

instead. Presumably such consumers would choose the largest possible mortgage that is still conforming. We confirm this bunching in Figure 7A.

We document a spike in borrower income below the conforming loan limit (Figure 7B). Larger mortgages are, on average, taken out by people with larger incomes. This implies that the bunching at the discontinuity draws from a higher-income population than what the mortgage size would suggest. A large spike in income would suggest that even very wealthy borrowers are willing to take up a smaller mortgage in exchange for lower rates. We formalize this intuition in the model and exploit the moments related to this bunching to estimate the model.

#### **Section IV: Model of Mortgage Demand and Supply**

Motivated by the evidence from the previous sections, we build and estimate a structural model of the U.S. residential mortgage market, which features banks competing with shadow banks for consumers. The model has several goals. First, we want to understand how the industrial organization of financial intermediation and the choice of bank business model determine who originates which types of mortgages, and at which interest rates. Second, we then use the estimated model to quantitatively analyze the consequences of capital requirements, access to secondary loan markets, and unconventional monetary policy on lending volume and pricing, bank stability, and the distribution of consumer surplus across rich and poor households. Moreover, we quantify the importance of the shadow bank migration and balance sheet retention margins for policy analysis.

Our model builds on Buchak et al. (2018) but is substantially richer in several dimensions on both the demand and supply sides. Most importantly, our model accounts for the market segmentation between products which can easily be sold, and those that cannot (conforming versus jumbo mortgages), both on the demand and supply sides. We briefly discuss some salient features of the supply and demand sides before describing the model in detail.

On the supply side we explicitly model different financing choices across intermediaries. The supply side of the market consists of three types of lenders, banks, and two distinct types of shadow banks: non-fintech shadow banks, and fintech shadow banks.<sup>8</sup> These financial intermediaries engage in two activities: loan origination and financing. Intermediaries can finance mortgages two different ways: portfolio (balance-sheet) lending or originate-to-distribute. In portfolio lending the intermediary finances the mortgage from its own funds. Therefore, differences in lenders' internal funds—i.e., balance sheet capacity—will change their willingness to engage in this activity. Furthermore, capital requirements put regulatory restrictions on the amount of portfolio lending in which a bank can engage. Alternatively, intermediaries can originate to distribute: they finance the mortgage by selling it to a third-party financier through GSEs. Of course, an intermediary can engage in both types of financing simultaneously. We also allow banks to face regulatory pressures beyond capital requirements. These can arise from legal or regulatory enforcement actions, or the anticipation of future actions on the part of regulators or prosecutors. These regulatory pressures constrain banks' lending activity even if banks are well capitalized. In Section V.E, we relax the assumption that

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<sup>8</sup> During our estimation period all traditional banks are classified as non-fintech (see Buchak et al. (2018)).