Agio at Delphi

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IN a fascinating paper, Patrick Marchetti has argued that the Greek word ἐπικαταλλαγή denoted not *agio*, a charge for converting one currency to another, but a 're-(ἐπι-)évaluation (ou *ré*-ajustement)' of the exchange-rate between Aeginetan and Attic silver.[1] In 335 BC, according to Marchetti, the official exchange rate of gold darics to Aeginetan silver drachmas – at Delphi – was changed from 1:14 to 1:15 in order to correct a supposed local monetary problem; an abundance of worn and therefore underweight Aeginetan silver coinage in circulation meant that a payment of, say, 10 physical drachmas might weigh less than 10 drachmas (before 335: 1 daric = 7 Aeginetan staters = 20 Attic drachmas; after: 1 daric = $7\frac{1}{2}$ Aeginetan staters = 20 Attic drachmas).[2] In the re-edition of the relevant accounts in *CID* II Jean Bousquet followed Marchetti.[3] This paper argues that the economics of Marchetti's proposal are implausible and introduces evidence that suggests that his theory must be abandoned.

I

The Delphic accounts provide some of the best evidence for the phenomenon of *agio* from the Hellenistic period.[4] If Marchetti's theory is correct then

[1] P. Marchetti, 'Les cours de l'attique et de l'éginétique et les rapports or-argent dans les comptes de Delphes', in D. Knoepfler (ed.), *Comptes et inventaires dans la cité grecque* (Neuchâtel, 1988), pp. 103–10; Marchetti first floated the idea in very brief form in 'Quelques réflexions sur les équivalences entre l'or et l'argent', in T. Hackens and P. Marchetti (eds), *Histoire économique de l'antiquité* (Louvain-la-Neuve, 1987), pp. 135–49, at p. 139. Cf. *LSJ s.v. epikatallage*: 'money paid for exchange, discount' and for this and related words in the sense of *agio* see R. Bogaert, *Banques et banquiers dans les cités grecques* (Leiden, 1968), pp. 48–9.

[2] Marchetti, *Comptes et inventaires*, p. 109.

[3] G. Le Rider, 'À propos d'un passage des *Poroi* de Xenophon: la question du change et les monnaies incuses d'Italie du sud', in G. Le Rider et al. (eds), *Kraay-Mørkholm Essays: Numismatic Studies in Memory of C. M. Kraay and O. Mørkholm* (Louvain-la-Neuve, 1989), pp. 159–72, Addendum no 1, p. 171, found Marchetti's suggestion convincing.

[4] For *agio* in the Hellenistic period see Bogaert, *Banques et banquiers*, pp. 48–9, 122–4, 176–7, 325–30; even in Ptolemaic Egypt the evidence is not great: K. Maresch, *Bronze und Silber: Papyrologische Beiträge zur Geschichte der Währung im ptolemäischen und römischen Ägypten bis zum 2. Jahrhundert n. Chr.* (Opladen, 1996), pp. 2–3, 19–20, and esp. 89–95. See also the collection of texts in J. Melville Jones, *Testimonia Numaria* (London, 1993), pp. 375–99. The Roman Empire furnishes more numerous case-studies: see C. J. Howgego, 'The relationship of the issar to the denar in rabbinic literature', *INJ* 8 (1984/5), pp. 59–64; D. MacDonald, 'The worth of the assarion', *Historia* 38 (1989), pp. 120–3; J. R. Melville Jones, 'Denarii, asses and assaria in the early Roman empire', *BICS* 18 (1971), pp. 99–105; A. S. Walker, '16 or 18 assaria, drachmai and denarii in mid second century Athens?', *INJ* 6/7 (1982/3), pp. 142–7; A. D. Macro, 'Imperial provisions for Pergamum: *OGIS* 484', *GRBS* 17 (1976), pp. 169–79.

much of what we think we know about *agio* in the Hellenistic period would have to be discarded. A review of the relevant passages is in order.

An account dated to the archonship of Dion (336/5)[5] records the disbursement of money to the *naopoioi* to pay for cypress-timber (*CID* II 76.ii.9–12 = *FD* III.5 50):

> [ᵡτοῖς] ναοπ[οι]οῖς εἰς κυπάρ[ισ]σον φιλιππείους
> ᵡ χρυσοῦ[ς] ἑ[κατὸν πε]ντήκον[τα], ἕκαστον ἐν ἑπτὰ
> ᵡ στατῆρ[σιν ᵡ]. τούτου ἐγένετο εἰς ἀργυρίου παλαιοῦ
> 12 [ᵡ λ]όγον μναῖ τριάκοντα.

To the *naopoioi* for cypress, 150 philippic staters, each at 7 staters (sc. Aeginetan). (Equivalent) of this in old money[6] is 30 minas.

At Delphi in 335 BC 1 gold philip (= 1 daric) equaled 7 Aeginetan staters of silver, so that, given the now typical gold:silver exchange rate of 1:10,[7] the 150 staters of gold = 1050 Aeginetan staters = 2100 Aeginetan drachmas. Since this document equates the sum with 30 minas, giving a 70-drachma Aeginetan mina (3100÷30 = 70),[8] Marchetti reasons that it provides a *terminus post* for his proposed revaluation.

Marchetti adduces a section from the account of 335/4 as the *terminus ante* (*CID* II 62.ii.A.5–13 = *FD* III.5 25):[9]

> ἐλέφαντα ἐπριάμεθα [τε]-
> τραστάσιον, ὁλκὰ ἀττικοῦ [μν]-
> αῖ ἐνενήκοντα τρεῖς, τιμὰ [ἀτ]-
> 8 τικοῦ μναῖ ἴκατι δύο δρ[α]χ[μα]-
> ὶ ἑβδεμήκοντα [τέ]τορες·τοῦτ-
> ο αἰγιναῖον ἀπεδώκαμες τᾶι
> ἐπικαταλλαγᾶι δραχμὰς χι[λ]-
> 12 ίας ἑπτακατίας πέντε, ὀβολο-
> ὺς τρεῖς.

