Capital Inflows and the Decline in American Manufacturing

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Abstract

What is the impact of capital inflows on advanced economies? I study this question in the context of the "global savings glut", which was associated with large capital inflows to the United States. Using regional variation in banks' exposure to global funding markets, I show that a widening of U.S. current account deficits induces a sectoral reallocation of resources from tradable to non-tradable industries, causing a decline in manufacturing employment. This reallocation results from banks intermediating capital inflows to domestic households, financing a credit-fueled consumption boom that shifts resources to the production of local goods. Banks more exposed to capital inflows further amplify this reallocation by cutting back industrial lending in favor of issuing more debt to households. The role of the global savings glut I document is distinct and complementary to the effects of import competition on manufacturing employment (often referred to as the "China shock").

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1 Introduction

> *"Over the past decade a combination of diverse forces has created a significant increase in the global supply of saving – a global saving glut – which helps to explain both the increase in the U.S. current account deficit and the relatively low level of long-term real interest rates in the world today."*
>
> – Bernanke (2005)

Episodes of large capital flows to emerging economies have long been studied due to their propensity to precede financial crises, specifically balance of payments crises (Calvo, 1998). More recent work has rationalized this propensity by arguing that capital inflows induce a sectoral reallocation – shifting resources from the production for global export markets in favor of the production for domestic consumption – that makes their recipients more prone to suffer from such crises (Reis, 2013; Benigno et al., 2015; Kalantzis, 2015). In contrast, the impact of capital inflows on advanced economies has received relatively less attention. While advanced economies are less susceptible to balance of payment crises, they are not immune to the sectoral reallocation that tends to accompany capital inflows. This paper examines a prominent case study of an episode of large capital inflows into the U.S. economy: the "global savings glut" – the accumulation of excess savings in emerging market economies, particularly China – and argues that it contributed to the decline in American manufacturing.

Motivated by predictions from the theoretical literature on the impact of capital inflows (Mendoza, 2002; Reis, 2013; Benigno and Fornaro, 2014; Kalantzis, 2015; Benigno et al., 2020), I empirically explore the structural consequences of the global savings glut for the U.S. economy. A common prediction of these models is that capital inflows induce a reallocation of resources from tradable to non-tradable sectors. I argue that this mechanism links the global savings glut to the decline in American manufacturing employment: as excess savings from emerging economies flow into the U.S., they generate a credit-fueled consumption boom that sets into effect a reallocation of resources from tradable industries, such as manufacturing, to non-tradables such as real estate. Banks intermediate foreign savings into domestic credit, transmitting and amplifying the consumption boom. The flow of international capital to the U.S., and its intermediation through domestic banks, is thus an important contributor of the decline of American manufacturing employment.

I first document a new result in the literature on the impact of shocks to import competition on American manufacturing employment: the adverse effects of such shocks are limited to periods when the U.S. is a net recipient of global capital. Using novel historical data from the Bureau of Labor Statistics' County Business Patterns for the years 1946-1975 that we made available in Eckert et al. (2021), I am able to study earlier periods of increasing international competition to American manufacturing industries before the recent episode of import competition from China, characterized as the "China shock" (Autor et al., 2013). While these earlier periods exhibit trade shocks of a magnitude comparable to the China shock, they did not bring about the same adverse effects on manufacturing employment. A key distinction between these episodes is the magnitude of the capital flows the U.S. economy has received. How such capital inflows shape employment in manufacturing is the focus of the rest of this paper.

I explore the theoretical relationship between capital inflows and sectoral reallocation away from manufacturing employment. Following the international macroeconomics literature, I distinguish between tradable and non-tradable goods. Their key distinction is that non-tradable goods, such as housing, have to be produced where they are consumed while tradable goods, such as manufacturing products, can be imported. Increases in credit supply, like those resulting from capital inflows, lead to a expansion of the non-tradable sector at the expense of production of tradables. The expansion of the non-tradable sector is necessitated by households' increased demand for consumption goods in response to cheaper access to credit. This credit-fueled consumption boom requires increased production of non-tradable goods, as these goods cannot be imported from abroad to satisfy higher demand. I distill this mechanism in a simple general equilibrium model, which despite its simplicity produces empirically testable predictions. The key prediction from this model is an increase in the relative price of non-tradable goods, a real exchange rate appreciation. This regional appreciation of the real exchange rate serves as a way of distinguishing between declines in manufacturing employment due to capital inflows and those stemming from import competition, as the latter postulates no such localized appreciation.

In order to empirically test this theoretical mechanism, I employ a shift-share approach with regional variation in the exposure to capital flows as the share, and changes in capital inflows into the U.S. as the national shifter. In order to isolate the exogenous component of capital flows driven by the global savings glut, I instrument capital inflows into the U.S. using the inflows received by other developed countries over the same period. The cross-sectional variation in exposure to capital flows is based on bank-level differences in reliance on global funding markets. Specifically, I use regulatory balance sheet data to measure banks' reliance on interest-sensitive non-deposit funding as a proxy for exposure to capital inflows. I aggregate these bank-level exposure measures to the regional level using banks' share of regional mortgage origination. To rule out anticipatory changes in banks' funding structure, I use the regional exposure measure lagged by a decade in the construction of the shift-share instrument.

In line with the predictions of the model, areas more exposed to capital inflows via the pre-determined structure of their banking sector experience a greater reallocation of labor from tradable to non-tradable industries. The decrease in employment in the tradable sector is largely driven by declines in manufacturing. Furthermore, exposed regions also exhibit an increase in the relative price of non-tradable goods, the model's other key prediction. This regional real exchange rate appreciation clearly delineates the effects of capital inflows from the ones of import competition.

I then explore in greater detail banks' intermediation of international capital flows into the U.S., first with a focus on mortgage issuance. Mortgage lending is of crucial importance for the mechanism I study since mortgages constitute the largest source of credit for American households. Thus, if the declines in manufacturing employment are indeed related to bank intermediation of capital inflows to household credit, this should be reflected in greater mortgage issuance by more-exposed banks. Mortgage lending is also closely related to the sectoral reallocation from tradables to non-tradables since mortgage lending is directly tied to households' demand for housing, a key non-tradable industry.

Consistent with my cross-sectional identification strategy, banks with greater exposure to global funding markets exhibit a greater expansion in mortgage issuance than their less-exposed counterparts as capital flows into the U.S. These differences in banks' lending behavior have consequences for the regional allocation of credit. Counties with a greater share of borrowing from exposed banks also exhibit greater increases in mortgage issuance, implying that exposed banks do not merely capture market shares from retreating competitors. Lastly, I show that these results are indeed due to differences in banks' supply of credit, as opposed to differences in borrower composition or other factors related to credit demand: in the spirit of Khwaja and Mian (2008), I include county fixed effects to absorb unobserved factors related to credit demand on the regional level. This effectively compares loans made by different banks to borrowers in the same county and shows that credit demand is not responsible for differences in mortgage issuance. Instead, bank supply of credit due to differential exposure to capital inflows drives the regional differences in mortgage issuance.

Banks' loan portfolios are affected broadly beyond mortgage lending. As capital flows into the U.S., banks with a greater degree of non-deposit funding exhibit greater growth in the size of their overall loan portfolios. This overall loan growth does not affect all components of banks' portfolios uniformly. Specifically, high-exposure banks extend a disproportionate amount of credit to households directly in the form of mortgages and loans for personal expenditures. This increase in the share of credit to households amplifies the effects of capital inflows on sectoral reallocation, as it further feeds into the credit-fueled consumption boom. The disproportionate increase in lending to households also comes at the expense of corporate credit as banks shrink the the share of loans to commercial and industrial borrowers.

Lastly, I show that the results of the global savings glut are complementary to the most prevalent explanation for the decline in American manufacturing employment: the increase in import competition stemming from the rise of China in international trade. Exposure to capital inflows and exposure to Chinese imports are geographically distinct, so that American manufacturing experienced a "double whammy" as trade deficits widened and capital flowed into the U.S. economy. A benchmarking exercise suggests that the aggregate effects of capital inflows on manufacturing employment are about half the size of the magnitude of the China shock studied by Autor et al. (2013).

Taken together, this paper provides evidence that the decline in American manufacturing is exacerbated by the global savings glut and the associated capital flows into the U.S. economy. Bank intermediation to American households is crucial in the transmission of the effects of capital flows on sectoral employment, and differences in banks' funding sources bring about regional heterogeneity in the severity of the declines in manufacturing. Specifically, non-deposit funded banks amplify the impact of capital flows by disproportionately feeding into a credit-fueled consumption boom that sets into motion the sectoral reallocation away from manufacturing and other tradable industries. This paper suggests that a singular focus on controlling international trade as a means of protecting domestic manufacturing is misguided, and that the international movement of capital, along with its intermediation by domestic banks, warrants similar scrutiny.

Related Literature: This paper relates to the large literature on the causes of the decline in American manufacturing. Autor et al. (2013) identify the rapidly increasing import competition from China as an important cause for the decline in manufacturing employment. A large literature has subsequently expanded on this idea (e.g., Autor et al., 2016; Acemoglu et al., 2016; Hombert and Matray, 2018). Most closely related to this paper are Federico et al. (2023), who study the effects of import competition on bank lending via banks' exposure to exporting firms. Dix-Carneiro et al. (2023) include both import competition and global imbalances in a general equilibrium model and find that the effects of import competition are magnified when allowing for current account imbalances. This paper contributes to this literature by extending the evidence on the impact of import competition on American manufacturing to include a wider range of import sources over a longer period. To the best of my knowledge, it also is the first to propose and test the mechanism of a credit-induced reallocation of labor from tradable sectors to non-tradables as an explanation for the decline in American manufacturing.

This paper also relates to the empirical literature on the impact of credit booms on sectoral allocation. This literature largely employs two approaches. The first approach uses cross-country studies that identify periods of large credit expansions and identify their effects on the sectoral reallocation from tradable to nontradable industries.[1] These include Beck et al. (2012), Kalantzis (2015), Benigno et al. (2015), Borio et al. (2016), Mian et al. (2017), and Teimouri and Zietz (2018). Most relevant to this study is Müller and Verner (2023) who use sectoral credit data in a cross-country panel to show that credit expansions – many of which stemming from capital inflows – disproportionately favor the allocation of credit to the non-tradable sector. The second approach employs more granular intra-national data to provide evidence on identified credit supply shocks. Examples include Mian et al. (2020), who show that states that deregulated their banking system earlier exhibited a greater reallocation towards the non-tradable sector, and Mian and Sufi (2021), who use regional exposure to the growth in mortgage securitization to provide evidence of the impact of a credit supply expansion on speculative behavior in the housing market. The latter is particularly relevant to this paper, as I adopt their identification strategy exploiting differences in banks' funding sources for the purpose of capturing exposure to the global savings glut. This paper contributes to both strands of the literature by studying an international credit expansion like much of the cross-country literature, but tracing its effects on the economy using an identification strategy based on microeconomic data as is common in the literature on identified credit supply shocks. To the best of my knowledge, my paper is the first to provide granular evidence on the sectoral consequences of the large capital inflows into the U.S. economy associated with the global savings glut.

Lastly, this paper relates to the theoretical literature on the impacts of capital flows on sectoral allocation. This literature is discussed in more detail in section 2.1, when the theoretical mechanism motivating the subsequent empirical analysis is discussed. Relevant papers include Mendoza (2002), Schneider and Tornell (2004), Reis (2013), Benigno and Fornaro (2014), Kalantzis (2015) and Benigno et al. (2020). This paper contributes by testing the mechanism underlying these models using microeconomic data on the banking system in the U.S.

The paper proceeds as follows: Section 2 discusses the conceptual framework, including a summary of existing theory on the relationship of capital inflows and sectoral reallocation, a simplified model that distills the main mechanism, as well as the key predictions that come out of the theory and guide the empirical analysis. Section 3 describes the data used and the empirical strategy employed, including the key issue of obtaining regional measures of the banking sector's exposure to capital inflows. Sections 4-7 describe the empirical results:

[1] These are frequently, but not always, corresponding to episodes of large capital inflows (Jordà et al., 2010).

Section 4 presents evidence on the interaction of trade shocks and capital flows, Section 5 shows the reallocation of resources that arises from capital inflows, Section 6 provides greater detail on the transmission of capital inflows via the banking sector, Section 7 compares the effects of capital inflows with those of the China shock, and Section 8 concludes.

2 Conceptual Framework

2.1 Existing Theory

What does existing theory suggest about the impact of a global savings glut on the sectoral organization of the U.S. economy? The theoretical literature has proposed various models that produce predictions on the sectoral effects of capital inflows. Most of these papers either study structural effects on productivity, or the propensity of capital inflows to bring about financial crises. The allocation of resources – labor in particular – between the tradable and the non-tradable sector is rarely the explicit focus of the analysis. That said, these models have largely congruent predictions about the sectoral implications of capital inflows: they induce a reallocation of resources from tradable to non-tradable sectors, which is associated with an increase in the relative price of non-tradables.[2]

The literature studying the sectoral consequences of capital inflows as an important predictor of financial crises has a longer history, as it is rooted in the "sudden stops" literature starting with Calvo (1998). In the models by Mendoza (2002), Schneider and Tornell (2004) and Kalantzis (2015), financial fragility arises from liability dollarization, i.e. the denomination of debt in terms of tradable output. This currency mismatch between output and debt gives rise to the critical importance of the sectoral organization of the economy for financial fragility. In these models, capital inflows lead to a reallocation from tradable to non-tradable employment, along with a rise in the real exchange rate: In Mendoza (2002) and Kalantzis (2015) this is due to the standard consumption effect discussed in detail below, while in Schneider and Tornell (2004) it is due to the financing asymmetry between tradable and non-tradable firms.

Likewise, the strand of the literature studying the implications for growth and productivity comes to the same general conclusions about the effect of capital inflows on sectoral allocation. Benigno and Fornaro (2014) argue that the tradable sector represents the "engine of growth" with higher productivity growth than non-tradable industries, which they rationalize as stemming from "learning from exporting" effects. In their model, a credit-fuelled increase in overall consumption necessitates an increase in production of non-tradables, which

[2] To my knowledge, the first paper to explicitly model this effect is Rebelo and Vegh (1995).

in turn requires labor to move from the tradable to the non-tradable sector. This reallocation entails adverse effects on growth due to the productivity asymmetry between the two sectors. Benigno et al. (2020) extend this idea from a small open economy to the United States. In their model, innovation in the U.S. determines the evolution of the world technological frontier, so a reallocation from tradables to non-tradables in the U.S. entails a global slowdown in productivity growth and subdued investment despite low interest rates, which the authors call the "global financial resource curse". Brunnermeier et al. (2020) argue that for countries running trade deficits, i.e. recipients of capital inflows, competitive pressures discourage innovation in tradable industries, which induces a shift towards production of non-tradables. Reis (2013) emphasizes financing asymmetries between tradable and non-tradable firms as the reason why inflows of foreign capital lead to a reallocation of resources from tradables to relatively unproductive non-tradables.[3]

While the papers mentioned above differ in the questions they analyze as well as the specific modelling choices they make, they all share the same general prediction: capital inflows induce a reallocation away from manufacturing industries. This is the mechanism that motivates the empirical exploration of capital inflows as a cause of decline in American manufacturing employment, which I distill into a general variant in the following section.

