 33-45.
--- 2011, 'The "silverization" of the economy of the Achaemenid and Seleukid empires and early modern China,' in: Archibald, Z.H., Davies, J.K., Gabrielsen, V., eds., *The Economies of Hellenistic Societies, Third to First Centuries* (Oxford: Oxford University Press), 402-420.
R. van der Spek, P. Foldvari, B. van Leeuwen 2014. "Growing silver and changing prices. The development of the money stock in ancient Babylonia and medieval England". In *A History of Market Performance. From Ancient Babylonia to the modern world*, edited by R. van der Spek *et al*., London-New York: Routledge, 489-505.
Von Reden, S. 1995, *Exchange in Ancient Greece*, London: Duckworth.
--- 2007, *Money in Ptolemaic Egypt: From the Macedonian conquest to the end of the third century*, Cambridge: Cambridge University Press.