[5] *CID* II 76, pp. 162–3.

[6] The 'old money' is that used before the Amphictyonic re-coinage between Autumn 336 and Spring 334 (or more cautiously, *c.* 338–333): see P. Kinns, 'The Amphictionic coinage reconsidered', *NC* 143 (1983), pp. 1–22, esp. 10–17, modifying the conclusions of E. J. P. Raven, 'The amphictionic coinage of Delphi 336–334 B.C.', *NC*⁶ 10 (1950), pp. 1–22. See also O. Picard, 'Les Monnaies des comptes de Delphes à "*apousia*"', in Knoepfler (ed.), *Comptes et inventaires*, pp. 91–101.

[7] Bogaert, *Banques et banquiers*, p. 111; on the progression of the Attic standard toward this rate see D. M. Lewis, 'New evidence for the gold-silver ratio', in C. M. Kraay and G. K. Jenkins (eds), *Essays in Greek Coinage Presented to Stanley Robinson* (Oxford, 1968), pp. 103–10; cf. W. E. Thompson, 'Gold and silver ratios at Athens during the fifth century', *NC*⁷ 4 (1964), pp. 103–23; Marchetti, *Histoire économique de l'antiquité*, pp. 145–9.

[8] See B. Keil, 'Von delphischem Rechnungswesen', *Hermes* 37 (1902), pp. 511–29, esp. 515.

[9] Marchetti, *Comptes et inventaires* 105: 'Preuve est en un autre passage daté de 335, où le mot ne peut pas être compris comme désignant un "bénéfice de change."'

We purchased ivory at 1:4 (?),[10] at an Attic weight of 93 minas; cost was 22 minas 74 drachmas of Attic (silver). We paid this, in Aeginetan (silver), with *epikatallage*, 1705 drachmas 3 obols.

The account states that 2274 Attic drachmas were equal, including *epikatallage*, to 1705 drachmas 3 obols Aeginetan. This ratio of Aeginetan to Attic silver is $7\frac{1}{2}$:10 (1705.5 ÷ 2274 = .75). At 7:10 payment in Aeginetan would be 1591.8 drachmas (1591.8 ÷ 2274 = .7). Marchetti took the discrepancy to indicate a revaluation of the two silver moneys, such that 75 Aeginetan drachmas = 100 Attic drachmas. The difference between 1705.5 and 1591.8 is, as Marchetti's notes,[11] 113.7, exactly 1/15th of the expressed sum of Aeginetan drachmas, 1705.5, equal to the difference between a daric worth 7 Aeginetan staters and one worth $7\frac{1}{2}$ Aeginetan staters:

$$\frac{1705.5 \text{ dr. Aeg.}}{2274 \text{ dr. Att.}} = \frac{7\frac{1}{2}}{10} = \frac{7\frac{1}{2} \text{ st. Aeg.}:1 \text{ daric}}{20 \text{ dr. Att.}:1 \text{ daric}}$$

$$\frac{1591.8 \text{ dr. Aeg.}}{2274 \text{ dr. Att.}} = \frac{7}{10} = \frac{7 \text{ st. Aeg.}:1 \text{ daric}}{20 \text{ dr. Att.}:1 \text{ daric}}$$

The observation is true, but tautologous. Marchetti postulates no change in the Attic standard against the daric. Thus, any manipulation of the value of Aeginetan silver, for whatever reason, will cause a proportional change in the ratio between Aeginetan and Attic silver.[12] The ratio of Aeginetan to Attic drachmas implicit in the text ($7\frac{1}{2}$:10 = 1705.5:2274) shows that Delphians were paying one additional Aeginetan drachma for a gold daric, or for 20 Attic drachmas. The text, however, does not specify the nature of the added drachma, whether *agio* or revaluation.

The next relevant passage comes from an account from the archonship of Kaphis (327/6; *CID* II 97.4–9 = *FD* III.5 58):

> 4 [πρ]όσοδοι δὲ ἐγένοντο· παρὰ τῶν ἱερομνημόνων τὸ [ἐ]πιδέκατον μ[ν]αῖ
> [δ]έκα ὀκτώ, στατῆρες εἴκοσι· ᵡ καὶ τῶν δαρεικῶν [τῶ]ν εἰς τοὺς στεφά-
> [νο]υς, οὗ ἐχρησάμεθα παρὰ τῶν πρυτανίων, Ὀλυ[μπιά]δι, ᵛᵃᶜ·¹¹
> [δα]ρεικῶν ἑκατὸν ἐνενήκοντα, ἐπικαταλλ[αγ]ὴ ἐγένετο στατῆρες
> 8 [ἐν]ενήκοντα πέντε.
> [κεφά]λαιον τῆς προσόδου· ᵡ μναῖ εἴκοσι [μ]ί[α, σ]τατῆρες δέκα.

[10] [τε]τραστάσιον has been assumed to imply that 1 mina of ivory = 4 minas of silver, but the mathematics do not agree: 93 minas ÷ 4 = 23 minas 25 drachmas; the payment appears to be 51 drachmas short. No entirely satisfactory explanation has been found; see J. Bousquet, 'Inscriptions de Delphes', *BCH* 109 (1985), pp. 221–53, 234–5; *CID* II 62, p. 123. Melville Jones, *Testimonia Numaria* 210 p. 141 translates, 'We bought ivory, quality 1:4, weight ninety-three Attic minas, value twenty-two minas seventy-four drachmas of Attic (coinage).'

[11] Marchetti, *Comptes et inventaires* 106, actually referring to *CID* II 97.13–15, but by way of explaining the present text.