2.2 Simple Model

The following model captures the key mechanism that motivates the empirical analysis: a reallocation from tradable to non-tradable employment as a result of capital inflows. It strips down complexity wherever possible in order to show the most basic setting required to exhibit this mechanism. Yet, this simple approach makes it possible to derive testable hypotheses for the subsequent empirical analysis. I have intentionally abstracted from any effects stemming from differences in credit intermediation, as in the models of Schneider and Tornell (2004) and Reis (2013). Instead, this model produces the key mechanism without assuming any sectoral asymmetry in financing, e.g. due to different productivity, pleadgeability or profitability between tradables and non-tradables.

Households

Households maximize utility from consumption over two periods:

$$\max_{C_t, b_t} \log C_0 + \beta \log C_1$$

[3] While the analysis in this paper is purely positive, these papers point out why the reallocation of resources associated with capital inflows might not be desirable from a welfare perspective.

Households are subject to a standard budget constraint where p denotes the relative price of non-tradables in terms of tradables and households can save and borrow internationally in a bond b at the world interest rate r^*

$$\text{s.t. } C_t^T + p_t C_t^{NT} + b_t = Y_t^T + p_t Y_t^{NT} + (1+r^*) b_{t-1}$$

Consumption is a standard CES aggregator over tradable and non-tradable goods:

$$C_t = \left[\gamma \left(C_t^T\right)^\sigma + (1-\gamma)\left(C_t^{NT}\right)^\sigma\right]^{\frac{1}{\sigma}}$$

Production

Households own the firms and supply their labor inelastically. Firms use labor as the only input to produce tradable and non-tradable goods with decreasing returns to scale, $\alpha \in (0,1)$:

$$Y_t^T = \left(N_t^T\right)^\alpha \qquad Y_t^{NT} = \left(N_t^{NT}\right)^\alpha \qquad N_t^{NT} + N_t^T = \bar{N}$$

International Borrowing

The key distinction between the two types of goods is that non-tradables have to be produced domestically while tradables can be imported. Such imports widen the trade deficit (as reflected in the trade balance, TB_t), and have to be financed by international borrowing, i.e. capital inflows:

$$Y_t^{NT} = C_t^{NT} \qquad Y_t^T = C_t^T + TB_t \qquad b_t = (1+r^*) b_{t-1} + TB_t$$

Equilibrium

The following equilibrium conditions are sufficient to illustrate the key mechanism. From the household problem, we obtain that the level of overall consumption in the first period is a fraction of lifetime income:

$$C_0 = \frac{1}{1+\beta}\left[Y_0 + \frac{Y_1}{1+r^*}\right] \tag{1}$$

Relative consumption of tradables and non-trabables is determined by their relative price

$$p_t = \frac{1-\gamma}{\gamma}\left(\frac{C_t^{NT}}{C_t^T}\right)^{1-\sigma} \tag{2}$$

Lastly, equaling marginal products of labor between the tradable and non-tradable sector yields that the ratio of labor employed in the two sectors is determined by the relative price of their products

$$p_t = \left(\frac{N_t^{NT}}{N_t^T} \right)^{1-\alpha} \tag{3}$$

Savings Glut

It is now possible to characterize the sectoral consequences of the global savings glut. An increase in the global supply of savings lowers the world interest rate r^*. This increases the value of discounted lifetime income, and raises contemporaneous consumption via Equation (1). This expansion in consumption increases the price of non-tradables p: Note that if p was unchanged, households would continue to consume the same relative quantities of tradables and non-tradables according to Equation (2). However, maintaining the same relative consumption is irreconcilable with an increase in overall consumption as dictated from Equation (1), as higher consumption of non-tradables necessitates an increase in labor in the non-tradable sector. This is due to the fact that non-tradables cannot be imported, so they have to be produced using domestic labor. Thus, the price of non-tradables has to increase, which induces a reallocation of labor towards the non-tradable sector following from Equation (3). Consumption of tradables increases relative to that of non-tradables as they become cheaper. Likewise, labor is reallocated to the non-tradable sector as the output of that sector becomes more valuable. To reconcile a relative increase in tradable consumption with a decrease in labor in the tradable sector, the trade deficit has to widen and capital inflows have to finance the imports of tradable consumption goods.

In summary, a global savings glut widens the trade deficit while also inducing a reallocation of labor from the tradable to the non-tradable sector. Any model that shares the very general characteristics of the stylized one above will exhibit these basic effects. Note here the similarities and differences to the China shock: the China shock explanation for the decline of U.S. manufacturing postulates import competition, i.e. a worsening of the trade balance, as the causal reason for the decreases in manufacturing employment. In the global savings glut explanation, the trade deficits as well as the decrease in manufacturing employment are both equilibrium outcomes of the increase in global savings and the associated capital inflows to the US.

2.3 Key Empirical Prediction

This section describes how the predictions from the model described above can be tested empirically, and how this test is able to distinguish between capital inflows and import competition as the reason for declines in manufacturing employment. As Section 3 describes in more detail, the predictions are tested in cross-sectional U.S. data following the approach by Autor et al. (2013), i.e. comparing regions across the U.S. with different degrees of exposure to capital inflows or import competition, respectively.

The preceding section showed that a common prediction of a wide range of models is a credit-fuelled reallocation of resources from tradable to non-tradable industries. Another implication is a rise in the relative price of non-tradables, i.e. an appreciation of the real exchange rate: to induce an increase in local production of non-tradables necessary to satisfy the increased demand for such goods, the local price of non-tradables has to increase. This real exchange rate appreciation is the key empirical prediction of this model, and allows for a sharp distinction from competing explanations for the decline in American manufacturing.

Specifically, it starkly contrasts with the predictions of a decline in manufacturing employment driven by increases in import competition. Such trade shocks are postulated to originate from foreign productivity improvements in the production of tradable goods and thus also lead to an increase in the price of non-tradables relative to tradables, i.e. a real exchange rate appreciation. However, the different nature of the two types of goods allows for a sharp distinction between the *cross-sectional* predictions of the two mechanisms: tradables are priced on a global market, so a relative productivity improvement in the production of tradables abroad should lead to a real exchange rate appreciation that is *uniform* across the U.S., independent of the regional exposure to import competition. In contrast, a real exchange rate appreciation that arises from local demand effects due to a credit-fuelled consumption boom, as described in the model in the previous section, will be stronger in regions with a greater exposure. Thus, a regional measure of exposure to capital inflows that captures the mechanism outlined above should exhibit a *positive* correlation with the regional real exchange rate. Observing this positive correlation also provides direct evidence against the competing hypothesis of losses in manufacturing being caused by shocks to import competition.

Thus, the regional dynamics of the real exchange rate are informative about whether a decline in manufacturing employment can be attributed to a shock to import competition, as the China shock postulates, or to the impact of capital inflows, as the ones generated by the global savings glut.

3 Data and Empirical Strategy

3.1 Data

This section describes the sources of the data used in the empirical analysis. More details on variable construction can be found in Appendix A.3.

Labor Market Data The geographic unit used in the analysis of labor market effects are the commuting zones (CZs) defined by Tolbert and Sizer (1996). These zones represent local labor markets that are characterized by strong commuting ties within CZs, and weak commuting ties across CZs. As common in this literature, the baseline sample contains the 722 CZs in the continental US. Labor market data is from the County Business Patterns (CBP), which provides county-level employment on fine industry classifications (4-digit SIC before 1997, 6-digit NAICS afterwards). Data from 1975 on is from Eckert et al. (2020a) and the earlier data is from Eckert et al. (2021), who also provide concordances to map industry codes from a respective year to 1987 SIC codes (SIC87). County data is aggregated to the CZ level using the mapping from Eckert et al. (2020b). The classification of employment into tradable- and non-tradable employment follows Mian and Sufi (2014), who classify the top quartile of industries by geographical concentration as tradable and the bottom quartile as non-tradable.

Demographic data is obtained from IPUMS (Ruggles et al., 2021). Specifically, I use the Census 1960 5% Sample, the 1970 1% Metro Sample 1, and the 5% Samples for 1980, 1990 and 2000. Following Autor et al. (2013), I average across the American Community Surveys (ACS) for 2006, 2007 and 2008 to decrease measurement error for 2007 data. The geographical units are then mapped to CZs using the crosswalks provided by Autor and Dorn (2013) and Rose (2018).

Import Data Data on imports is obtained from UN Comtrade through the World Bank's International Trade Statistics (WITS). For data from 1991 on, the industry classification is the Harmonized System (HS), which is mapped to SIC87 codes using the crosswalk provided by Autor et al. (2013). For older data, the industry classification is the Standard Industrial Trade Classification (SITC) Revision 1, which is mapped to the HS classification following the procedure proposed by Batistich and Bond (2019), which is described in Appendix A.3.

Price Indices Regional price data comes from the Bureau of Labor Statistics (BLS) consumer price indices for metropolitan statistical areas (MSAs), which are mapped to commuting zones by first applying a cross-walk from the MSA- to the county-level provided by the BLS, and then to the CZ using Eckert et al. (2020b). County-level house prices are obtained from the Federal Housing Finance Agency (FHFA) and also aggregated to the CZ-level using Eckert et al. (2020b).

Financial Data Data on capital flows and the current account for the United States is obtained from the Bureau of Economics Analysis (BEA). Data on capital flows to other countries comes from Broner et al. (2013). Banks balance sheet information come from the FDIC's *Reports of Condition and Income* (Call Reports), obtained from the Federal Reserve Bank of Chicago. Mortgage issuance data comes from the HMDA Loan Application Register (LAR) for 1981, 1990, 2000 and 2007 obtained from the National Archives, which are also used as the weights to aggregate banks' NCL-shares to the regional level following the approach from Mian and Sufi (2021).

3.2 Measuring Exposure to Global Capital Inflows

Capital inflows increased rapidly between 1990 and the onset of the global financial crisis. Figure 1 shows net flows as measured by the current account deficit as well as gross inflows and their composition. After being briefly balanced in 1991, the current account deficit increased to more than 5% in 2007. This was driven by a rapid expansion in gross capital inflows into the U.S. economy: after two decades of tepid growth, gross inflows increased from 2.7% of GDP in 1990 to 15.1% in 2007. Most of this increase was concentrated in portfolio flows, 89% of which consisted of debt securities such as treasuries (Broner et al., 2013). Over the same period, only 21% of the total inflows came in the form of foreign direct investment. In other words, the increase in capital flows associated with the global savings glut came largely in the form of financial assets, specifically debt claims on U.S. corporations and the government.

The key challenge in attributing the impact of capital inflows to regional outcomes is that by their nature, capital flows occur on the national level and mostly come in the form of financial assets that are not tied to a specific location. Granular data on the counterparties involved in cross-border transactions is not available and not necessarily helpful.[4] Instead, I use a shift-share approach using capital flows as a shifter on the national level, which is attributed across the cross-section using regional shares capturing differential exposure of the local banking industry to such flows.

Measuring capital flows The measure for capital inflows I use in the shift-share analysis is the increase in gross flows of capital into the U.S. as measured by the liability side of

[4] A useful analogy are asset purchases by the Federal Reserve: we usually do not think that it is relevant from which one of their primary dealer the Fed purchases these assets. What matters is their overall impact, a decline in the interest rate.

the Financial Account in the Balance of Payments. This measure has several advantages compared to its alternatives. It is the most direct measure to capture the effects of the global savings glut. In contrast to net inflows, which also include capital flows from the U.S. to other countries, gross inflows are more directly related to excess savings from abroad flowing into the U.S. economy.[5] Naturally, gross inflows are still partially determined by factors within the U.S.,[6] but the instrumental variable approach discussed in more detail in the next section isolates the component of capital flows that is determined outside of the U.S.

Total gross inflows are also the measure closest to the mechanism outlined in the model in section 2.2 and in the theoretical literature on capital flows and sectoral reallocation (Rebelo and Vegh, 1995; Reis, 2013; Benigno and Fornaro, 2014; Benigno et al., 2020). In contrast to more narrow measures that focus on specific components of capital flows, such as portfolio investment or FDI, it captures the entire breadth of global savings flowing into the U.S. economy. There is a substantial literature showing that gross capital inflows lower U.S. interest rates (e.g., Warnock and Warnock, 2006; Bernanke et al., 2011; Beltran et al., 2013; Justiniano et al., 2014). This fall in interest rates sets into effect the credit-fueled consumption boom that induces a sectoral rellocation of resources. As discussed next, it is also the key assumption underlying the measure capturing regional exposure to global capital inflows.

Regional Exposure to Capital Inflows The regional exposure to capital inflows is based on lenders' differential exposure to global funding markets. Banks differ in the degree to which they are funded by deposits. While deposits constitute the main source of funds for large commercial banks, shadow banks such as mortgage lenders and other institutions that cannot collect deposits have to rely instead on market-based wholesale funding. These two funding sources differ vastly in their sensitivity to the overall level of interest rates, and thus in their exposure to capital inflows affecting the level of interest rates.

Since banks exploit market power in setting deposit rates, the cost of funds of deposit-funded institutions is relatively insensitive to the level of interest rates (Drechsler et al., 2017). In contrast, market-based wholesale funding is highly sensitive to fluctuations in market interest rates (Adrian et al., 2013). Figure 2 graphically depicts these different sensitivities. It shows two benchmark interest rates, the Federal Funds Rate (FFR) as the benchmark policy rate and 3-months LIBOR as a benchmark for banks' non-deposit funding

[5]Kumhof et al. (2020) suggest that the level of gross flows can be uninformative since they are artificially inflated by the effects of double-entry bookkeeping. However, this concern is not relevant in this application, which is concerned with *changes* to inflows, as long as the compositional distortions of such accounting effects are time-invariant.

[6]Such factors include the fact that the U.S. is the issuer of the global reserve currency and supplies a large fraction of the global supply of safe assets, has a greater degree of financial development than most other economies, and is a safe haven for investors in times of crises.

costs, as well as the average deposit rate for U.S. commercial banks. As Drechsler et al. (2021) point out, the deposit rates exhibits significantly less cyclical variation than the FFR, which they argue to be due to the market power banks hold in the setting deposit rates. In stark contrast, the LIBOR – the average interest rate banks charge each other, i.e. a benchmark rate for banks' cost of funds outside of deposits – closely tracks the overall level of interest rates as proxied by the FFR.

With the general effect of capital inflows being a decline in interest rates, differential funding sources imply that lenders which rely less on deposits as a source of funding are more affected by capital inflows in their cost of funds than conventional deposit-taking institutions. Thus, the degree of reliance on non-deposit funding captures a bank's exposure to capital inflows. I follow Mian and Sufi (2021) in constructing a bank's non-core liability share (NCL) as one minus the ratio of core deposits to total liabilities, where core deposits are defined as deposits covered by FDIC insurance.

