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Corrigendum to "Walrasian equilibrium in large, quasilinear markets" [*Theoretical Economics* 8 (2013), 281–290][1]

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The proof of Lemma 1 in Azevedo, Weyl, and White (2013) incorrectly invokes compactness of the set of allocations in the L^1-norm topology. This corrigendum repairs the proof. All results are correct as originally stated.

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JEL classification. D51.

The proof of Lemma 1 of Azevedo, Weyl, and White (2013, pp. 286–287) has a mistake. The sentence "the set of allocations is compact according to the L^1 norm" is incorrect. This set is not generally compact. In the same paragraph, $x_n(u) \in D(p, u)$ should read $x_n(u) \in D(p_n, u)$.[2] The proof can be corrected with the following argument showing that the aggregate demand correspondence has a closed graph.

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[2]The mistake was discovered by Yokote (2026), who proposed an alternative duality argument for the main existence result.

Let $X = \{z^1, \dots, z^m\}$ denote the set of bundles. For each bundle $z^j \in X$, let $\tilde{z}^j \in \mathbb{R}^G$ denote the vector whose gth coordinate equals 1 if bundle z^j contains good g, and 0 otherwise. Define

$$\mathcal{A} = \left\{ a = (a_1, \dots, a_m) \in L^\infty(U, \eta)^m : a_j \geq 0,\ \sum_{j=1}^m a_j = 1\ \eta\text{-a.e.} \right\}.$$

We identify $a \in \mathcal{A}$ with

$$x_a(u) = \sum_{j=1}^m a_j(u) \delta_{z^j}.$$

Strictly speaking, x_a is not an allocation as defined in the original paper, because $\mathcal{A}$ imposes the simplex constraints only η-a.e.

Endow $L^\infty(U, \eta)^m$ with the product weak-* topology $\sigma(L^\infty, L^1)^m$. By Banach–Alaoglu, the unit ball of $L^\infty(U, \eta)$ is weak-* compact, and therefore $\mathcal{A}$ is weak-* compact, since the constraints $a_j \geq 0$ and $\sum_j a_j = 1$ are weak-* closed.

Suppose $p_n \to p$, $d_n \to d$, and $d_n \in D(p_n)$. Choose $a^n \in \mathcal{A}$ such that $x_{a^n}(u) \in D(p_n, u)$ for η-a.e. u and

$$d_n = \sum_{j=1}^m \tilde{z}^j \int a_j^n \, d\eta.$$

By weak-* compactness, there is a subnet a^{n_α} that converges weak-* to some $a \in \mathcal{A}$. Therefore,

$$\sum_{j=1}^m \tilde{z}^j \int a_j \, d\eta = \lim_\alpha \sum_{j=1}^m \tilde{z}^j \int a_j^{n_\alpha} \, d\eta = \lim_\alpha d_{n_\alpha} = d.$$

It remains to show that $x_a(u) \in D(p, u)$ a.e. Fix j, k and $\varepsilon > 0$, and define

$$A_{kj}^\varepsilon = \left\{ u : u(z^k) - p \cdot \tilde{z}^k \geq u(z^j) - p \cdot \tilde{z}^j + \varepsilon \right\}.$$

For all sufficiently large α, bundle z^j is not optimal on A_{kj}^ε at price p_{n_α}. Hence $a_j^{n_\alpha} = 0$ a.e. on A_{kj}^ε. Weak-* convergence implies

$$\int_{A_{kj}^\varepsilon} a_j \, d\eta = \lim_\alpha \int_{A_{kj}^\varepsilon} a_j^{n_\alpha} \, d\eta = 0.$$

Thus $a_j = 0$ a.e. on A^{ε}_{kj}. Taking the finite union over j, k and the countable union over rational $\varepsilon > 0$, we obtain that $a_j(u) > 0$ only if z^j is p-optimal for a.e. u. Therefore $x_a(u) \in D(p,u)$ a.e. Modifying x_a on a null set gives an allocation satisfying the demand condition everywhere. Thus $d \in D(p)$, so the graph of D is closed.

References

Azevedo, Eduardo M., E. Glen Weyl, and Alexander White (2013): "Walrasian equilibrium in large, quasilinear markets." *Theoretical Economics*, 8, 281–290. https://doi.org/10.3982/TE1060. [1]

Yokote, Koji (2026): "Constrained optimal transport with an application to large markets with indivisible goods." arXiv:2604.02559 [econ.TH]. https://doi.org/10.48550/arXiv.2604.02559. [1]