[12] Given 1 daric = 7 Aeginetan staters = 20 Attic drachmas, if 1 daric = $7\frac{1}{2}$ Aeginetan staters, then $7\frac{1}{2}$ Aeginetan staters = 20 Attic drachmas.

Revenues were: from the *hieromnemones*, the tenth: 18 minas 20 staters; and from the darics for the crowns, what we borrowed from the prytanies for Olympias, that is 190 darics, the *epikatallage* was 95 staters. Total revenue: 21 minas 10 staters.

The events underlying the transactions in this section of the account are obscure, but appear to have unfolded as follows. An unnamed person wished to dedicate gold crowns to Olympias,[13] but possessed only silver, not the gold needed to fashion the crowns. He approached the treasurers, proposing to purchase the gold from them. They were short of gold and so arranged a temporary transfer from the prytanies. Then they sold the gold to the dedicator, charging him an additional drachma per daric as *agio*. Finally, the treasurers logged the money earned from this sale as revenue (πρόσοδοι 4). Now Bogaert deduced from this text that the 'officiel', instead of which I suggest 'notional', ratio of gold darics to Aeginetan drachmas was 1:14 but that the 'commercial' ratio, i.e. the notional value plus *agio*, was 1:15.[14] Thus for the 190 darics the person purchasing gold with which to make the crowns paid 2660 Aeginetan drachmas (190 × 14 = 2660) plus an additional 190 Aeginetan drachmas for the *agio*, making the total cost to him 2850 Aeginetan drachmas.

On Marchetti's explanation the purchaser had to make a supplementary payment of 190 Aeginetan drachmas to make up for his worn and underweight coins.[15] If this were true, then on what logic could the 190 drachmas have been accounted as revenue? If they were merely a supplementary payment, then no revenue would have accrued to the treasurers from selling the gold.[16] The account squares; the 190 drachmas were revenue. Any definition of the word, therefore, must be consistent with its inclusion under the rubric 'revenue'.[17] If the word indicated a

[13] Or on her behalf; see n. 17 below.

[14] Bogaert, *Banques et banquiers*, pp. 110–111: 'Les trésories empruntaient sans intérêt (χρησάμεθα) 190 dariques dont le métal devait servir à la confection des couronnes. La darique leur était comptée à 14 drachmes éginétiques; à Olympias ils réclamèrent le prix de 'archers' perses sur le base de 15 drachmes la pièce et notèrent dans leur compte une ἐπικαταλλαγή de 95 statères ou 190 drachmes. Ces deux cours différents de la darique reposent sur un cours de base de 1 darique = 20 drachmes attiques. Cela donne au tarif officiel, auquel les trésories ont emprunté aux prytanes, 14 drachmes éginétiques, au cours commercial, appliqué dans la facture d'Olympias, 15 drachmes', ultimately following observations made by Keil, *Hermes* 37 (1902), pp. 511–14; see also Bogaert, *Banques et banquiers*, p. 316 with Le Rider, *Kraay-Mørkholm Essays*, pp. 161, 164–7.

[15] Marchetti, *Comptes et inventaires*, pp. 104, 109; Bousquet, *CID* II 97 p. 205.

[16] To give a modern analogy, imagine that the United States Treasury Department decreed that $1.00 was now to consist of 110 pennies. Now imagine that my neighbour wanted to buy a dollar bill from me, paying with 22 nickels. If $1.00 = 110 pennies = 22 nickels, on what logic would I be justified in reckoning two of the nickels that my neighbour paid me as income?

[17] Marchetti, *Comptes et inventaires*, pp. 104–5, evidently aware of the problem, invoked a tangentially related argument advanced by Bousquet, that the crowns were given in honour of Olympias, not to a god on her behalf: *BCH* 109 (1985), pp. 240–2, against Bourguet, *FD* III.5 58 p. 226, who had assumed that the crowns were for Apollo and that the darics were borrowed from the prytanies on Olympias' behalf, an assumption once followed by Marchetti, 'À propos des comptes de Delphes sous les archontats de Théon (324/3) et de Caphis (327/6)', *BCH* 101

supplementary payment then payment of a sum plus *epikatallage* meant nothing more than full payment; in this case the word would never have appeared under the heading 'revenue'.

A few lines later the same document sheds additional light on the meaning of *epikatallage* (*CID* II 87.13–15):

13 [τοῖ]ς ναοποι[ο]ῖ[ς, κελευσ]άντων τῶν ἱερομνα[μό]νων δοῦναι τάλαντα
   [αἰγ]ιναίου εἴκο[σι, ἐδώ]καμεν ἀττικοῦ τάλαντα δέκα ὀκτώ,
   [μνᾶ]ς τεσσαράκο[ντα· ᵛ τ]ὸ δὲ ἄλλο ἐπικαταλλαγὴ ἐγένετο·

To the *naopoioi*, when the *hieromnemones* bade us give 20 talents of Aeginetan (silver), we gave 18 talents 40 minas of Attic (silver). The rest was *epikatallage*.

