1023-13-132 **R D Kravitz*** (07rdk@williams.edu), 2519 Panama Street, Philadelphia, PA 19103. *An equivalent characterization of half-factorial restricted block monoids over $\mathbb{Z}$ and torsion groups, with applications to factorization in Dedekind domains.* Preliminary report.

Let M be a commutative, cancellative monoid. For $x \in M$, we define $\rho(x)$, the *elasticity* of x, to be $max\{\frac{m}{n} : x = \alpha_1 \cdots \alpha_n = \beta_1 \cdots \beta_m\}$ for irreducible α_i's and β_j's. We then define $\rho(M)$, the *elasticity* of M, to be $sup\{\rho(x) : x \in M\}$.

Recall that a monoid M is *half-factorial* if for every element, each factorization is unique up to factorization lengths, or in other words, $\rho(x) = 1$ for all $x \in M$. We say that a monoid M is *strongly taut* if for all $x \in M$, $n \in \mathbb{N}$, $\rho(x) = \rho(x^n)$.

We prove that for block monoids over a torsion group or the integers, these two conditions are equivalent. There exists a transfer homomorphism from a Dedekind domain to the block monoid over its class group, so in other words, factorization properties of the domain are completely described by factorization in a particular restricted block monoid. Thus, as an application of this work, we prove the equivalence of strong tautness and half-factoriality in a large class of Dedekind domains. (Received August 06, 2006)