To obtain a regional exposure measure, I again follow Mian and Sufi (2021) and calculate a region's NCL as the weighted average of the NCL of banks active in said region. The weights are obtained from a bank's share of mortgage origination in that region. This regional NCL measures the degree to which the lenders serving a region are financed by interest sensitive wholesale funding. It thus proxies the region's exposure to global capital inflows, and constitutes the regional "share" in the shift-share approach that the next section describes in detail.

3.3 Empirical Specification

The shift-share approach used to measure the effects of capital inflow on regional manufacturing employment mirrors Autor et al. (2013)'s approach in capturing the China shock, which allows for a comparison of the respective mechanisms. Unless otherwise noted I follow Autor et al. (2013) in running my analysis on the commuting-zone level (Tolbert and Sizer, 1996), and in analyzing the 1990-2007 period in two stacked differences, 1990-2000 and 2000-2007. This is the period that both captures China's rise in international trade and the global savings glut, making it uniquely suitable to study and compare both phenomena. I first outline the approach used by Autor et al. (2013) to analyze the China shock, which I later use to study the effects of import competition stemming from countries other than China in earlier periods. I then contrast this with the shift-share approach to capture the effects of the global savings glut.

Capturing import competition Autor et al. (2013) capture the China shock by regressing changes in manufacturing employment in commuting zone i on a measure called "imports per workers" (IPW):

$$\Delta L_{it}^{m} = \alpha_t + \beta \Delta \text{IPW}_{uit} + \mathbf{X}_{it}'\gamma + e_{it} \tag{4}$$

The regression includes decade fixed effects α_t as well as a vector of demographic and occupational controls $\mathbf{X}_{it}$. ΔIPW is defined as a weighted sum of the increase in U.S. imports from China per worker in commuting zone i, where the weight for imports from industry j is given by CZ i's share of the national employment in that industry:

$$\Delta \text{IPW}_{uit} = \sum_j \frac{L_{ijt}}{L_{ujt}} \frac{\Delta M_{ucjt}}{L_{it}}$$

This measure is instrumented with other developed countries' imports from China, which are attributed to CZs given their lagged industrial composition.

$$\Delta \text{IPW}_{oit} = \sum_j \frac{L_{ijt-1}}{L_{ujt-1}} \frac{\Delta M_{ocjt}}{L_{it-1}}$$

The instrument alleviates issues of endogeneity with the IPW measure: changes in employment and imports could be driven by shocks to productivity or demand within the U.S., as opposed to productivity shocks in China. It also eliminates any anticipatory effects by using as shares the labor market composition a decade preceding the actual period.

Capturing the global savings glut Mirroring the shift-share approach, I regress changes in manufacturing employment on a shift-share variable I call "exposure times flows" (ETF). As discussed above, it is constructed as the regional NCL as a proxy for exposure to capital inflows, multiplied by changes in capital inflows into the U.S. economy.

$$\Delta L_{it}^{m} = \alpha_t + \beta \Delta \text{ETF}_{uit} + \mathbf{X}_{it}'\gamma + e_{it} \tag{5}$$

ΔETF is defined as the weighted average bank NCL in a region, where the weights are given by a bank's share of mortgage origination O in that region. This exposure measure is then multiplied with changes in the capital inflows into the U.S.

$$\Delta \text{ETF}_{uit} = \sum_b \frac{O_{bit}}{O_{it}} \text{NCL}_{bt} \Delta \text{CIF}_{uit}$$

This measure is instrumented with an analog measure using capital inflows to other developed countries, and the regional NCL-share lagged by a decade

$$\Delta \text{ETF}_{oit} = \sum_b \frac{O_{bit-1}}{O_{it-1}} \text{NCL}_{bt-1} \Delta \text{CIF}_{ot}$$

Instrumenting with capital inflows to other developed countries alleviates concerns that capital inflows are driven by factors within the U.S., as opposed to a global savings glut. The set of "other" countries is the same as used by Autor et al. (2013).[7] Using the lagged regional NCL precludes any contamination from banks changing their funding structure in anticipation of capital inflows.

Identification Assumption

There has been a recent debate on the identification assumptions for the kind of shift-share instrument used in this analysis. Borusyak et al. (2021) use a quasi-experimental framework that treats industry-level trade shocks as "as-if" randomly assigned to industries. This framework is suitable for analyzing the validity of shift-share approaches in studying the effects of import competition as in Autor et al. (2013) as it relies on large-sample asymptotics for both commuting zones and industries. In this framework, shift-share instruments are valid if industry-level shocks are (1) orthogonal to CZ-level characteristics and (2) sufficiently independent. The orthogonality assumption is justified if imports that are common among the U.S. and the countries used in the construction of the instrument ΔIPW_{oit} are driven by productivity increases in the exporting country. In other words, industry-level productivity or demand shocks in the U.S. have to be uncorrelated with such shocks in the countries used in the construction of the instrument. This assumption is common in the literature on the effects of import competition. Using the hierachical nature of the industry classification for imports, Borusyak et al. (2021) show that the second assumption of shock independence holds for imports from China, and Batistich and Bond (2019) show that the same applies for imports from Japan in the 1970s and 1980s.

However, the quasi-experimental framework proposed by Borusyak et al. (2021) does not apply to the instrument used to capture the effects of capital inflows associated with the global savings glut. This is due to the fact that their framework relies on a large number of industries, while the exposure measure used to capture the global savings glut is based on the banking sector alone. Goldsmith-Pinkham et al. (2020) instead propose a framework where identification is based on exogeneity of the shares. They show that shift-share instruments

[7] Namely, Australia, Denmark, Finland, Germany, Japan, New Zealand, Spain, and Switzerland.

are valid if the regional shares are orthogonal to *changes* in CZ-level outcomes other than through the channel posited by the researcher. The instrument ΔETF_{oit} is thus valid unless the regional NCL-share from a decade ago is correlated with contemporaneous changes in manufacturing employment through other channels than via the effect of capital inflows. Note that not just bank-level NCLs are lagged by a decade, but also the mortgage issuance weights used to aggregate them to the regional level. The use of this distant pre-determined exposure measure makes the identification assumption of exogenous shares a plausible one. Appendix A.1 implements additional validation exercises for the shift-share instrument as suggested by Goldsmith-Pinkham et al. (2020).

4 Trade Shocks beyond China

In this section, I expand on the results of trade shocks on manufacturing employment beyond the immediate China shock episode studied in Autor et al. (2013). The purpose is to explore how trade shocks affect manufacturing employment under different current account regimes, specifically in periods not characterized by the large capital inflows the U.S. has received in recent decades. As Figure 1 shows, extending the time series to a point where the U.S. was not a net recipient of global capital requires going back to the 1970s, a period in which trade with China was all but non-existent.

4.1 The "Japan shock"

The 1970s and 1980s mark the rise of Japan in international trade. Table A.4 shows the rise of U.S. imports from Japan during those two decades. Imports almost tripled in real terms during the 1970s, and then close to doubled again during the 1980s. While the rise of Japanese imports during the period is not quite as rapid as the increase in Chinese imports during the 1990s and 2000s, it makes it possible to study the impacts of a shock to import competition on manufacturing employment in a period where the U.S. was a net source of global capital as opposed to being a recipient as in recent decades.

Table 1 reports the results of applying the China shock approach by Autor et al. (2013) described in section 3 to the rise of Japanese import competition. It reports results of a regression of decadal changes in the share of the working-age population employed in manufacturing on the imports-per-worker (IPW) measure as in specification (4). While column (1) suggests a large and negative impact of exposure to import competition from Japan on manufacturing employment, the effect disappears entirely when controlling for the initial share of workers employed in manufacturing. Instead of capturing a decline in manufacturing response to trade shocks, the result in column (1) are entirely driven by a secular decline in manufacturing employment over the sample period. Column (3) reports that the effect of import competition remains statistically indistinguishable from zero after adding Census Division fixed effects. The same is true for the addition of a wide range of demographic and occupational controls reported in the subsequent columns.[8] These results are in line with the ones obtained by Batistich and Bond (2019), who study the period of increasing import competition from Japan with a focus on racial differences in manufacturing employment and also find no aggregate effect.

These results suggest that rapid increases in import competition do not always lead to declines in manufacturing employment. One key difference to the period of the China shock was that the U.S. was a much larger recipient of global capital during China's than during Japan's rise in international trade.[9] The next section expands the evidence on the effects of trade shocks on manufacturing employment beyond these two individual case studies to broaden the evidence on how their impact differs across time and across different current account regimes.

4.2 Broader Evidence on Trade Shocks

In this section, I generalize the results of Autor et al. (2013) and show that the adverse effects of import competition are limited to periods when the U.S. is a recipient of global capital. I extend the evidence on the China shock by constructing a corresponding "East Asia shock", which exploits the fact that different countries in east Asia exhibited rapid export growth to the U.S. at different times spanning the entire period from 1970 to 2007. Figure 3 shows that while the increase in imports from China in the 1990s and 2000s was extraordinary, it was not without precedent. As discussed above, imports from Japan exhibited a similarly stellar growth during the 1970s and 1980s, and while they afterwards decreased as a fraction of U.S. GDP, other countries in East- and Southeast Asia (from here on, loosely defined as "East Asia") exhibited similarly impressive export growth to the U.S. at different times.[10] Aggregating import from all these countries, it is possible to construct a measure of import

[8] These are the same controls also used by Autor et al. (2013), who show that the China shock is robust to their inclusion.

[9] Of course, there are other differences between the two episodes. Batistich and Bond (2019) point out some of these other differences: First, Japan was already highly industrialized during the 1970s. Second, Japanese import competition induced a change of composition of skills in the U.S., while the China shock applied across all skill levels. Third, the China shock is often attributed to the abundance of cheap labor in China, while the "Japan Shock" was rationalized by innovative Japanese management practices.

[10] See Appendix A.3 for a list of countries included

competition that spans the four decades starting in 1970.[11]

This long period also spans vastly different current account regimes, beginning in the late years of the Bretton-Woods regime with effectively closed capital accounts, and ending in the 2000s characterized by large global imbalances in capital flows. Specifically for the U.S. as seen in Figure 1, the current account was largely balanced until the early 1980s, and only began its sustained increase in the early 1990s. Thus, the broader measure of trade shocks from East Asia can be used to explore the differential impact of trade shocks across different current account regimes.

Table 2 reports the impact of import competition from East Asia on manufacturing employment, both over the entire 1970-2007 period and separately by decade. Column (5) shows that when estimating the effect jointly across all decades, imports from East Asia have a large and significant negative impact on manufacturing employment in the US. A one thousand dollar increase in imports from the region is associated with a 0.91 percentage point decrease in the share of the working-age population employed in manufacturing. This coefficient is very similar to the coefficient Autor et al. (2013) estimate for the China shock. However, this estimate masks significant heterogeneity in the magnitude of the impact across different periods. While the effects are large and significant in the 1990s and 2000s, there are no adverse effects of import competition on manufacturing employment during the 1970s and 1980s, the period when the U.S. was just beginning to opening up to receive global capital.

Table 3 tests the effect of different current account regimes on the impact of trade shocks more explicitly. It displays the results of adding to the standard specification in Equation 4 an interaction of the imports-per-worker (IPW) term with the average current account deficit the U.S. incurred in the respective decade. Specifically, the regression takes the form:

$$\Delta L_{it}^{m} = \gamma_t + \beta_1 \Delta \text{IPW}_{uit} + \beta_2 \Delta \text{IPW}_{uit} \text{x CA}_t + \mathbf{X}_{it}' \gamma + e_{it}$$

Column (1) shows that the impact of trade shocks on import competition are stronger at times of higher current account deficits: a one percentage point increase in the current account deficit predicts a decrease in share of the working-age population employed in manufacturing by an additional 0.1 percentage points. The impact of import competition however is still strong across the board with an estimate for β_1 of about -0.65. This, however, changes as additional controls are added in subsequent columns. After the addition of Census Division fixed effects in column (3), the coefficient β_1 on IPW alone is indistinguishable from zero, and the entirety of the adverse effects of import competition on manufacturing employ-

[11] Appendix Table A.4 shows that the imports from East Asia increased rapidly and consistently over the entire period, greatly outpacing U.S. exports to the region as well as imports from other parts of the world.

ment is arising via the interaction with the current account deficit. This result is robust to the inclusion of the other demographic and occupational controls in columns (4) - (6).

In conclusion, by expanding the evidence on the impact of trade shocks on manufacturing employment, it becomes apparent that their effects are concentrated in periods when the U.S. is a recipient of global capital. However, it does not provide any direct evidence on the mechanism by which capital flows determine declines in manufacturing employment. The following section directly studies the impact capital inflows have on U.S. manufacturing employment specifically and sectoral allocations more generally.

5 Sectoral Reallocation

Having established the suggestive result that being a recipient of international capital flows is an important determinant of adverse employment effects in manufacturing, I now explore directly the global savings glut explanation for the decline in American manufacturing. In this section, I study the main hypothesis of the framework described in section 2: capital inflows induce a sectoral reallocation from tradable to non-tradable sectors, alongside an increase in the price of non-tradables. This sectoral reallocation manifests itself in a decline in manufacturing as a key tradable industry. I test this hypothesis using the shift-share approach capturing exposure to capital inflows on the regional level, as described in section 3. This approach isolates the component of capital inflows driven by factors outside of the US, namely, the global savings glut, to study how exogenous increases in capital inflows from abroad affect the sectoral organization of the U.S. economy.

5.1 Employment

In order to test whether capital inflows induce a sectoral reallocation of labor, I test the prediction of the model from section 2.2: regions with a greater exposure to capital inflows should exhibit a greater reallocation of employment from tradable to non-tradable industries.

Figure 4 graphically sketches the empirical strategy for the impact of capital inflows on manufacturing employment specifically. The top panel depicts the first stage regression of the exposure to capital inflows on the instrument constructed by inflows to other developed countries, aggregated for the entire 1990-2007 period. It reveals significant predictive power of the instrument for the exposure to capital flows in the United States. The F-stat of 17.4 is well above the threshold of 10 that Staiger and Stock (1997) propose and Stock and Yogo (2005) show to hold well for the one-instrument case. Table A.5 shows that when estimated over both periods separately, the instrument is even stronger. The bottom panel depicts the reduced form regression of changes in manufacturing employment on the instrument. It shows a strong negative relationship between the exposure to capital inflows predicted by the instrument and changes in manufacturing employment. Over the entire 1990-2007 period, an increase in capital inflows equal to one percentage point of GDP decreased the share of labor employed in manufacturing by 0.55 percent.

Table 4 reports the results of capital flows on the reallocation of labor more broadly. Specifically, I estimate the following regression

$$\Delta L_{it}^{s} = \gamma_t + \beta \Delta \mathrm{ETF}_{uit} + \mathbf{X}_{it}' \gamma + e_{it}$$

where the dependent variable is the change regions i's share of total employment in sector $s \in \{T, NT\}$.[12] I further decompose tradable employment by studying manufacturing employment directly, and use the construction sector as an example of employment in housing as a key non-tradable industry. $\Delta\mathrm{ETF}_{uit}$ is the instrumented exposure-to-flows measure described in section 3, while $\mathbf{X}$ captures a vector of control variables. All regressions control for the initial share of employment in manufacturing to rule out a simple "secular decline" in manufacturing, as well as the regional NCL-share used as the exposure variable in the construction of the ETF-measure. Thus, the coefficient β estimates the effect of an increase in capital inflows for a region with average exposure to capital inflows. For ease of interpretation, the coefficient is scaled so that β can be interpreted as the effect of an increase in capital inflows equal to one percentage point of GDP.