Given a 70-drachma mina, 20 talents = 84,000 Aeginetan drachmas; given a 100-drachma mina, 18 talents 40 minas = 112,000 Attic drachmas. The treasurers were to pay 20 talents (120,000 Attic drachmas), but only paid 18 talents 40 minas, which left a difference (τὸ δὲ ἄλλο) of 8000 Attic drachmas (120,000 − 112,000). Bruno Keil first saw that 84,000 ÷ 112,000 = .75 and 84,000 ÷ 120,000 = .70, and so suggested that the amount by which the treasurers under-paid and the difference between exchange at 7:10 and $7\frac{1}{2}$:10 accounted for the same 8000 drachmas.[18] On this view the treasurers paid in Attic drachmas, in spite of the *hieromnemones*' request for payment in Aeginetan. Furthermore, because the *naopoioi*, the payees, would presumably want or need to convert that payment to Aeginetan, the treasurers included 8000 Attic drachmas to cover this expense. The *hieromnemones* bade payment to the *naopoioi* in Aeginetan. The treasurers paid in Attic, but included an additional sum to cover the fee that the *naopoioi* would have to pay for changing the money to Aeginetan. This means that in the end the treasurers only paid 78,400 Aeginetan drachmas (84,000 × .70 = 78,400). The details of the transaction are not known. Keil's explanation poses the question, why would the *naopoioi* have accepted less than the full 20 talents? We cannot be certain but the treasurers could only disburse what they had on hand. If the treasurers had an abundance of expendable Attic drachmas and a shortage of expendable Aeginetan drachmas, then in order to pay the full 20 talents they would have had to withdraw more than 20 talents, to cover the fee for exchange. This they were no doubt unwilling to do.

If *epikatallage* indicates *agio* then the treasurers paid the *naopoioi* less than they were instructed, a less than satisfactory outcome for the *naopoioi* and for

(1977), pp. 133–64, at 146–7. But, Marchetti asks (*Comptes et inventaires*, pp. 104–5), 'Que faire toutefois, dans cette dernière hypothèse (that of Bousquet), de l'ἐπικαταλλαγή inscrite comme "recette" en argent éginétique?' responding only with, 'Ce problème demeure.' But the problem has nothing to do with Olympias' role in the transaction. Whether the crowns were to be offered in her honour or paid for at her request the 95 staters comprising the *epikatallage* were accounted as revenue. See also F. Lefèvre, *L'Amphictionie Pyléo-Delphique: histoire et institutions* (Paris, 1998), p. 97 with n. 475.

[18] Keil, *Hermes* 37 (1902), p. 517.

Keil's explanation. But it is a possible and plausible outcome; the treasurers could not pay money that they did not have and even *naopoioi* could be short-changed on occasion. Marchetti's explanation, on the other hand, is in this instance mathematically impossible. He suggests that the evidence here is consistent with that of *CID* II 62.ii.A.5–13, asserting that *epikatallage* indicates a revaluation because the difference between 112,000 and 120,000 is proportional to the difference between a gold stater worth 7 Aeginetan staters and one worth $7\frac{1}{2}$ Aeginetan staters ($112,000 \div 120,000 = 14 \div 15$).[19]

Here again the theory rests on two premises: 1) the weight of the larger denominations (mina and talent) remained constant across the coinages, and 2) the number of constituent small-denomination pieces changed only in Aeginetan silver:

● before 335 BC: 20 Aeginetan talents = 84,000 Aeginetan drachmas = 120,000 Attic drachmas
● after 335 BC: 20 Aeginetan talents = 90,000 Aeginetan drachmas = 120,000 Attic drachmas

Thus, according to Marchetti the *epikatallage* changed the total number of physical Aeginetan drachmas in a mina from 70 to 75 (theoretically), without changing the weight of the Aeginetan mina; the number of Attic drachmas in one talent remained 6000. According to the account, however, the *epikatallage* affected the total number of Attic drachmas. On Marchetti's interpretation the account would mean that before revaluation 112,000 Attic drachmas could buy 20 Aeginetan talents, but that after revaluation 120,000 were needed to buy the same weight of Aeginetan silver. This violates the two premises of Marchetti's's theory. 120,000 Attic drachmas always purchased 20 talents; Marchetti's theory addresses only whether those 20 talents were composed of 84,000 or 90,000 Aeginetan drachmas.

An account for the archonship of Theon (324/3)[20] records the rates of conversion for two quantities of darics (*CID* II 102.ii.A.5–12):

[δοκι]μεῖον ἀπὸ τοῦ κ[ρατῆρος *sum of money in AR*]
δ[αρ]εικοὶ ἑκατὸν ἐνενή[κοντα ἐν ἑπτὰ στατῆρσι]
[ἠρι]θμημένοι.
8 [ἄλ]λοι δαρεικοὶ τριάκοντα ἐν ἑ[πτὰ καὶ δραχμῆι]
[ἠρ]ιθμημένοι.
[κ]αὶ δοκιμεῖον ἀπὸ τοῦ περιρραντηρίου·
[δ]αρεικός· ⯑ ἀριθμεῖται δὲ ὁ δαρεικὸς ἑ[ν ἑπτὰ]
12 [κ]αὶ δραχμῆι.

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[19] Marchetti, *Comptes et inventaires*, p. 106: 'Ne traduisons pas trop vite: "le reste est un *bénéfice de change*", car il n'y a pas eu change réel, mais une simple réévaluation de la valeur de l'encaisse en attique, que doit tenir compte des réalités du marché monétaire. La différence, ici, est exactement d'un quinzieme, c'est-à-dire rigoureusement la même que celle séparant le cours d'un statère d'or à 14 ou 15 drachmes.'
[20] Date: *CID* II 102 p. 219, 224.

Sample from the k[rater...][21] 190 darics reckoned at 7 staters (each). Another 30 darics reckoned at 7 staters and 1 drachma. And a sample from the lustral bowl, 1 daric. The daric was reckoned at 7 (staters) and 1 drachma.

