between 20–100 bps across different QE operations.[19] We model QE as a decrease in the GSE financing costs, which was also the stated intent of the policy. To better understand the implications of secondary market interventions, we also experiment with increasing GSE rates. Such an increase could reflect the reversal of the QE policy or increase in the guarantee fees charged by the GSEs for coverage of projected credit losses from defaults in the securitized pools. The results are shown in Table 10 and Figure 11.

One can compare secondary market interventions with a relaxing of capital requirements, since QE was used in part to encourage lending by banks who had experienced a contraction in capital. Our results suggest that both policy interventions result in more mortgages, but impact different parts of the market. Therefore, they have dramatically different distributional consequences across the income spectrum and result in markedly different allocations of mortgage risk in the economy.

Mortgage Origination and Redistribution

Our counterfactuals suggest that the main effect of QE is to decrease conforming loan rates and increase conforming mortgage lending volumes significantly: a 25 bp decrease in GSE rates leads to an essentially one-to-one decrease in conforming loan rates and roughly $193 billion of new conforming mortgage origination. Jumbo interest rates and volumes are largely unaffected. Aggregate consumer surplus increases by roughly $35 billion, driven by both increased lending and lower interest rates for existing borrowers.

An *increase* in GSE financing costs has a relatively smaller impact on interest rates and on lending volumes because banks adjust on the balance sheet retention margin. A 25 bp increase in the cost of a securitized conforming mortgage only leads to a 12 bp increase in conforming loan rates. As GSE financing costs increase, banks make significant adjustments along the bank balance sheet retention margin and substitute away from GSE financing and towards cheaper balance sheet financing. In this scenario, conforming mortgage origination declines by only $88 billion, in comparison to the $193 billion increase caused by an equivalent GSE rate decrease. Jumbo origination volumes decrease slightly because the increased conforming loan balance sheet financing crowds out jumbo lending and increases jumbo origination costs slightly. Aggregate consumer surplus declines by roughly $17 billion, with individuals in higher-income markets seeing declines of roughly $8 billion, compared to $1 billion in low-income markets.

This asymmetry in response to rate increases and decreases is more apparent in more extreme scenarios. A 100 bp decline in GSE financing costs leads to roughly a 100 bp decline in conforming interest rates. In contrast, a 100 bp increase in GSE financing costs leads to only a 33 bp increase in conforming interest rates. This asymmetric response of interest rates again reflects the importance of the bank balance sheet retention margin. As banks retain more loans on the balance sheet, the sensitivity of mortgage interest rates to GSE rates decreases. Interestingly, absorbing these costs through more balance sheet lending reduces banks' ability to originate jumbo mortgages, leading to slightly higher jumbo rates and slightly lower volumes. The implications for lending volumes and

[19] See, among others, Krishnamurthy and Vissing-Jorgensen (2011) and Di Maggio, Kermani, and Palmer (2019).