Columns (1) and (2) of Table 4 show that an increase in capital inflows to the U.S. equal to one percentage point of GDP decreases the share of employment in tradable industries by 0.26 percentage points per decade. The coefficient is highly statistically significant and robust to the inclusion of a broad set of demographic and occupational controls, as well as the inclusion of Census Division fixed effects. The effect is economically significant: in the period of 2000-2007, capital inflows to the U.S. increased by about 6 percentage points of GDP compared to the previous decade, predicting a 1.2 percentage point decline in the share of labor in tradable industries. This decline in tradable employment is largely driven by declines in manufacturing employment. Columns (3) and (4) show that around three quarters of the decline in tradable sectors overall is driven by declines in manufacturing employment: the manufacturing share decreases by 0.2 percentage points for every additional percentage point of capital inflows.

[12] The distinction in employment between tradable and non-tradable follows Mian and Sufi (2014). They observe that the key quality of non-tradable goods – that they cannot be imported – requires them to be produced locally. Thus, one can use geographic concentration as a proxy for classifying industries as tradable or non-tradable: the latter will be present in all regions, while the former can be greatly concentrated in specific regions.

Having established that capital inflows are associated with decreases in the share of employment in tradable and manufacturing industries, we turn to the other part of the prediction from the model: a shift in employment towards non-tradable industries in order to satisfy the increased demand for non-tradable consumption as a result of the credit-fueled consumption boom. Columns (5) and (6) show that the decline in tradable employment is accompanied by an almost commensurate increase in employment in the non-tradable sector. Additional capital inflows of one percentage point of GDP predict about an 0.18 percentage point increase in non-tradable employment. Note that tradables and non-tradables are defined to constitute a quarter of all industries each, so this reallocation is not mechanical but instead speaks to an adjustment in the relative importance of the two sectors. Columns (7) and (8) show that the expansion in non-tradable employment is largely driven by an increase in employment in the construction industry, at least when the full set of controls is included.

Taken together, the results of capital flow on employment are in line with the predictions from the stylized model from section 2.2: an increase in capital flows to the U.S. is associated with a reallocation of labor from tradable to non-tradable industries. The decline in tradable employment is driven to a large extent by employment in manufacturing, establishing that global capital flowing into the U.S. predicts declines in American manufacturing employment. The next section studies the other prediction about the sectoral implications of capital inflows: the appreciation of the real exchange rate.

5.2 Prices

This section tests directly the key empirical prediction of section 2.3: the global savings glut explanation for declines in manufacturing employment should be associated with an increase in the relative price of non-tradables, i.e. a real exchange rate appreciation. To test this, I adopt the use the same specification as in the preceding section, but replacing the dependent variable with the inflation rate constructed from different regional price indices:

$$\pi_{it}^{s} = \gamma_t + \beta \Delta \text{ETF}_{uit} + \mathbf{X}_{it}' \gamma + e_{it}$$

where π_{it}^{s} is the rate of inflation in region i for prices of goods in sector s. Besides overall price inflation across all goods, I separately study the prices of tradable and non-tradable goods, as well as the price of housing as a key non-tradable sector with wider data availability. As before, β is scaled so that it captures the effect on the average region's inflation rate of an increase of capital inflows equal to one percent of GDP.

Table 5 displays the results of this regression. Columns (1)-(6) use BLS data on consumer prices in select metropolitan areas, which I map to commuting zones.[13] The low observation count of 70 commuting zones is due to the small number of metropolitan areas covered in the BLS data. However, the data is available for the largest metropolitan statistical areas (MSAs), so that the 70 commuting zones featured still cover around 40% of the population in all commuting zones.

Columns (1) and (2) show that exposure to capital inflows is associated with an increase in overall inflation across all products. Products are then split into tradable commodities and non-tradable services, which shows that the entire increase in overall inflation comes from the price of non-tradables. Columns (3) and (4) reveal that inflation in tradables is not affected by capital inflows. In contrast, inflation in non-tradables increases by an additional 0.42-0.44 percent for every percentage point increase in capital flows to the US. In other words, regions with greater exposure to capital inflows exhibit a real exchange rate appreciation.

The results reported in columns (7) and (8) address the issue of the low coverage of regional price data by focusing on the quintessential non-tradable good: housing. House prices, which are available for almost all commuting zones from the FHFA, exhibit greater increases in regions with higher exposure to capital flows. The coefficient is extremely similar to the one obtained for non-tradable inflation in the smaller BLS sample, providing some evidence that results from the smaller sample apply more broadly.

In summary, the results presented in this section provide evidence for the key mechanism explored in this paper: manufacturing employment decreases as capital inflows induce a sectoral reallocation from tradable to non-tradable sectors, which is reflected in a shift in employment between these sectors as well as an increase in the relative price in non-tradables. This real exchange rate appreciation also clearly delineates the effects on manufacturing employment from the ones obtained as a result of trade shocks via rising import competition.[14] The next section explores in more detail how the banking sector is crucial in intermediating capital inflows to the U.S. and amplifies their impact on manufacturing employment.

6 Bank Transmission and Amplification

The preceding section provided evidence that capital inflows into the U.S. are an important determinant for the decline in the manufacturing sector. The key identifying assumption is that banks' pre-determined funding structure, specifically their reliance on deposits as a source of funding, governs their exposure to capital inflows. This section examines this

[13] Appendix A.3 has details on their construction.

[14] In comparison, Appendix Table A.6 shows that exposure to the China shock was not associated with an increase in the real exchange rate. The only significant effect is a *decrease* in house prices in the exposed regions, in line with the results found in Teimouri and Zietz (2024).

assumption in more detail by studying how banks' lending behavior is affected by their funding structure, providing more granular detail on the inner workings of mechanism tested on the regional level in the preceding section. It shows that bank intermediation is not just transmitting the sectoral effects of capital inflows, but bank lending behavior additionally amplifies these effects by further feeding into the credit-fuelled consumption boom.

6.1 Mortgage Issuance

To study bank intermediation of capital inflows more specifically, I investigate how mortgage issuance depends on banks' exposure to capital flows. Mortgage issuance is a useful object of analysis for multiple reasons. First and foremost, it is a key source of borrowing for households, consistently constituting about 70% of total household debt (Federal Reserve Bank of New York, 2024). Thus, it is natural to expect the credit-fueled consumption boom at the core of the mechanism explored in this paper to be reflected in mortgage issuance: if households indeed borrow more, mortgages are likely to be part of this increase in loan uptake. Second, mortgage issuance also relates to the mechanism studied in this paper in that it directly affects the real estate sector, a key non-tradable industry. Increased mortgage uptake is not just reflective of increased household borrowing. It also directly relates to increased demand housing as a non-tradable products, and is thus indicative for the reallocation in resources to non-tradable industries. Lastly, mortgage issuance is reported publicly with both more extensive coverage and with greater granularity than other types of credit. This allows me to leverage different aggregations of loan-level data to study how banks' mortgage issuance depends on their funding structure and if those result hold up when aggregating across banks on the regional level. Lastly, this allows one to absorb demand effects using the fixed effects methodology of Khwaja and Mian (2008), ruling out the possibility that the obtained results are purely driven by spurious demand effects.

The specification used again is a variant of the main specification in Equation 5, but with the annualized growth in mortgage issuance as the dependent variable. Specifically, I estimate the following regression on different levels of aggregation:

$$\Delta O_{bt} = \gamma_t + \beta \Delta \mathrm{ETF}_{ubt} + \mathbf{X}'_{bt}\gamma + e_{bt}$$

ΔO_{bt} captures the increase in the origination of mortgages by bank b over period t, $\Delta \mathrm{ETF}_{ubt}$ is the exposure-to-flow measure used before, but here constructed using the bank-level NCL, and $\mathbf{X}$ includes a set of standard controls for bank characteristics (bank size, leverage and profitability). The granularity of the issuance-level data allows me to run this regression on different levels of aggregation: on the bank-level, the county-level and the bank-county-level.

Table 6 reports the results. Columns (1) shows the results of a regression of bank-level mortgage issuance growth on the exposure-to-flow measure. Banks with a greater exposure to capital inflows increase their mortgage origination at a faster rate than non-exposed banks as capital flows into the U.S. economy. A one percentage point increase in capital flows to GDP predicts a 0.68 percentage point increase in mortgage issuance growth for a bank with average exposure. Column (2) shows that the coefficient is virtually unchanged when including bank characteristics as controls. This result provides evidence for the identification strategy employed in this paper: if banks with less reliance on deposit funding are indeed more exposed to capital inflows via their funding structure, one should expect them to exhibit greater loan issuance growth as capital inflows increase. Importantly, it also provide direct evidence for bank intermediation shaping the sectoral consequences of international capital flows, namely the reallocation of resources from tradables to non-tradables: as exposed banks increase mortgage issuance in response to capital flows, they finance an increase in demand for the housing, a quintessential non-tradable product.

Next, I aggregate the data to the county-level to test whether the bank-level results still hold on the regional level. This does not necessarily have to be the case, as high-exposure banks could simply be taking over market share from other retreating banks, so that there is no actual increase in mortgage issuance on the regional level. Column (3) shows that this is not the case. Instead, the coefficient on the county-level is very similar in magnitude to the ones estimated on the bank-level, and again is robust to controlling for bank characteristics. The fact that the effects of capital inflows on mortgage issuance hold on the bank- as well as the county-level imply that differences in banks funding sources indeed have regional consequences in the allocation of credit. It thus provides further evidence that bank intermediation of international capital flows is an important determinant of the reallocation of resources from tradable to non-tradable industries.

So far, these results discussed in this section do not allow to distinguish between credit demand and supply in driving the greater mortgage issuance for banks and counties with a higher exposure. On the one hand, the results could be driven by credit supply, where banks with access to cheaper funding via wholesale markets issue more mortgages. On the other hand, it is possible that banks with greater whole-sale reliance simply happened to serve borrowers who extended their loan demand disproportionately. To distinguish between demand- and supply-effects driving the results in mortgage issuance, I leverage the issuance-level structure of the HMDA data to construct a data set on the bank-county level which captures mortgage growth by a bank in a given county. I can then add county fixed effects in the spirit of the methodology by Khwaja and Mian (2008). These fixed effects absorb any firm-varying demand effects on the county-level and the coefficient of interest now reports the difference in mortgage growth of banks with different funding structures lending *in the same county*, extracting the effect purely driven by credit supply.

First, columns (5) and (6) report the results of the regressions on the county-bank level, but without the inclusion of fixed effects. As seen on both the bank- and the county-level, banks increase their mortgage issuance at a faster rate if they were more exposed to global funding markets when capital flowed into the U.S. economy. The magnitude of the coefficients is comparable, albeit slightly smaller than the ones obtained at the bank-level, suggesting that bank issuance growth is not fully homogeneous across borrower counties. However, these results still do not rule out spurious demand effects driving these results. For this reason, columns (7) and (8) now report the results of the same regressions, but including county fixed effects. They show that banks with a greater reliance on non-deposit funding exhibit significantly greater loan growth than deposit-funded banks *lending to the same county*. This result is robust to the inclusion of controls for other bank characteristics. The point estimates are statistically indistinguishable from the ones obtained without the inclusion of county fixed effects, which implies that local demand effects are not responsible for the increase in mortgage issuance growth, but that they are instead driven by banks shifting their lending behavior in response to access to cheaper funding.

In summary, the results reported in Table 6 establish that exposure to capital inflows entails stark differences in mortgage issuance behavior between banks depending on their funding structure. Banks with greater exposure to capital inflows due to their reliance on non-deposit funding exhibit faster mortgage growth than less-exposed banks. Furthermore, these bank-level effects manifest themselves on aggregate in regional mortgage markets. Thus, regional differences in the funding structure of the banking sector drive different regional patterns in the allocation of credit to households and are thus an important determinant of the regional reallocation of resources across sectors in response to national capital inflows. These results are robust to controlling for bank characteristics as well as local demand conditions. The next subsection shows that this expansion in mortgage lending came at the cost of other forms of credit, specifically industrial credit lending.

6.2 Credit Reallocation

One shortcoming of the effects on mortgage issuance discussed in the previous section is that it precludes any conclusions about changes to the overall composition of banks' loan portfolios. For example, did more exposed banks indiscriminately increase all types of lending as capital flowed into the U.S. economy, or did mortgage issuance increase disproportionately?

This section fills that gap by using regulatory bank balance-sheet data from the FDIC Call Reports. Since this data covers bank balance sheets as opposed to loan issuance-leve data as in the preceding section, it allows for less granularity in the level of observation. In particular, there is no information on the geography of borrowers in the loan data. Therefore I cannot distinguish between demand- and supply effects as in the previous sections, or draw conclusions about the regional differences in the allocation of credit.

Nonetheless, this data enable important conclusions about banks' reallocation of credit across borrower types in response to capital inflows. Since household borrowing is a crucial ingredient to the credit-fueled consumption boom at the core of the mechanism studied in this paper, I focus on the share of bank loans going to households in the form of either mortgage lending or other personal loans. I contrast this with the share going to corporations in the form of commercial and industrial (C&I) loans. Specifically, I estimate the following bank-level regression:

$$\Delta C_{bt} = \gamma_t + \beta \Delta \text{ETF}_{ubt} + \mathbf{X}'_{bt}\gamma + e_{bt}$$

where ΔC_{bt} captures either the increase in overall credit on bank b's balance sheet, or the change in the share of these loans going to households or corporates. Table 7 reports the results. Column (1) reports that more-exposed banks expand their overall loan portfolios faster than other banks in response to capital inflows. For the average bank, a one percentage point increase in capital flows as a share of GDP leads to an increase of 0.32 percentage points in the growth rate of their loan portfolio. Column (2) shows that this holds with comparable magnitude when taking into account bank characteristics. These results provide a more general validation of results observed in the first two columns of Table 6, which covered only mortgage loans.[15] In line with the identifying assumption used throughout this paper, banks whose pre-determined funding structure makes them more exposed to capital inflows exhibit greater loan expansions when such capital flows increase.

However, this aggregate increase in loan volumes masks important heterogeneity in banks' allocation of credit. Columns (3) and (4) show that banks increase loans to households at an even faster rate than their overall loan portfolio: for the average bank, the share of loans going to households increases by 0.34-0.4 percentage points in response to a one percentage point increase in capital flows to GDP. These results suggest that exposed banks *amplify* the transmission of capital flows by increasing their lending to households at a disproportionate rate, providing additional fuel to the consumption boom and its implications for sectoral reallocation from tradables to non-tradables.