Marchetti suggests that the 190 darics were reckoned here at 1:7 because the *epikatallage* had already been counted at *CID* II 97.7–8, but that by this date they and all other darics were really evaluated at $7\frac{1}{2}$ Aeginetan staters. If, as Marchetti suggests, all the darics were evaluated at $1:7\frac{1}{2}$, then a proportional change in the ratio of Aeginetan and Attic silver should be in evidence. In other words, we should find an Aeginetan mina of 75 drachmas, not 70. We do not. The same inscription continues (34–46):[22]

ἐλείπετο [τοῖς τ]αμίαις ἐπ-
[ὶ] τῆς ὀπωρινῆς πυλαίας τῆς ἐπὶ Θ[έωνος· τ]άλαντα πέ-
36 ντή[κ]οντα ὀκτώ, μναῖ πεντήκοντ[α τέτταρ]ες, στατῆρ⟨ε⟩- [A]
ς δέκα ὀκτώ, δραχμή, χαλκοῖ πέν[τε· τούτου] χρυσοῖ δι-
ακόσιοι εἴκοσι εἰς· τούτω̣ν̣ [οἱ μὲν ἑκατό]ν ἐνενήκο- [B]
[ντα ἐν ἑ]πτὰ στατῆρσι λε[λογισμένοι ἦσα]ν, οἱ δὲ τρι-
40 [άκοντα] καὶ εἷς ἐν ἑπτὰ κ[αὶ δραχμῆι. γίνετ]αι δὴ τούτ- [C]
[ων ἀργυρίου] μναῖ τεττα[ράκοντα τέτταρ]ες, στατῆρ-
[ες εἴκοσι δύο, δραχμ]ή· λ[ελόγισται οὖν το]ῦ μὲν ἀ[ργυ]-
[ρίου σύμπασα τιμή, ἀφαιρεθείσης τῆς τ]ιμῆς τ[οῦ χρ]- [D]
44 [υσίου, τάλαντα πεντήκοντα ὀκτώ, μναῖ ἐ]ννέα, σ[τατῆ]- [E]
[ρες τριάκοντα εἷς, χαλκοῖ πέντε· χρυσοῖ δὲ δι[ακόσ]-
[ιοι εἴκοσι εἰς. ....

[A] 58 T 54 M 18 st. 1 dr. 5 ch.
[B] 221 dar. =
[C] 44 M 22 st. 1 dr.
[D] 58 T 9 M 31 st. 5 ch.
[E] + 221 dar.

Left to the treasurers at the spring session of the year of Theon: 58 talents 54 minas 18 staters 1 drachma 5 chalkoi. Included in this, 221 gold staters. Of these 190 had been reckoned at 7 staters, and 31 at 7 staters 1 drachma. Thus, their total in silver was 44 minas 22 staters 1 drachma. The total value of the silver, therefore, has been reckoned – with the value of the gold subtracted – at 58 talents 9 minas 31 staters 5 chalkoi and 221 gold staters...

Bousquet's text is admittedly heavily restored, but seems on the whole secure – the stoichedon format reduces the range of likely restorations considerably. The account declares a balance of 58 talents 54 minas 18 staters 1 drachma

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[21] The precise meaning of δοκιμεῖον is disputed; see J. R. Melville Jones, 'Darics at Delphi', *RBN* 125 (1979), pp. 25–36, and Marchetti, *BCH* 101 (1977), p. 149, whose ingenious restoration, κ[εφαλαίου τῶν στεφάνων], may well be correct.
[22] Cf. Keil, *Hermes* 37 (1902), p. 515.

5 chalkoi and notes that a part of that balance consists of 221 darics, of which 190 were reckoned at 7 Aeginetan staters and the rest at $7\frac{1}{2}$. Then it accounts the gold in terms of Aeginetan staters, 44 minas 22 staters 1 drachma. If we follow the conversions listed in the account we arrive at the following figures:

Account	Rate	Aeginetan staters AR	Aeginetan drachmas AR
190 darics	1:7	1330	2660
30 darics	1:$7\frac{1}{2}$	225	450
1 darics	1:$7\frac{1}{2}$	$7\frac{1}{2}$	15
221 darics		1562.5	3125

If Marchetti's proposed revaluation applies here to all the money, then we should expect the converted darics to result in minas of 75 drachmas. If the proposed revaluation applies to some of the money, but not all (i.e. to the 31 darics but not the 190 darics) then we should expect conversion of the darics to produce minas with an average number of drachmas between 70 and 75. Neither expectation is met. The account tells us that the 3125 drachmas equalled 44 minas 22 staters 1 drachma Aeginetan. These two figures are equivalent only on a 70-drachma mina ($44 \times 70 = 3080$; $3125 - 3080 = 45$; 45 drachmas = 22 staters 1 drachma → 44 minas 22 staters 1 drachma). The account explicitly reckons all the darics at 1:14 (40–2) in spite of the fact that the itemizoi portion of the account lists two different rates of exchange (38–40).

Let us assume for a moment that Marchetti's theory is correct. The account tells us that the treasurers have assessed the full 221 darics at the rate of 1:14. Now, suppose at some time after 335 BC, when the rate of exchange had been raised to 1:15, the temple wanted to sell some of its gold darics. Can we believe that the treasurers would have sold the gold at 1:14, the rate at which they had reckoned it in *CID* II 102.ii.A.34–46, or 1/15th below current market value?

Why then would the account reckon the total volume of gold at 1:14 when the itemized portion of the same account clearly states that some of the gold was valued at 1:15? A simple answer may be offered. Let us review what the account actually lists. Concerning the gold, the account presents three pieces of data: (1) the rates at which three lots of darics were exchanged for staters of silver: 190@1:7, 30@1:$7\frac{1}{2}$, 1@1:$7\frac{1}{2}$, (2) the notional equivalent of the gold in Aeginetan silver, which disregards the expressed rate of conversion: 44 minas 22 staters 1 drachma, and (3) total monetary assets with gold and silver separate and unconverted: 58 talents 9 minas 31 staters 5 chalkoi + 221 darics. If the treasurers ever wanted to convert any of the holdings from gold to silver, then in order to avoid selling the gold at a loss they would need to

know three pieces of information: (1) the price in silver at which the gold had been obtained – in this case 190@1:7, 30@1:$7\frac{1}{2}$, 1@1:$7\frac{1}{2}$, (2) the notional value of the darics – in this case 44 minas 22 staters 1 drachma, and (3) the total number of gold darics – in this case 221. These three pieces of information correspond exactly to those presented in the account. If Marchetti's theory were correct, then this piece of careful accounting would have been irrelevant, since the gold would have been obtained at the same price in *weight* regardless of the *number* of drachmas at which it was purchased.[23]

