Tracing out the effect of large economic stimuli on the pattern of transactions in an integrated economy, and their aggregate implications, has long been a central goal of economic analysis, but until now has not been studied experimentally. This study was designed to study the aggregate consequences of cash transfer programs while accounting for multipliers and externalities. We carried out a large-scale experiment in rural Kenya that provided one-time cash transfers worth roughly USD 1000 across 653 villages with around 280,000 people, with a large implied fiscal shock of roughly 15\% of local GDP, and deliberately randomized the intensity of cash transfers across geographic sublocations. We first document large direct impacts on households that received transfers, including increases in consumption expenditures and durable assets 18 months after transfers. Enterprises in areas that receive more cash transfers also experience meaningful gains in total revenues, in line with the increased household expenditures. Untreated households, too, show large consumption expenditure gains, by an amount comparable to recipients' gains. Through monthly measurement of scores of commodities and consumer and durable goods, we document positive but minimal local price inflation (0.1\% on average) in areas that received additional cash. To assess aggregate implications, we compute a local fiscal multiplier, taking advantage of data on representative samples of treated and untreated households and firms. Both income data and consumption data yield large positive estimated local fiscal multipliers of approximately 2.6. A speculative possibility for how local output increases, despite no meaningful local price inflation or firm investment response, is that many local enterprises are characterized by substantial 'slack' in their utilization of factors of production. Finally, we interpret the welfare implications of these results through the lens of a simple household optimization framework. In this framework, the fact observed consumption gains for untreated households are not driven by corresponding increases in labor supply, combined with a lack of local price inflation or of adverse spillovers along other non-market dimensions, suggest that non-recipients as well as recipients were made better off in this setting. This in turn suggests that some existing evaluations of cash transfer programs that ignore aggregate effects may be under-estimating overall program gains.