[15] Since the results in Table 6 are based on issuance data, while Table 7 is based on balance-sheet data, any differences could also be related to a different propensity to offload loans in securitization markets.

If exposed banks increase their lending to households at a disproportionately rate, it is natural to ask what type of lending suffers as a result. In column (5) and (6), the dependent variable is the share of loans going to corporations as C&I loans. This share decreases by 0.36-0.44 percentage points, an almost exactly commensurate decrease to the increase in lending to households. Thus, exposed banks increase their lending to households at the expense of loans going to corporations. Note that these two shares together constitute about 60% of all loans, so the reallocation of credit is not purely mechanical. Unfortunately, the sectoral distribution of C&I loans is not reported, but Caglio et al. (2021) show that in the period from 2012 to 2019, the manufacturing sector was by far the largest recipient of bank loans in the U.S. Due to the even greater importance of the manufacturing industry over the period I study, it stands to reason that its share in total bank lending used to be even greater, and thus more strongly affected by a decrease in C&I loans than other industries. However, note that even if the relative decrease in C&I loans did not disproportionately affect manufacturing industries, these results still suggest an amplification of sectoral reallocation via bank lending behavior. Since this reallocation away from tradables and manufacturing is set into motion by an expansion of household consumption, any disproportionate increase in loans extended to households amplifies its effects.

Taken together, the results discussed in this section paint a clear picture: more exposed banks issued more loans to households in the form of personal loan and mortgages, fuelling the household demand channel at the core of the sectoral reallocation mechanism explored in this paper. Furthermore, they had an amplifying effect on the consumption-induced reallocation by expanding household lending disproportionately at the expense of lending to businesses. In total, they provide evidence of bank intermediation shaping and amplifying the consequences of capital inflows on sectoral allocation, favoring a shift of resources towards non-tradable sectors at the expense of tradable industries such as manufacturing. The next section compares this effect to the leading explanation for the declines in American manufacturing, the China shock.

7 Comparison to the "China Shock"

The preceding sections provided evidence for capital inflows to the U.S. inducing a credit-fuelled consumption boom that lead to a reallocation of resources to non-tradable sectors, at the expense of tradable sectors in general and manufacturing specifically. This subsection contrasts this mechanism for the decline in manufacturing employment with its most popular explanation: Autor et al. (2013)'s China shock, an increase in import competition to manufacturing businesses in the U.S. driven by increases in Chinese productivity.

As described in section 3, the empirical approach chosen in this paper is intentionally close to the one employed in the China shock literature, partially with the intention to facilitate a comparison of the two explanations. I make use of this similarity by first estimating Equations (4) and (5) separately, and then combining both in the same specification to compare their explanatory power:

$$\Delta L_{it}^{m} = \alpha_t + \beta_1 \Delta \text{ETF}_{uit} + \beta_2 \Delta \text{IPW}_{uit} + \mathbf{X_{it}}'\gamma + e_{it}$$

Table 8 reports the results. As shown in section 5, increases in the ETF measure predict decreases in manufacturing employment, which is robust to the inclusion of a broad set of demographic controls as. The same is true for the IPW measure, as columns (3) and (4) show. Finally, including both regressors in the same regression leaves all the point estimates significantly negative, and only slightly attenuated in their magnitude. This points to a geographical separation of the different sources of exposure: regions exposed to import competition are distinct from the ones particularly exposed to capital inflows.

Figure 5 compares the two different exposure measures, plotting import exposure per worker against the exposure to capital inflows. The top panel shows the instrumented measures from a first stage without any control variables, in the bottom panel all control variables were included in the first stage regressions. The two measures exhibit a small negative correlation of -0.04 to -0.18. Interestingly, this negative relationship is largely driven by the very extremes: the areas with the largest exposure to import competition are barely exposed to capital inflows, and vice versa. Commuting zones with large import exposure tend to be smaller, while the ones exposed to capital inflows are larger urban areas whose higher financial development exposes them more to the impacts of capital flows.

This geographical separation between implies that the two exposures should not be thought of as representing competing explanations, but as two complementary forces both contributing to the decline in American manufacturing in tandem. The fact that the regional exposures affect fairly distinct regions implies a "double whammy" for manufacturing employment in the US: even regions with a low exposure to Chinese import competitions were not immune to the deterioration in the U.S. trade balance, as many of them were particularly exposed to the effects of capital inflows to the U.S. that were associated with the widening trade deficit.

7.1 Benchmarking the impact on manufacturing employment

The previous sections have shown that both the China shock and increased capital flows from abroad associated with the global savings glut contributed to declines in American manufacturing. However, these cross-sectional results do not reveal the aggregate impact of either mechanism. This section benchmarks the magnitude of both effects against the overall decline in manufacturing employment. Since this back-of-the-envelope calculation is based on cross-sectional estimates, it is potentially not fully representative for the aggregate effect taking general equilibrium channels into account. Nonetheless, it provides a useful benchmark and facilitates a comparison to estimates obtained by Autor et al. (2013) using an analogous approach.

American manufacturing employment decreased as a share of the working-age population by 2.07 percentage points between 1990 and 2000, and by another 2 percentage points between 2000 and 2007. Over the same periods, imports per worker from China increased by $1,140 and $1,839, respectively (Autor et al., 2013), while capital inflows increased by 1.36% and 6.06% of GDP, respectively. Applying these numbers to the estimates obtained in column (6) of Table 8 make it possible to attribute the decline in American manufacturing to the two different mechanisms. Import competition decreased manufacturing employment by 0.58 percentage points during the 1990s and by 0.94 percentage points in 2000-2007, which is similar to the estimates reported by Autor et al. (2013). Capital inflows contributed 0.26 and 1.16 percentage points, respectively.

However, these numbers likely overstate the aggregate effects of the two mechanisms: the estimates in Table 8 are obtained by studying purely the supply-driven effect of both imports and capital flows on manufacturing employment, so applying them to the *total* increase in imports and capital flows ignores any demand-side components. If components related to demand have a lesser impact on manufacturing employment, then including them will overstate the aggregate effect.[16] To isolate the supply-driven component, I follow the approach used by Autor et al. (2013) and described in detail in Appendix A.2. This approach exploits the fact that the difference between the OLS and 2SLS estimates is driven by the demand-driven effects that the instrument eliminate. We can use this difference to calculate a fraction of the variation in imports and capital inflows respectively that is driven purely by supply components. This decomposition implies that about 48% of the variation in import competition is driven by supply-driven components (Autor et al., 2013), while for capital flows the share is 25% (see Appendix A.2).

Taking into account these weights implies that import competition accounts for 14% of the decline in manufacturing employment in the 1990s, and 23% during the 2000s, for an overall share of 18%. Exposure to capital flows explains 3% of the decline in the 1990s, but

[16]For example, capital inflows that are attracted by the greater depth of financial development in the U.S. as in Caballero et al. (2008) or Aguiar and Amador (2011) might not have the same effects as the ones driven by excess savings due to the global savings glut.

15% during the 2000s when capital inflows were particularly high. In total, the effects of global savings glut account for 9% of the decline in American manufacturing employment, about half the size of the effects of the China shock.

8 Conclusion

In this paper, I argue for a novel explanation for the decline in American manufacturing around the turn of the millennium. Building on the theory on the effects of capital inflows from the international macroeconomics literature, I present a theoretical mechanism in which capital inflows induce a credit-fueled consumption boom that leads to a reallocation of resources from tradable to non-tradable industries. I test this mechanism empirically using bank balance sheet information to capture differential exposure to global funding markets. From these bank-level exposure measures, I construct regional exposures using mortgage issuance data. In line with the theoretical predictions, regions with a higher exposure to capital inflows exhibit a reallocation of employment from tradable industries, such as manufacturing, to non-tradables. It also confirms the key prediction of a stronger real exchange rate appreciation for more exposed regions, which rules out a trade-based explanation for the manufacturing losses.

I use granular mortgage- and bank balance sheet data to study the transmission of capital inflows via the banking sector. More exposed banks increase their mortgage issuance at a faster rate, and counties more exposed via their banking sector also experience a faster increase in mortgage issuance, which is not driven by spurious credit demand. Furthermore, banks expand their issuance of personal loans at the expense of corporate credit, which points to an amplifying role of the banking sector in the effects of capital flows on sectoral allocations.

The effects of capital inflows are independent of the effects of import competition, and provide a novel explanation for the decline in American manufacturing that complements existing explanations. These findings pose important implication for the long-term structural consequences of capital inflows on advanced economies, and for the role the banking sector plays in shaping those consequences.

While the analysis in this paper is not designed to speak to the welfare effects of counterfactual policies, it suggests that controlling international capital flows could benefit domestic manufacturing industries. This is relevant in light of the recent resurgence in the popularity of trade protections. One rationale for these protections is to shield the domestic manufacturing sector from the impacts of foreign import competition. If the benefit of trade protections is deemed high enough to forego gains from trade, then the findings of this paper suggest that controlling the inflow of foreign capital or its intermediation by domestic banks might also be worthwhile considerations for policymakers. Since the framework used in this paper does not allow for normative evaluations of such policies, future research is needed to shed a light on the optimal design of macroprudential policies that can achieve these objectives.

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Tables

Table 1: Japanese Imports and Manufacturing Employment, 1970-1990

	I. 1970-1990					
	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW	-1.380***	0.027	0.119	0.273	0.283	0.199
	(0.409)	(0.262)	(0.225)	(0.227)	(0.192)	(0.212)
Manufacturing Share (%)		-0.421***	-0.354***	-0.334***	-0.224***	-0.216***
		(0.041)	(0.039)	(0.044)	(0.054)	(0.053)
College-educated (%)				-0.001		0.048
				(0.078)		(0.075)
Foreign-born (%)				-0.064***		-0.060*
				(0.025)		(0.034)
Female Employment (%)				-0.075		-0.004
				(0.048)		(0.043)
Routine Employment (%)					-0.103***	-0.106***
					(0.019)	(0.021)
Offshorability Index					-0.007	0.008
					(0.008)	(0.014)
Census Division FEs			✓	✓	✓	✓
R^2	0.07	0.51	0.62	0.64	0.66	0.67
Observations	670	670	670	670	670	670

Notes: This table reports the coefficients of regressions of decadal changes in manufacturing employment as a share of the working-age population (in % points) on imports-per-workers (in $ thousands) from Japan. The countries used in the construction of the instrument are the same as in Autor et al. (2013), with the exception of Germany and Japan. Following Batistich and Bond (2019), the regression is estimated as a long difference over the full period. Robust standard errors clustered at the state level in parentheses. Regressions are weighted by population at the beginning of the period. $^{*}\, p < 0.1$; $^{**}\, p < 0.05$; $^{***}\, p < 0.01$

Sources: IPW is constructed using imports data is from *UN Comtrade* and labor market data from the CBP provided by Eckert et al. (2020a) and Eckert et al. (2021). Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.

Table 2: East Asian Imports and Manufacturing Employment, 1970-2007

	I. 1970-2007, by decade				II. stacked
	1970-1980	1980-1990	1990-2000	2000-2007	1970-2007
	(1)	(2)	(3)	(4)	(5)
Δ IPW	0.246	0.322	-0.216**	-1.440***	-0.911***
	(1.704)	(0.659)	(0.100)	(0.429)	(0.147)
Full Controls & FEs	✓	✓	✓	✓	✓
R^2	0.45	0.43	0.41	0.62	0.43
Observations	672	685	722	722	2,801

Notes: This table reports the coefficients of regressions of decadal changes in manufacturing employment as a share of the working-age population (in % points) on imports-per-workers (in $ thousands) from East Asia (defined in Appendix A.3) . The countries used in the construction of the instrument are the same as in Autor et al. (2013), with the exception of Germany and Japan. Stacked difference regression in column (5) includes decade fixed effects, and all regressions include the full set of controls from column (6) of Table 1. Robust standard errors clustered at the state level in parentheses. Regressions are weighted by population at the beginning of the period.* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Sources: IPW is constructed using imports data is from *UN Comtrade* and labor market data from the CBP provided by Eckert et al. (2020a) and Eckert et al. (2021). Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.

Table 3: East Asian Imports and Current Account Deficits

	I. 1970-2007 stacked differences					
	(1)	(2)	(3)	(4)	(5)	(6)
Δ IPW	-0.645***	-0.506**	-0.130	0.042	-0.014	0.084
	(0.181)	(0.200)	(0.18)	(0.153)	(0.176)	(0.173)
CA Deficit (%)	0.075	0.074	0.081	0.409***	-0.414***	-0.113
	(0.071)	(0.063)	(0.067)	(0.135)	(0.07)	(0.112)
Δ IPWxCA Deficit (%)	-0.105***	-0.130***	-0.215***	-0.240***	-0.233***	-0.246***
	(0.040)	(0.042)	(0.040)	(0.04)	(0.036)	(0.036)
Manufacturing Share (%)		-0.023	-0.030*	-0.045**	0.025	0.005
		(0.020)	(0.018)	(0.021)	(0.019)	(0.021)
College-educated (%)				0.041		-0.039
				(0.040)		(0.04)
Foreign-born (%)				-0.055***		-0.018
				(0.019)		(0.016)
Female Employment (%)				-0.142***		-0.033
				(0.033)		(0.035)
Routine Employment (%)					-0.218***	-0.221***
					(0.026)	(0.035)
Offshorability Index					-0.032***	-0.016
					(0.007)	(0.012)
Census Division FEs			✓	✓	✓	✓
R^2	0.20	0.23	0.35	0.40	0.42	0.44
Observations	2,801	2,801	2,801	2,801	2,801	2,801

Notes: This table reports the coefficients of regressions of decadal changes in manufacturing employment as a share of the working-age population (in % points) on imports-per-workers (in $ thousands) from East Asia (defined in Appendix A.3) interacted with the average U.S. Current Account deficit as a percentage of GDP in the respective decade. The countries used in the construction of the instrument are the same as in Autor et al. (2013), with the exception of Germany and Japan. Robust standard errors clustered at the state level in parentheses. Regressions are weighted by population at the beginning of the period and include decade fixed effects. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Sources: IPW is constructed using imports data is from *UN Comtrade* and labor market data from the CBP provided by Eckert et al. (2020a) and Eckert et al. (2021). The current account deficit is obtained from the BEA. Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.