II

Marchetti's proposed revaluation thus encounters considerable obstacles, especially at *CID* II 97.4–9, 13–15 and *CID* II 102.ii.A.5–12, 34–46. Moreover, neither Marchetti nor Bousquet comments on the economic implications of the re-definition of *epikatallage*. The economic problems with the new meaning are insuperable. First an obvious objection. On Marchetti's argument, after 335 at Delphi, a mina of Aeginetan silver was not measured by weight, but by the number of drachmas or staters of which it was composed. The impracticality of such a gesture looms large. Can we reasonably expect that after 335 everyone who changed a talent of Attic silver for Aeginetan counted (or insisted that the other party do so) to make certain that all 4500 Aeginetan drachmas were present? When in 327/6 the *hieromnemones* bade the treasurers pay 20 Aeginetan talents to the *naopoioi* (*CID* II 97.13–14), was any party prepared to count all 45,000 physical staters or 90,000 drachmas, instead of simply weighing the lot?[24]

The economic policy that underpins Marchetti's theory presupposes that the average person was willing to accept this additional burden. People tend to protect their own money, so if this were all that Marchetti's theory assumed, we might suspend disbelief. The economic policy underlying Marchetti's revaluation, however, can only have succeeded if the trading public were ignorant. In a system of bullion coinage regulation of large denominations by number of constituent coins, rather than by aggregate weight, only works if the individual coins enjoy near perfect consistency of weight or if the average person is willing to lose money regularly. Neither

[23] Current consensus holds that inscribed accounts in antiquity were not rationally conceived economic tools, but proof that officials in charge of money had discharged their duties fully and honestly. The Delphic accounts no doubt served this function. Here, however, we may be certain that no treasurer would have sold any of the 221 darics without first consulting this account, or an internal document – written on papyrus *vel sim.* – containing the same information.

[24] The Delphic *apousia* accounts (see n. 6 above) and an incident reported in Plutarch, *Lysander* 16, in which bags of money held little notes (*grammatidia*) that bore the number of coins contained in each bag, are not enough to make one think so; cf. Le Rider, *Kraay-Mørkholm Essays*, p. 163; Marchetti, *Comptes et inventaires*, p. 105 n. 9.

condition obtained in antiquity.[25] Suppose a trader had only, or mainly, full-weight money. Can we believe that he would have been willing to purchase e.g. 1 mina of Attic silver with a mina of Aeginetan silver that consisted of 37½ staters but weighted more than 1 mina? What if another trader wished to buy gold from the temple, but only had severely worn coins? On Marchetti's theory the temple would have been constrained to accept 150 physical staters that weighed less than 4 minas. If Marchetti is correct then Delphi suffered a regressive monetary policy that could not have been acceptable to anyone, least of all the temple, whose financial interests it was presumably designed to safeguard.

At the fiscal level, Marchetti's theory fails in conception and in execution. The problem of worn, underweight coinage at this time and place may have been real, as Marchetti claims.[26] This is a problem particular to bullion currency. But Marchetti suggests that the authorities[27] attempted to solve the problem of the *weight* of *individual* coins, by reassessing the *number* of *aggregated* coins in larger denominations. This is an anachronistically fiduciary gesture. Application of this complex fiduciary solution to a simple bullion problem produces even more absurd results on the ground. Given an abundance of circulating worn and underweight coinage any law that assessed minas by the number of constituent coins rather than the total weight would have promptly driven the full-weight specimens out of circulation. Anyone who desired to buy gold or Attic silver would have paid with underweight Aeginetan coins. Why would anyone have wasted good money, if bad money enjoyed equal worth under law? Instead of reducing the number of underweight coins in circulation, this measure might have prompted rampant clipping and filing of silver coins. If Marchetti's theory is correct then the treasurers could not have crafted a more backward fiscal response to the simple problem of underweight coins. Marchetti's revaluation would have exacerbated the problem it sought to correct. Ancient states and ancient people had to deal with underweight coins on a regular basis. As far as we know, however, this problem was corrected simply and equitably, not by fiscal legislation, but by brain and balance.

III

As we have seen, the Delphic accounts do not appear to support Marchetti's definition of *epikatallage* and the economics that his argument presupposes are improbable at best. Two passages, one from a building account at Epidaurus and the other from Theophrastus' *Characters*, provide independent, contemporary control on the meaning of *epikatallage*. Both sources agree that it denotes *agio*. Marchetti cites neither (nor does

[25] On weights see Le Rider, *Kraay-Mørkholm Essays*, pp. 163–4.
[26] Marchetti, *Comptes et inventaires*, pp. 107–8.
[27] Marchetti never says who he thinks mandated the revaluation.