Table 4: Capital Flows and Labor Reallocation

	I. Tradable		II. Manufacturing		III. Non-Tradable		IV. Construction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ ETF	-0.261***	-0.268***	-0.196**	-0.203**	0.174***	0.181***	0.048	0.180***
	(0.049)	(0.057)	(0.081)	(0.099)	(0.042)	(0.045)	(0.048)	(0.064)
NCL Share (%)	0.015***	0.015***	-0.003**	-0.001	-0.015***	-0.014***	-0.002***	-0.001**
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.004)	(0.001)	(0.001)
Manufacturing Share (%)	-0.060***	-0.066***	-0.021***	-0.018***	0.022***	0.026***	0.002*	0.004***
	(0.003)	(0.005)	(0.002)	(0.003)	(0.003)	(0.004)	(0.001)	(0.001)
College-educated (%)		-0.007		-0.006*		-0.010*		0.004**
		(0.008)		(0.003)		(0.006)		(0.002)
Foreign-born (%)		0.002		0.003		-0.012***		-0.005***
		(0.007)		(0.003)		(0.003)		(0.001)
Female employment (%)		0.025**		0.003		-0.032***		-0.012***
		(0.010)		(0.004)		(0.007)		(0.003)
Routine Employment (%)		0.029**		-0.024***		-0.044***		-0.002
		(0.015)		(0.007)		(0.011)		(0.005)
Offshorability Index		0.007		-0.001		0.000		-0.001
		(0.007)		(0.001)		(0.002)		(0.001)
Census Division FE		✓		✓		✓		✓
R^2	0.228	0.256	0.329	0.378	0.365	0.392	0.034	0.119
Observations	695	695	695	695	695	695	695	695

Notes: This table reports the coefficients of regressions of decadal changes in employment shares (in % points) on the exposure-times-flows (ETF) measure described in Section 3. The coefficient on Δ ETF is scaled to correspond with a 1 percentage point increase in capital inflows to GDP for the average CZ by exposure to capital flows. The countries used in the construction of the instrument are the same as in Autor et al. (2013). Robust standard errors clustered at the state level in parentheses. Regressions include decade fixed effects and are weighted by population at the beginning of the period.. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Sources: Labor market data is from the CBP provided by Eckert et al. (2020a). ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.

Table 5: Capital Flows and Real Exchange Rate Appreciation

	I. All Items		II. Tradable		III. Non-Tradable		IV. House Prices	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ ETF	0.211*	0.275***	0.031	0.083	0.421**	0.444**	0.458**	0.422***
	(0.123)	(0.087)	(0.086)	(0.098)	(0.201)	(0.179)	(0.183)	(0.162)
NCL Share (%)	-0.007	-0.020**	0.008	-0.005	-0.025**	-0.033**	-0.062***	-0.046***
	(0.007)	(0.009)	(0.006)	(0.008)	(0.012)	(0.017)	(0.015)	(0.013)
Manufacturing Share (%)		0.000		0.002		-0.003		-0.007
		(0.013)		(0.010)		(0.020)		(0.015)
College-educated (%)		0.036		0.007		0.055		0.089***
		(0.027)		(0.018)		(0.046)		(0.029)
Foreign-born (%)		0.010*		-0.003		0.016*		-0.012
		(0.006)		(0.007)		(0.009)		(0.027)
Female employment (%)		-0.037*		-0.015		-0.056		-0.024
		(0.022)		(0.016)		(0.036)		(0.030)
Routine Employment (%)		0.015		-0.022		0.037		0.053
		(0.034)		(0.024)		(0.059)		(0.042)
Offshorability Index		-0.014**		-0.007		-0.017*		-0.024
		(0.006)		(0.005)		(0.010)		(0.048)
Census Division FEs		✓		✓		✓		✓
R^2	0.065	0.301	0.137	0.347	0.074	0.121	0.190	0.417
Observations	70	70	70	70	70	70	694	694

Notes: This table reports the coefficients of regressions of decadal rates of inflation (in % points) on the exposure-times-flows (ETF) measure described in Section 3. The coefficient on Δ ETF is scaled to correspond with a 1 percentage point increase in capital inflows to GDP for the average CZ by exposure to capital flows. The countries used in the construction of the instrument are the same as in Autor et al. (2013). Robust standard errors clustered at the state level in parentheses. Regressions include decade fixed effects and are weighted by population at the beginning of the period.. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Sources: Inflation data is obtained from the BLS CPI indices by MSA. House prices are from the FHFA. ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). Labor market data is from the CBP provided by Eckert et al. (2020a). Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.

Table 6: Capital Inflows and Mortgage Issuance Growth

	I. Bank-Level		II. County-Level		III. Bank-County-Level			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ ETF	0.681**	0.685**	0.686**	0.817***	0.552***	0.366***	0.667***	0.508***
	(0.325)	(0.329)	(0.289)	(0.263)	(0.073)	(0.071)	-0.089	(0.085)
NCL Share (%)	0.126***	0.116***	-0.095**	-0.171***	-0.018	-0.012	-0.051*	-0.066*
	(0.040)	(0.043)	(0.043)	(0.058)	(0.021)	(0.029)	(0.027)	(0.035)
Size		0.015		0.486		-0.927***		-0.017
		(0.331)		(0.365)		(0.128)		(0.153)
Leverage		0.124		0.037		2.116***		2.598***
		(0.126)		(0.252)		(0.136)		(0.162)
Profitability		-2.425		-4.364		19.381***		21.802***
		(1.517)		(3.626)		(2.159)		(2.513)
R^2	0.013	0.013	0.118	0.124	0.015	0.031	0.009	0.023
Observations	2,927	2,927	1,656	1,656	49,383	49,383	49,383	49,383
County FE							✓	✓

Notes: This table reports the coefficients of regressions of decadal mortgage issuance growth (in % points) on the exposure-times-flows (ETF) measure described in Section 3. Coefficients are scaled by average NCL to correspond with a 1 percentage point increase in capital inflows to GDP for the average bank/county by exposure to capital flows. The countries used in the construction of the instrument are the same as in Autor et al. (2013). Robust standard errors in parentheses. Regressions include decade fixed effects and are weighted by population at the beginning of the period. $^{*}\,p < 0.1$; $^{**}\,p < 0.05$; $^{***}\,p < 0.01$

Sources: Mortgage issuance growth captures the issuance of mortgages for purchases of single-family homes. ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). See Appendix Section A.3 for details.

Table 7: Capital Flows and Bank Credit Reallocation

	I. Loan Growth		II. Household Share		III. Corporate Share	
	(1)	(2)	(3)	(4)	(5)	(6)
Δ ETF	0.317***	0.337***	0.336***	0.398***	-0.439***	-0.362***
	(0.064)	(0.070)	(0.111)	(0.123)	(0.092)	(0.102)
NCL Share (%)	0.008	-0.011	0.032*	0.049**	-0.065***	-0.010
	(0.011)	(0.011)	(0.019)	(0.020)	(0.017)	(0.018)
Size		-0.080		-0.518***		-0.864***
		(0.090)		(0.147)		(0.120)
Leverage		0.311***		0.042		-0.242***
		(0.028)		(0.054)		(0.044)
Profitability		0.051		4.026***		-3.246***
		(0.598)		(1.123)		(0.930)
R^2	0.006	0.019	0.006	0.008	0.011	0.023
Observations	11,798	11,798	11,798	11,798	11,798	11,798

Notes: This table reports the coefficients of regressions of decadal growth rates in overall loan volume and the share of loans to households or corporates (in % points) on the exposure-times-flows (ETF) measure described in Section 3. Coefficients are scaled by average NCL to correspond with a 1 percentage point increase in capital inflows to GDP for the average bank/county by exposure to capital flows. The countries used in the construction of the instrument are the same as in Autor et al. (2013). Robust standard errors in parentheses. Regressions include decade fixed effects and are weighted by population at the beginning of the period.. $^{*}\,p < 0.1$; $^{**}\,p < 0.05$; $^{***}\,p < 0.01$

Sources: Loan data is from FDIC Call Reports. ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). Labor market data is from the CBP provided by Eckert et al. (2020a). See Appendix Section A.3 for details.

Table 8: Comparison between Capital Inflows and Import Competition

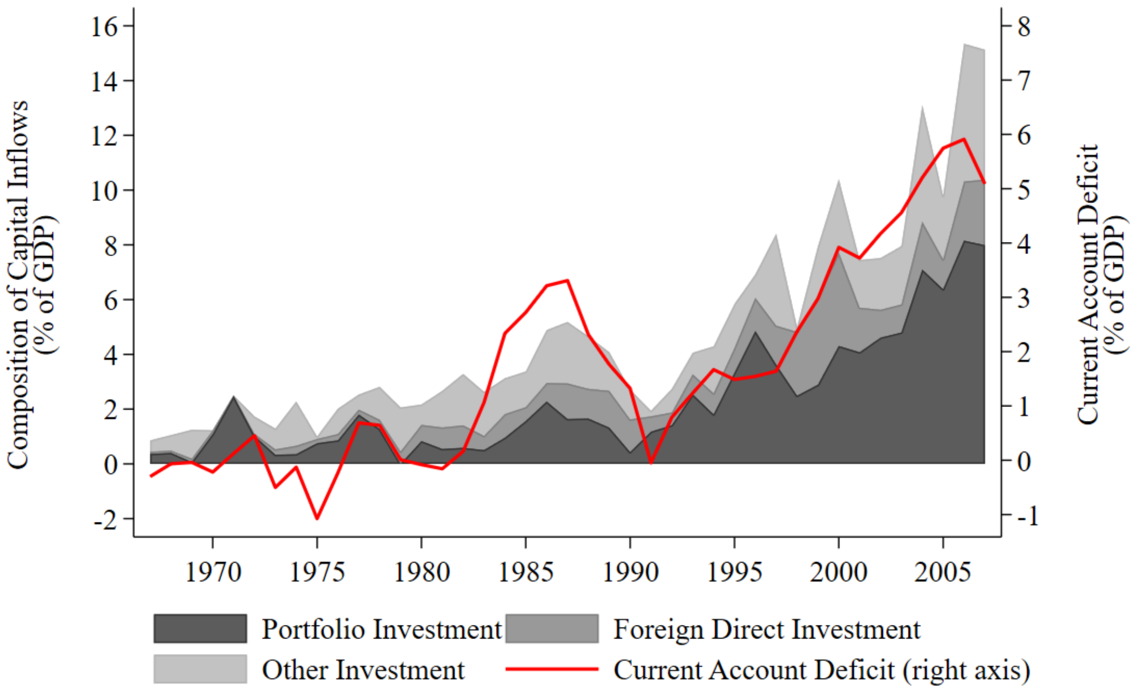
	I. ETF only		II. IPW only		III. Both	
	(1)	(2)	(3)	(4)	(5)	(6)
Δ ETF	-0.275**	-0.223***			-0.211**	-0.191***
	(0.109)	(0.060)			(0.096)	(0.055)
Δ IPW			-0.596***	-0.558***	-0.570***	-0.510***
			(0.144)	(0.101)	(0.143)	(0.092)
NCL Share (%)	-0.004**	-0.002	-0.003**	-0.003**	-0.003**	-0.002
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Manufacturing Share (%)	-0.018***	-0.011***	-0.010***	-0.003	-0.011***	-0.005*
	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
College-educated (%)		-0.008**		-0.004		-0.006*
		(0.003)		(0.004)		(0.004)
Foreign-born (%)		0.003		-0.001		0.004**
		(0.002)		(0.002)		(0.002)
Female employment (%)		-0.006*		-0.011**		-0.006*
		(0.004)		(0.004)		(0.004)
Routine Employment (%)		-0.029***		-0.029***		-0.029***
		(0.010)		(0.011)		(0.010)
Offshorability Index		-0.002		-0.003		-0.003*
		(0.002)		(0.002)		(0.002)
Census Division FEs		✓		✓		✓
R^2	0.277	0.441	0.322	0.458	0.329	0.479
Observations	695	695	695	695	695	695

Notes: This table reports the coefficients of regressions of decadal changes in manufacturing employment as a share of the working-age population (in % points) on imports-per-workers from China (in $ thousands) and the exposure-times-flows (ETF) measure described in Section 3. The coefficient on Δ ETF is scaled to correspond with a 1 percentage point increase in capital inflows to GDP for the average CZ by exposure to capital flows. The countries used in the construction of the instrument are the same as in Autor et al. (2013). Robust standard errors clustered at the state level in parentheses. Regressions include decade fixed effects and are weighted by population at the beginning of the period.* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Sources: ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). IPW is constructed using imports data is from *UN Comtrade* and labor market data from the CBP provided by Eckert et al. (2020a) Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.

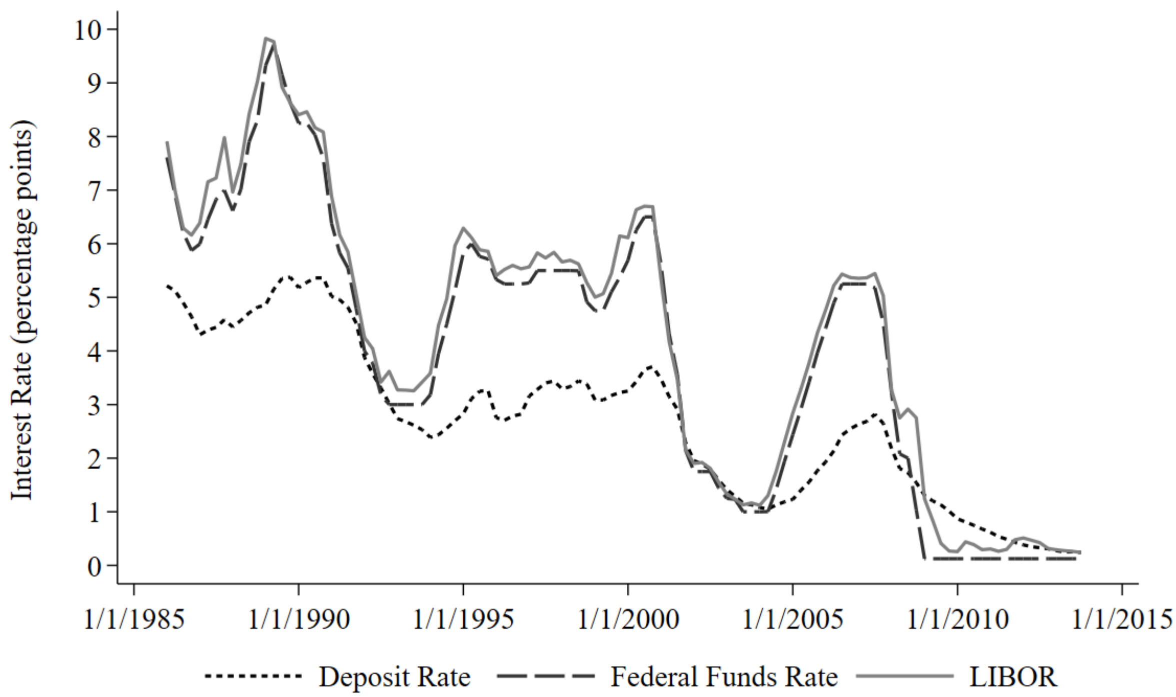
Figures

Figure 1: Composition of U.S. Capital Inflows and Current Account Deficit



Source: Bureau of Economic Analysis's *International Transactions*.