Bousquet). *IG* IV² 103.35–42 (365–335)[28] records payment to one Tychon for *epikatallage* on money changed at Athens:[29]

... Ποσιδαίου πρατομηνίαι· κατάλογος Εὐσθένης...
36 ....πὰρ Πύθωνος λάμμα[τα] ΗΗΗΗ = ::: ἐς ᾿Αθάνας δεκάτα τῶν λίθων τῶν Πενταληκ[ῶν(!)]
[Αἰγ]ιναῖον ΗΗΗΗ = ˣ ἐς ῎Αργος ἐφόδια ᾿Αγέαι·· Πυˣρρῆνι··ˣ ᾿Αρταμιτίου· καταλογ-
ος Δαμοκρίνης Πολιτάδος· πὰρ Πύθωνος λᾶμμα =- ᾿Αστίαι ἐγκαύσιος γραμμάτων
[=]-ˣ ᾿Αγριανίου· κατάλογος Ζευξίμαχος ᾿Αφυλωνίας· πὰρ Πύθωνος λᾶμμα Αἰγιναῖ-
40 [ο]ν = = ::::· Κορινθίου ΗΗΓ = = ::::· Κλεοστράτωι κομιδᾶς λίθων ἐγ λατομίας ἐνς Κεγχ-
[ρ]έας Κορινθίου ΗΗΓ = = ::::ˣ Τύχωνι ἐπικαταλλαγὰ ἐπὶ τὸ καταλλαχθὲν ἀργύριο-
ν ἐς ᾿Αθάνας = ::· ἐφόδια ἐς ᾿Αθάνας Πολυκλεῖ :::: Δαμαγήτωι :::: ᾿Αρισταίχμωι :::: ᵛᵃᶜ

[35] Posidaios, first of the month; *katalogos* was Eusthenês son of X. From Python, receipt, 426 drachmas; to Athens one tenth of the Pentelic stone, 420 Aeginetan drachmas. Travel money to Argos, to Ageas 3 drachmas, to Pyrrhes 3 drachmas.

[37] Artemitios; *katalogos* was Damokrines son of Politilas. From Python, receipt, 30 drachmas. To Astias for painting letters 30 drachmas.

[39] Agrianios; *katalogos* was Zeuximachos son of Aphylonia. From Python, receipt, 49 Aeginetan drachmas, 297 Korinthian. To Kleostratos, conveyance of stones from the quarry to Kenchreai, 297 Korinthian drachmas. To Tychon, *epikatallage* for the money exchanged at Athens, 25 drachmas. Travel money to Athens: to Polykles, 8 drachmas; to Damagetos, 8 drachmas; to Aristaichmos, 8 drachmas.

If Marchetti's definition of *epikatallage* is correct, this account suggests that Delphi was not alone in adopting this backward policy of revaluation. Bogaert assumes that the 25 drachmas paid to Tychon (41–2) in the month of Agrianios covered the *epikatallage* for the 420 Aeginetan drachmas withdrawn for payment to Athens two months before (36–7).[30] The account

[28] A. Burford, *The Greek Temple Builders at Epidauros: A Social and Economic Study of Building in the Asklepian Sanctuary, during the Fourth and Early Third Centuries B.C.* (Liverpool, 1969), p. 208.
[29] Keil, *Hermes* 37 (1902), p. 516 with n. 2, knew it. See also B. Laum, *RE* suppl. IV (1924) s.v. *Agio* 9–11, at 10; *LSJ* s.v. See also Le Rider, *Kraay-Mørkholm Essays*, pp. 164, 171, where – though Le Rider agrees with Marchetti – the Epidaurian account is invoked as a problem.
[30] Bogaert, *Banques et banquiers*, p. 325; see also O.Mørkholm, 'Some reflections on the production and use of coinage in ancient Greece', *Historia* 31 (1982), pp. 290–305, 296. Burford, *Temple Builders*, p. 126, took the 25 drachmas to be the *agio* for the complete payment of which the 420 drachmas was only one-tenth, δεκάτα (36); this does not appear to be in evidence.

offers no clarification, but as it registers no other disbursements to Athens in the intervening lines, the assumption is not unreasonable.

If Bogaert is correct then at least two months passed from the time the 420 drachmas were withdrawn and the time Tychon – presumably their deliverer – was paid the 25 drachmas for the *epikatallage*. This is an unlikely set of circumstances if Marchetti's theory is right. If a revaluation was mandated at Epidaurus, Tychon would have known the rate and brought the necessary money with him. Any revaluation, therefore, must have taken place at Athens. On Marchetti's theory we would be constrained to believe that Athens passed a law stipulating the number of Aeginetan drachmas in a mina. This is not probable.

Tychon, on the other hand, might not know precisely what the going rate was at the Athenian money-changers' tables. It is easy to imagine that Tychon was entrusted with the 420 Aeginetan drachmas on the understanding that he would float the *agio* with his own money and be re-imbursed upon his return to Epidaurus. The treasurers were no doubt loathe to overestimate the *agio* and so release more money than was absolutely necessary. Moreover, by putting the responsibility for covering the *agio* on Tychon the treasurers reduced the likelihood of graft on his part. Let us imagine that Tychon had been given the 25 drachmas at the start. Now suppose he arrived at Athens to find that he could change the money for 20 drachmas. What was to stop Tychon from paying the money-changer a drachma to fudge the receipt, so that it read that the exchange had cost 25 drachmas, and keeping the other 4 drachmas? As safeguards go, this obviously would not have been foolproof, but it may have been an adequate deterrent.

The *agio* paid on the 420 drachmas is not inconsistent with that attested at Delphi.[31] We have seen above *agio* at 1/15th. Tychon seems to have obtained a slightly better deal, $1/16\frac{4}{5}$. Later in the same account we find two further exchanges of Aeginetan coin.[32] At lines 122–3 2310 Aeginetan drachmas were allocated along with another 120 drachmas for *katallage* (*IG* IV² 103.122–3): Πανάμου πρατομηνίαι Αἰγιναίου XXHHH-, καταλλαγὰ τούτωι H=. For some reason the cost of exchange was higher than projected, for the account states two lines later that the *katallage* was 130 drachmas (125–6): Πανάμου πρατ[ο]|μηνίαι Λααρχίδαι Αἰγιναίου XXHHH-, τούτωι ἐγένετο καταλλαγὰ H=-. Here at least, *katallage* and *epikatallage* are synonymous.[33] A comparison of these rates and that attested at Delphi follows:

Location	Source	Fee/Amt. Dr.	= Reduced
1 Delphi	e.g. *CID* II 62.ii.A.5–13	113.7/1705.5	= 1/15
2 Epidaurus	*IG* IV² 103.35–42	25/420	$= 1/16\frac{4}{5}$
3 Epidaurus	*IG* IV² 103.122–3	120/2310	$= 1/19\frac{1}{4}$
4 Epidaurus	*IG* IV² 103.125–6	130/2310	$= 1/17\frac{10}{13}$

This spread of rates can only have arisen in an environment characterized by competition among money-changers and bargaining between changer and customer. If we agree that *katallage* and *epikatallage* are, in this case, synonymous then in order to maintain Marchetti's definition of the latter we must assume that Athens was constantly calculating average bullion-loss from worn Aeginetan coins and re-drafting legislation to re-calibrate the Aeginetan coins against their own. This is not an attractive proposition. In spite of the spread of rates all four appear to hover around 4 drachmas/mina:

Fee/Amt. in M		Fee ($= 4$ dr. $\pm$ n.)	/M $\pm$ n dr.
1 113.7/24.36 M	$\rightarrow 4.66 \times 24.36 = 113.7$	$= 4$ dr. $+ 4$ ob.	/M
2 25/6 M	$\rightarrow 4 \times 6 + 1 = 25$	$= 4$ dr.	/M $+ 1$ dr.
3 120/33 M	$\rightarrow 3.66 \times 33 - 1 = 120$	$= 4$ dr. $- 2$ ob.	/M $- 1$ dr.
4 130/33 M	$\rightarrow 4 \times 33 - 2 = 120$	$= 4$ dr.	/M $- 2$ dr.

Now it is easy to imagine that a money-changer took 1 drachma from every 15 drachmas changed (as in *CID* II 62.ii.A.5–13), but it is more difficult to believe that a money-changer took 1 drachma from every $17\frac{10}{13}$ drachmas changed (as in *IG* IV² 103.125–6). Perhaps bargaining between customer and money-changer or competition amongst money-changers customarily began at 4 drachmas per mina, and was graded in one or both of two ways. Either the rate itself was increased or decreased incrementally (as in e.g. *CID* II 62.ii.A.5–13), or a flat sum was added or subtracted from the calculated rate (as in *IG* IV² 103.35–42, 125–6), or else both procedures were applied (as in *IG* IV² 103.122–3). The variation in contemporary rates of (*epi*)*katallage* at Epidaurus is incompatible with Marchetti's definition of the term.

The second piece of contemporary evidence is found in the last of Theophrastus' *Characters*, the αἰσχροκερδής, the man who profits through shameful means (30.15):[34]

καὶ παρὰ παιδὸς κομιζόμενος ἀποφορὰν τοῦ χαλκοῦ τὴν ἐπικαταλλαγὴν προσαπαιτεῖν, καὶ λογισμὸν δὲ λαμβάνων παρὰ τοῦ χειρίζοντος.

and when he collects the rent from a slave, he demands in addition the *epikatallage* for the bronze; so too when he collects the account from the administrator.

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[31] John Melville Jones offers the insightful suggestion that the 420 Aeginetan drachmas were paid in satisfaction of a bill of 600 Attic drachmas. *Agio* might have been 6 Attic drachmas per mina, totalling 36 drachmas. Now, 36 Attic drachmas, at 10:7, equaled $25\frac{1}{5}$ Aeginetan drachmas, but a money changer might have been willing to accept 25 from a good customer.

[32] 7 years later: the payment to Tychon took place in the eleventh year of the account; this next, in the eighteenth.

[33] Bogaert, *Banques et banquiers*, p. 48.

[34] Cited in *LSJ s.v.* ἐπικαταλλαγή.

Marchetti's definition of *epikatallage* renders Theophrastus' example senseless. In every example of the *aischrokerdes*' behavior Theophrastus shows him shamefully scrounging or pinching a few extra pennies. If Marchetti's theory were correct then Theophrastus' character would be consistent in every example but this one. If the *epikatallage* was a supplementary payment intended to bring an underweight payment up to its full weight then the sense of the example would be: the *aischrokerdes* gains shamefully because he demands payment in full. Where is the shame in that? The pejorative exemplum only works if the *epikatallage* denotes the charge for exchanging the bronze for silver.[35] The *aischrokerdes* receives payment in bronze, which suggests that the payment is small, but demands also the fee for exchange (to silver). At *CID* II 62.ii.A.5–13 the treasurers paid the ivory-sellers the amount due plus the *epikatallage*. The ivory-sellers, like the *aischrokerdes*, evidently demanded payment with the fee for exchange included. But they were businessmen transacting a deal worth more than 2000 Attic drachmas. No shame fell on a businessman looking after his own interests in a major transaction. Theophrastus' *aischrokerdes*, however, was collecting a few bronze coins from one of his own slaves.

Marchetti's bold new explanation of *epikatallage* in the Delphic accounts is interesting and worthy of close attention. On present evidence, however, it is untenable. In Marchetti's own examples the accounts themselves do not make sense if *epikatallage* denotes revaluation as he defines it. The economics that underlie Marchetti's theory, moreover, are impossible to credit. Finally, contemporary use of the word suggests in one case (*IG* IV[2] 103.40–3) and all but demands in another (Theophr. *Char.* 30.15) that *epikatallage* means nothing more than *agio*.[36]

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[35] On *epikatallage* here as *agio*, see M. Stein, *Definition und Schilderung in Theophrasts Charakteren* (Stuttgart, 1992), pp. 276–7, and R. G. Usher, *The Characters of Theophrastus* (New York, 1960), pp. 264–5 n. 30, also rightly dismissing Cobet's emendation {επι}καταλλαγήν.

[36] I am grateful to John Melville Jones and Richard Ashton for improving the paper in many places; also to John Oates and especially Kent Rigsby for criticism offered with patience and care.