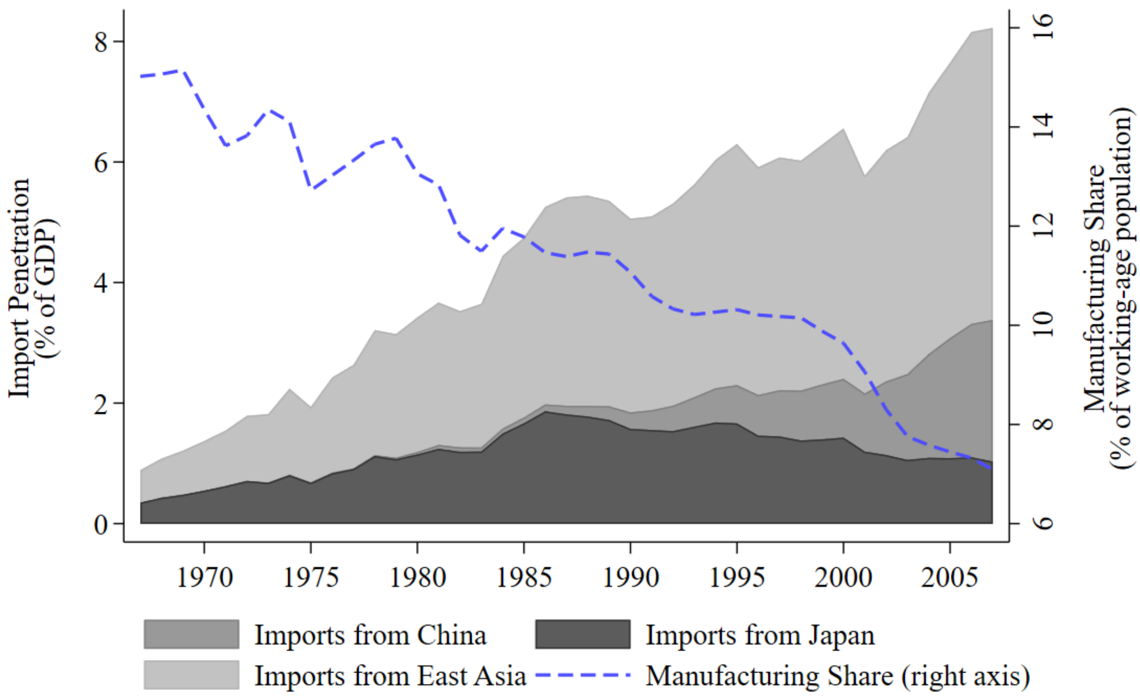
Figure 2: Deposit Rate, Federal Funds Rate and LIBOR



Notes: This figure plots the average deposit rate for U.S. commercial banks as well as the Federal Funds Rate and the 3-months LIBOR.

Sources: Deposit rates reproduced from Drechsler et al. (2017). FFR and LIBOR from FRED.

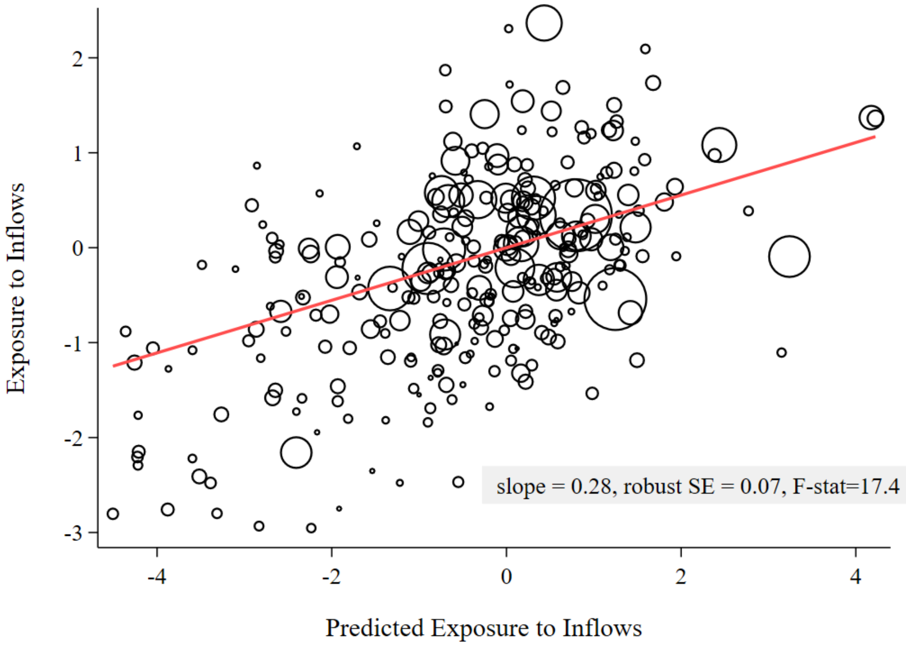
Figure 3: U.S. Import Penetration from East Asia the Manufacturing Share

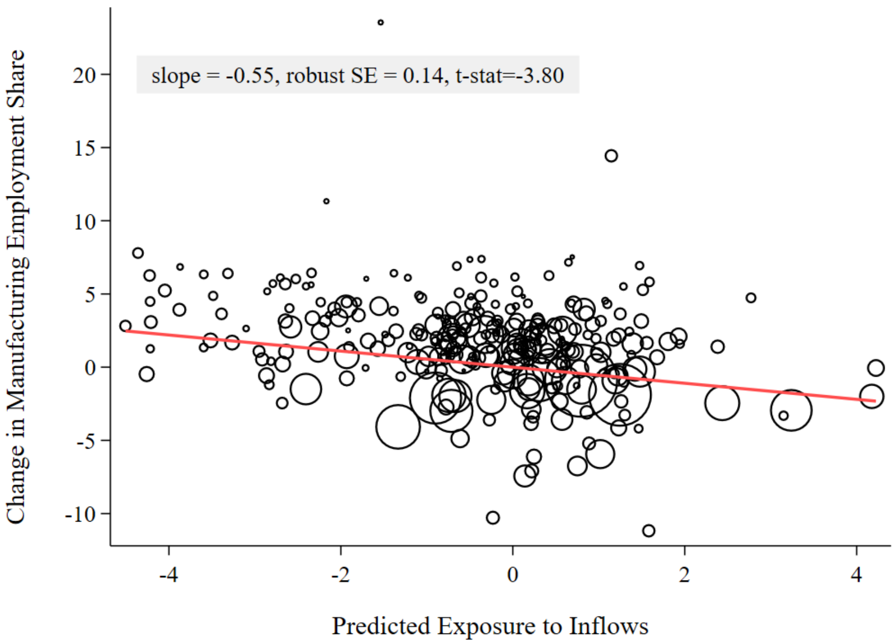


Notes: This figure plots total U.S. imports from China, Japan and East Asia (as defined in Appendix Section A.3) as well as the share of the U.S. working-age population employed in manufacturing.

Sources: Imports from *UN Comtrade*, Manufacturing Employment from Eckert et al. (2020a), working-age population from Ruggles et al. (2021).

Figure 4: First Stage and Reduced Form

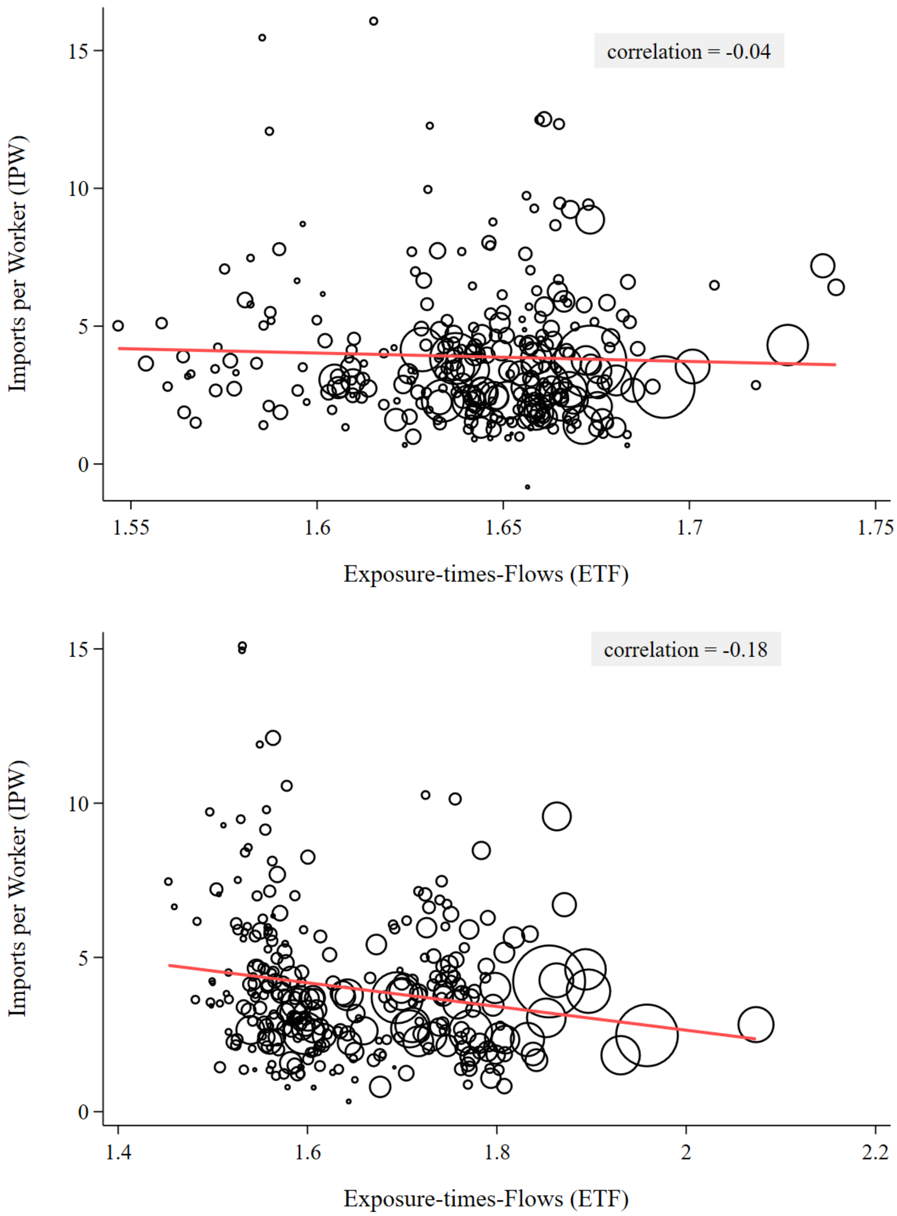




Notes: The top panel depicts the first stage regression of U.S. ETF on the instrument constructed using capital flows to other developed nations and 10-year-lagged NCL as the exposure variable. The bottom panel depicts a reduced form regression of changes in manufacturing employment on the instrument. Both panels use data for the entire 1990-2007 period, and only include commuting zones for which data is available in both periods. All variables are residualized to the share of employment in manufacturing. Observations are weighted by population.

Sources: ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). Manufacturing Employment from Eckert et al. (2020a), working-age population from Ruggles et al. (2021).

Figure 5: Comparison of ΔIPW and ΔETF



Notes: This figure compares the exposure to import competition, IPW, to the exposure to capital flows, ETF. The top panel depicts IPW and ETF obtained from a first-stage regression only including the instrument, the bottom panel controlled for the full set of controls from column (6) of Table 8. Observations are weighted by population.

Sources: ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). IPW is constructed using imports data is from *UN Comtrade* and labor market data from the CBP provided by Eckert et al. (2020a) and Eckert et al. (2021). Manufacturing Employment from Eckert et al. (2020a), working-age population from Ruggles et al. (2021).

Online Appendix

A.1 Additional Validation of the Shift-Share Instrument

Goldsmith-Pinkham et al. (2020) suggest some further options to build credibility for a shift-share instrument in their framework. Unfortunately, it is not possible to show any pre-trends for a period without rapid increases in capital flows to the U.S. as data availability issues preclude a construction of regional NCL-shares for such periods.[17] However, Appendix Table A.3 presents correlates of the NCL-share on the CZ-level in order to evaluate whether these correlates suggest other channels through which the NCL-share could predict declines in manufacturing or other outtcome variables. The correlates cover several dimensions of regional labor markets, as well as the demographic and occupational controls used in Autor et al. (2013). No correlation coefficient is particularly high[18]; the only variable with a correlation greater than 0.3 in absolute value is the percentage of the population born in a foreign country, which has a 0.42 correlation with the lagged NCL in 1990. However, Autor et al. (2013) show that the percentage of foreign-born individuals tends to be *positively* correlated with changes in manufacturing employment, mitigating contamination concerns. Similarly, the NCL-share is negatively correlated with the share of routine jobs in a CZ, but this measure itself is negatively correlated with changes in manufacturing employment in the sample period. Lastly, the share of employment in tradables generally and manufacturing specifically are both weakly negative, alleviating concerns that the NCL-share is spuriously contaminated by a structural decline in these sectors over the sample period.

A.2 Decomposing Demand and Supply Components of Capital Inflows

This section shows how the difference between OLS and 2SLS estimates can be used to decompose the effects of capital inflows intro a demand- and a supply-driven component, following the analogous approach used by Autor et al. (2013) to decompose the effects of import competition.

Beginning with the main specification (5) and omitting covariates

$$\Delta L_{it}^{m} = \alpha_t + \beta \Delta \text{ETF}_{uit} + e_{it}$$

[17]Specifically, HMDA data on mortgage issuance that is needed as weights for the bank-level NCLs only becomes available in the 1980s.

[18]Note that the framework of Goldsmith-Pinkham et al. (2020) does not require the regional shares to be uncorrelated in the level, but only in changes and only through channels other than the posited one.

we can write the coefficient one would obtain by estimating this equation via OLS as

$$\hat{\beta}_{OLS} = \frac{\sigma_{L,ETF}}{\sigma^2_{ETF}}$$

where the numerator is the covariance of the ETF measure and the change in manufacturing employment, and the denominator is the variance of the ETF measure. In contrast, estimating the equation by 2SLS one obtains

$$\hat{\beta}_{2SLS} = \frac{\sigma_{L,ETF_s}}{\sigma^2_{ETF_s}}$$

where the subscript s denotes the variation in the ETF measure that is isolated by the instrument, i.e. the supply-driven component of the ETF measure.

We can use the fact that the instrumental variable approach isolates the supply-driven component of the ETF in decomposing ETF into a supply- and a demand-driven component:

$$\Delta\text{ETF} = \Delta\text{ETF}_s + \Delta\text{ETF}_d$$

Noting that the supply- and the demand-driven component in the decomposition above are orthogonal to each other by construction, we can rewrite the OLS estimator as:

$$\hat{\beta}_{OLS} = \frac{\sigma_{L,ETF_s} + \sigma_{L,ETF_d}}{\sigma^2_{ETF_s} + \sigma^2_{ETF_d}}$$

We can finally use the definition of the other estimators to write the OLS estimator as the weighted average of the estimator isolating the supply-driven effect β_{2SLS} and the one isolating the demand-driven effect β_d, where the weights are the fraction of overall variation in ETF explained by the respective components:

$$\hat{\beta}_{OLS} = \hat{\beta}_{2SLS} \times \frac{\sigma^2_{ETF_s}}{\sigma^2_{ETF_s} + \sigma^2_{ETF_d}} + \hat{\beta}_d \times \frac{\sigma^2_{ETF_d}}{\sigma^2_{ETF_s} + \sigma^2_{ETF_d}}$$

We can thus recover the weight $w = \sigma^2_{ETF_s}/(\sigma^2_{ETF_s} + \sigma^2_{ETF_d})$ from the three estimated coefficients: From column (6) of Table 8 we get $\beta_{2SLS} = -0.191$, $\beta_{OLS} = -0.044$ and $\beta_d = 0.007$, giving a weight $w = 0.25$. This weight gives the fraction of variation in the ETF measure that is due to supply-driven components, and can thus be used to scale the results obtained in the benchmarking exercise in section 7 to account for the fact that only about 25% in capital inflows to the US are driven by supply-related components, according to these estimates.

A.3 Details on variable construction

Mapping SITC to HS Industries

Import data from UN Comtrade for pre-1991 years are only available in SITC product codes. For converting these to the modern HS codes, new, importer-exporter-specific crosswalks are constructed following the procedure proposed in Batistich and Bond (2019). The resulting HS product codes can then be mapped to SIC industries using the crosswalk from Autor et al. (2013).

The crosswalks are based on data for the years 1991-1994, for which both SITC (Revision 1) and HS (1992) product codes are available. The mapping between those codes comes from the correspondance tables provided by UN Comtrade[19], however these tables only provide connections between the different product classifications without weightings.

The weights are obtained by computing the shares for each HS product within an SITC code product, and averaging those across the years in which both were available. For product codes that were not available in any of these years, the weights are instead obtained from the importer's total imports.

Demographic and Occupational Controls

The manufacturing share is computed as the share of total employment in manufacturing, both obtained from the CBP. It differs from the dependent variable, which is divided by working-age population, not total employment.

The percentage of the college-educated population is defined as including everyone with at least one year of college, foreign-born includes everyone born outside of the United States. Female Employment is the share of females in a CZ that is employed.

The classification into Routine vs Non-Routine employment is based on the relative task-intensities by occupation from Autor and Dorn (2013), and is defined so that 1/3 of total workers in 1980 are occupied in Routine employment. The offshorability index also comes from Autor and Dorn (2013) and is standardized to a mean of zero and a standard deviation of 10.

East Asia shock

The (imprecisely named) East Asia shock is constructed based on imports from Cambodia, China, Hong Kong, Indonesia, Japan, Singapore, South Korea, Taiwan and Thailand. These countries in East- or Southeast Asia were selected due to being the fastest-growing source

[19] https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp

of US manufacturing imports during some subperiod of the 1970-2007 period. The results obtained are robust to different definitions of this import region, such as also including Malaysia, Philippines and Vietnam and to excluding all South-East Asian countries.

Call Reports Data

Overall loan growth is measured by total domestic loans (RCON1400). Loans to households include loans secured by residential real estates of 1-4 units (RCON1430) and personal loans (RCON1975). Corporate loans are measured by commercial and industrial (C&I) loans (RCON 1766).

NCL is defined as one minus the share of core deposits in total liabilities. Core deposits are computed as total domestic deposits (RCON2200) minus total domestic deposits greater than $100k, the FDIC insurance limit over the sample period (RCON2604). These are scaled by total liabilities (RCON2950).

Bank controls include size, leverage and profitability. Size is defined as the log of total assets (RCFD2170). Leverage is defined as total liabilities (RCFD2950) divided by total assets. Profitability is measured as net income (RIAD4340) divided by total assets.

HMDA Data

Mortgage origination data is obtained from HMDA's Loan Application Register (LAR), which includes all mortgage applications for lenders with a representation in an MSA. For the calculation of weights, all accepted loan applications are considered. The dependent variable on mortgage issuance growth is constructed only for home purchase loans. Since LAR data only becomes available in 1981, I use the 1981 mortgage issuance data to aggregate bank NCLs from 1980 to the regional level.

The mapping between the IDs used in the Call Reports and in HMDA is based on the "Avery file" constructed by Robert Avery at the FHFA, and obtained from Neil Bhutta's Website. However, there is no existing mapping for the 1981 LAR file. I generate this mapping by a combination of fuzzy-matching and manually matching lenders between both data sources.

Regional Price Indices

Regional price indices are obtained from the BLS data on MSA-level CPIs. The index used as a proxy for tradable prices is the "Commodities" subset of CPI categories, while regional prices on non-tradables are obtained from the "Services" subcategory. The BLS-provided crosswalk is used to attribute these price indices to the county-level, from which they are aggregated to the CZ-level using the crosswalks provided in Eckert et al. (2020b).

A.4 Appendix Tables

Table A.1: Summary Statistics: Trade Shock Regressions

	1970	**1980**	**1990**	**2000**	**Average**
Commuting-Zone Level					
Δ Manufacturing Employment/	-1.43	-2.26	-2.76	-3.17	-2.41
working-age population (%)	(2.47)	(2.20)	(2.07)	(2.26)	(2.34)
Δ IPW$_{\text{Japan}}$	0.20	0.41	0.41	-0.28	0.19
	(0.26)	(0.43)	(0.42)	(0.69)	(0.55)
Δ IPW$^{\text{Non-US}}_{\text{Japan}}$	0.06	0.05	-0.01	0.11	0.05
	(0.07)	(0.07)	(0.10)	(0.20)	(0.13)
Δ IPW$_{\text{East Asia}}$	0.57	1.08	2.43	2.23	1.58
	(0.42)	(0.85)	(2.64)	(2.31)	(1.97)
Δ IPW$^{\text{Non-US}}_{\text{East Asia}}$	0.16	0.14	0.31	1.20	0.45
	(0.13)	(0.12)	(0.25)	(0.79)	(0.61)
Manufacturing Share (%)	25.27	14.92	21.99	16.60	19.70
	(11.06)	(6.66)	(8.68)	(7.85)	(9.65)
College-educated (%)	8.46	11.57	18.09	33.84	17.99
	(2.45)	(2.96)	(4.52)	(6.30)	(10.70)
Foreign-born (%)	5.16	4.55	6.43	8.39	6.13
	(4.41)	(4.04)	(5.98)	(8.39)	(6.13)
Female Employment (%)	23.38	28.04	35.87	41.77	32.27
	(3.37)	(3.28)	(4.19)	(4.54)	(8.07)
Routine Jobs (%)	36.8	36.43	33.12	29.92	34.07
	(7.41)	(4.95)	(3.59)	(2.92)	(5.74)
Offshorability Index	-0.19	-0.69	-0.17	-0.13	-0.30
	(9.70)	(9.48)	(9.7)	(9.97)	(9.72)
Observations	672	685	722	722	2,801
National Level					
Current Account Deficit (% of GDP)	-0.15	1.57	1.40	4.80	1.75

Notes: This table reports summary statistics on the commuting-zone level for the variables underlying the analysis of trade shocks. Averages and standard deviations (in parentheses) are weighted by population.

Table A.2: Summary Statistics: Capital Inflow Regressions

	1990			2000		
	Observations	Mean	SD	Observations	Mean	SD
Commuting-Zone Level						
ΔETF	282	0.502	0.124	413	2.541	0.271
$\Delta ETF_{\text{Non-US}}$	282	0.341	0.192	413	1.833	0.459
ΔTradable Share	282	-2.454	2.241	413	-1.712	1.526
ΔNon-Tradable Share	282	2.279	1.909	413	2.279	2.061
ΔManufacturing Share	282	-4.927	2.259	413	-3.268	2.167
ΔConstruction Share	282	-0.150	1.135	413	-0.023	0.892
Inflation (all goods)	33	3.125	0.358	37	3.160	0.528
Inflation (tradables)	33	2.103	0.275	37	1.770	0.290
Inflation (non-tradables)	33	3.920	0.584	37	4.086	0.817
Inflation (housing)	281	4.688	2.236	413	3.871	2.169
County Level						
ΔETF	497	0.494	0.145	1,159	2.444	0.445
$\Delta ETF_{\text{Non-US}}$	497	0.270	0.172	1,159	1.845	0.563
ΔMortgage Issuance	497	8.380	4.122	1,159	4.599	6.098
Bank Level						
ΔETF	6,183	0.174	0.121	5,615	1.117	0.634
$\Delta ETF_{\text{Non-US}}$	6,183	0.108	0.100	5,615	0.672	0.496
ΔTotal Loans	6,183	5.936	6.334	5,615	5.659	8.445
ΔHousehold Share	6,183	5.935	13.341	5,615	4.204	15.143
ΔCorporate Share	6,183	-1.321	10.844	5,615	-1.897	12.802
Size	6,183	10.765	1.140	5,615	11.385	1.235
Leverage	6,183	90.750	2.637	5,615	90.111	2.979
Profitability	6,183	0.264	0.133	5,615	0.307	0.138
ΔMortgage Issuance	1,665	12.122	16.319	1,191	11.416	21.536

Notes: This table reports summary statistics on the commuting-zone, county and bank level for the variables underlying the analysis of capital inflows. CZ-level averages and standard deviations are weighted by population. Changes in share are expressed as decadal changes, inflation rates and loan/mortgage growth which are annualized. All growth rates are in percentage points.

Table A.3: Correlates of lagged CZ-level NCL

	1990	1980
Tradable Share	-0.166	-0.149
Manufacturing Share	-0.167	-0.140
Non-Tradable Share	-0.004	0.070
Construction Share	0.103	0.087
Total Employment	0.283	0.095
Working-age Population	0.281	0.097
Share College-educated	0.264	0.147
Share Foreign-born	0.422	0.138
Share Female	-0.061	0.052
Offshorability Index	0.230	0.077
Share Routine Employment	-0.257	-0.206

Notes: This table reports CZ-level correlates of the NCL share aggregated to the CZ level using mortgage issuance weights. NCL shares are lagged by a decade, as in the construction of the shift-share instrument.

Table A.4: Trade with China, Japan and East Asia, for the US and other selected high-income countries

	I. Trade with China		II. Trade with Japan		III. Trade with East Asia		IV. Trade with RoW
	Imports (1)	Exports (2)	Imports (3)	Exports (4)	Imports (5)	Exports (6)	Imports (7)
			Panel A: United States				
1970			25.1	19.5	37.8	29.5	133.0
1980	2.5	8.2	72.0	44.9	139.8	96.6	409.0
1990	23.7	7.0	136.7	67.1	279.0	145.0	472.8
2000	118.8	18.1	173.9	71.7	505.6	213.6	937.4
2007	340.1	61.0	149.4	58.1	701.2	246.4	1311.3
Growth 1970-2007	1,435%	871%	594%	297%	1,854%	834%	985%
			Panel B: Six other developed countries				
1970			4.8	6.8	7.0	10.4	95.4
1980	1.2	2.8	15.7	16.3	28.3	30.4	257.6
1990	3.9	2.4	27.1	22.8	49.2	46.9	334.0
2000	17.1	7.6	23.8	21.9	75.4	63.3	399.8
2007	70.4	29.4	31.5	34.0	172.4	117.2	747.0
Growth 1970-2007	1,805%	1,225 %	655%	499%	2,462%	1,126%	782%

Notes: Values are in billions of 2007 US Dollars. For trade with China, the base year for the growth rate is 1990.

Sources: *UN Comtrade*

Table A.5: First Stage

	I. 1970-2007 stacked differences					
	(1)	(2)	(3)	(4)	(5)	(6)
Δ ETF$_{\text{NON-US}}$	0.984***	0.986***	1.015***	0.912***	1.004***	0.876***
	(0.042)	(0.041)	(0.041)	(0.043)	(0.041)	(0.042)
Manufacturing Share (%)		0.001	0.002	-0.010***	0.005	-0.003
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
College-educated (%)				-0.044***		-0.048***
				(0.010)		(0.010)
Foreign-born (%)				0.010***		0.013**
				(0.004)		(0.006)
Female employment (%)				0.053***		0.056***
				(0.014)		(0.014)
Routine mployment (%)					-0.012	-0.030**
					(0.012)	(0.012)
Offshorability Index					-0.004	-0.009
					(0.004)	(0.007)
Census Division FEs			✓	✓	✓	✓
R^2	0.700	0.700	0.710	0.736	0.709	0.739
Observations	695	695	695	695	695	695

Notes: This Table reports the first-stage regression of exposure-to-flows (ETF) on the instrument constructed using capital flows to other developed nations and 10-year-lagged NCL as the exposure variable. The countries used in the construction of the instrument are the same as in Autor et al. (2013). Robust standard errors clustered at the state level in parentheses. Regressions are weighted by population at the beginning of the period. $^{*}\,p < 0.1$; $^{**}\,p < 0.05$; $^{***}\,p < 0.01$

Sources: ETF is constructed using bank balance sheet data from FDIC Call Reports, mortgage origination is from HMDA and data on capital flows from Broner et al. (2013). Labor market data is from the CBP provided by Eckert et al. (2020a). Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.

Table A.6: Import Competition & Real Exchange Rate Appreciation

LHS: Annual Inflation Rate by Category (in % points)

	I. All Items		II. Tradable		III. Non-Tradable		IV. House Prices	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IPW	0.002	-0.029	-0.007	-0.008	-0.027	-0.058	-0.298***	-0.166**
	(0.051)	(0.051)	(0.040)	(0.029)	(0.084)	(0.093)	(0.077)	(0.069)
Manufacturing Share (%)	-0.024***	-0.002	-0.016***	0.001	-0.024**	-0.004	0.013	0.014
	(0.006)	(0.012)	(0.005)	(0.009)	(0.012)	(0.020)	(0.015)	(0.017)
College-educated (%)		0.039		0.007		0.059		0.102***
		(0.025)		(0.016)		(0.042)		(0.030)
Foreign-born (%)		0.013**		-0.002		0.023***		-0.009
		(0.006)		(0.007)		(0.008)		(0.027)
Female employment (%)		-0.040*		-0.016		-0.059*		-0.037
		(0.022)		(0.016)		(0.036)		(0.030)
Routine Employment (%)		0.022		-0.020		0.047		0.063
		(0.034)		(0.023)		(0.059)		(0.042)
Offshorability Index		-0.017***		-0.008*		-0.023**		-0.022
		(0.006)		(0.005)		(0.010)		(0.048)
Census Division FEs		✓		✓		✓		✓
R^2	0.147	0.254	0.194	0.349	0.080	0.076	0.203	0.415
Observations	70	70	70	70	70	70	694	694

Notes: This table reports the coefficients of regressions of decadal rates of inflation (in % points) on imports-per-worker from China (in $ thousands). The countries used in the construction of the instrument are the same as in Autor et al. (2013). Robust standard errors clustered at the state level in parentheses. Regressions include decade fixed effects and are weighted by population at the beginning of the period..
$^{*}\,p < 0.1$; $^{**}\,p < 0.05$; $^{***}\,p < 0.01$

Sources: Inflation data is obtained from the BLS CPI indices by MSA. House prices are from the FHFA. IPW is constructed using imports data is from *UN Comtrade* and labor market data from the CBP provided by Eckert et al. (2020a) and Eckert et al. (2021). Labor market data is from the CBP provided by Eckert et al. (2020a). Demographic controls are constructed from Census data obtained from IPUMS (Ruggles et al., 2021). Occupational controls are constructed following Autor and Dorn (2013). See Appendix Section A.3 for details.