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ADDRESSING TAX COMPLIANCE ISSUES FOR LOAN-BASED PAYMENT TYPES: DEVELOPMENT OF THE TAX BUFFER MECHANISM AND ITS USE IN THE FINTECH INDUSTRY

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Abstract
In the modern world of the fintech industry, tax changes are one of the key problems, especially with fixed loans. This study examines the Tax Buffer mechanism, designed to effectively manage tax obligations that vary depending on the jurisdiction and stages of delivery of goods. The main task of the mechanism is to automatically recalculate taxes to minimize the risk of errors and reduce the burden on the accounting and legal departments of the company. The implementation of this solution allows you to reduce the number of manual operations, reduce transaction costs and improve the customer experience by eliminating the need to notify users of every change in the amount of taxes. The results of the implementation of the mechanism have shown its high efficiency: a significant reduction in the number of errors and financial disputes, as well as an increase in operational efficiency. The Tax Buffer mechanism is an important innovation that helps to increase the resilience of fintech companies to changes in tax legislation.

Keywords Fintech, tax changes, Tax Buffer, tax liabilities, automation of tax calculations, accounting, credit transactions, operational efficiency, minimization of legal risks, tax legislation.

INTRODUCTION

The modern fintech industry is rapidly evolving, facing numerous challenges related to tax regulation and shifting economic conditions. One of the most complex tasks is managing tax obligations in the context of fixed loan amounts, particularly in situations where tax rates fluctuate across different jurisdictions. This creates significant difficulties for both financial institutions and their clients, necessitating innovative solutions that can ensure flexibility and accuracy in tax calculations.

The relevance of this topic is driven by the growing role of fintech companies in the global economy and the need for effective tax risk management. In this context, the development of mechanisms like the Tax Buffer becomes a key element in ensuring the stability and reliability of financial operations.

The purpose of this paper is to explore the development and application of the Tax Buffer mechanism in the fintech industry and to analyze its impact on optimizing tax obligations and minimizing risks associated with changes in tax legislation.

1. Operation Principle and Structure of the Tax Buffer Mechanism

To begin the discussion on this topic, it is important to first explore the theoretical aspects related to the activities of fintech companies. The term "financial technology," or "fintech," refers to the use of modern technologies to optimize financial operations and improve the accessibility of financial services. Fintech products and solutions are aimed at simplifying financial management for both businesses and individuals, made possible by integrating specialized software and algorithms that operate on various devices, including computers and mobile phones.

One of the key characteristics of most fintech companies is their drive to compete with traditional financial institutions by offering more flexible and accessible services. These companies typically target audiences underserved by conventional financial organizations. For example, Affirm provides quick loans for online purchases, eliminating the need for customers to use credit cards. Although interest rates on such loans can be high, the company offers credit options to people with limited credit history.

Other examples of fintech include companies like Better Mortgage, which offers online mortgage services, and Tala, which provides microloans in developing countries based on data analysis from users' mobile devices. These companies aim to offer more convenient and accessible financial products compared to traditional banking solutions. The fintech sector plays a significant role in accelerating the digitization of financial services and transforming traditional approaches to managing financial operations [1].

Currently, there are significant challenges in tax legislation, driven by the varying approaches states take in determining sales tax amounts. Taxation differs not only in rates but also in the rules of their application, which can significantly affect the final prices of goods and services depending on the state where the order is processed and delivered. As a result, organizations are forced to recalculate costs because goods may be ordered in one state, where the tax approach differs from another. For example, if a customer places an order in one state but later changes the delivery address to a state with a different tax rate, the total order amount must be recalculated. In most cases, this does not pose a problem, as platforms can automatically update the invoice and provide the customer with the correct amount. However, the complexity arises when it comes to loans [2].

The situation with taxes becomes more complicated when a loan agreement is involved. Upon signing a loan agreement, the payment amounts are fixed and cannot be altered. However, if the product is delivered to a different state with a different sales tax rate, a legal and financial issue arises. The tax amount should, in theory, change, requiring a revision of the agreement terms, but since they are already established, this is not possible.

Such nuances in state-specific legislation become a critical problem for fintech companies that offer loans on goods or services, as well as for e-commerce platforms operating across multiple states. Companies are forced to adapt their tax and financial strategies to account for potential sales tax changes when delivery locations shift [3]. For a clearer understanding of this issue, Figure 1 below presents a map illustrating differences in sales tax rates by state [4].

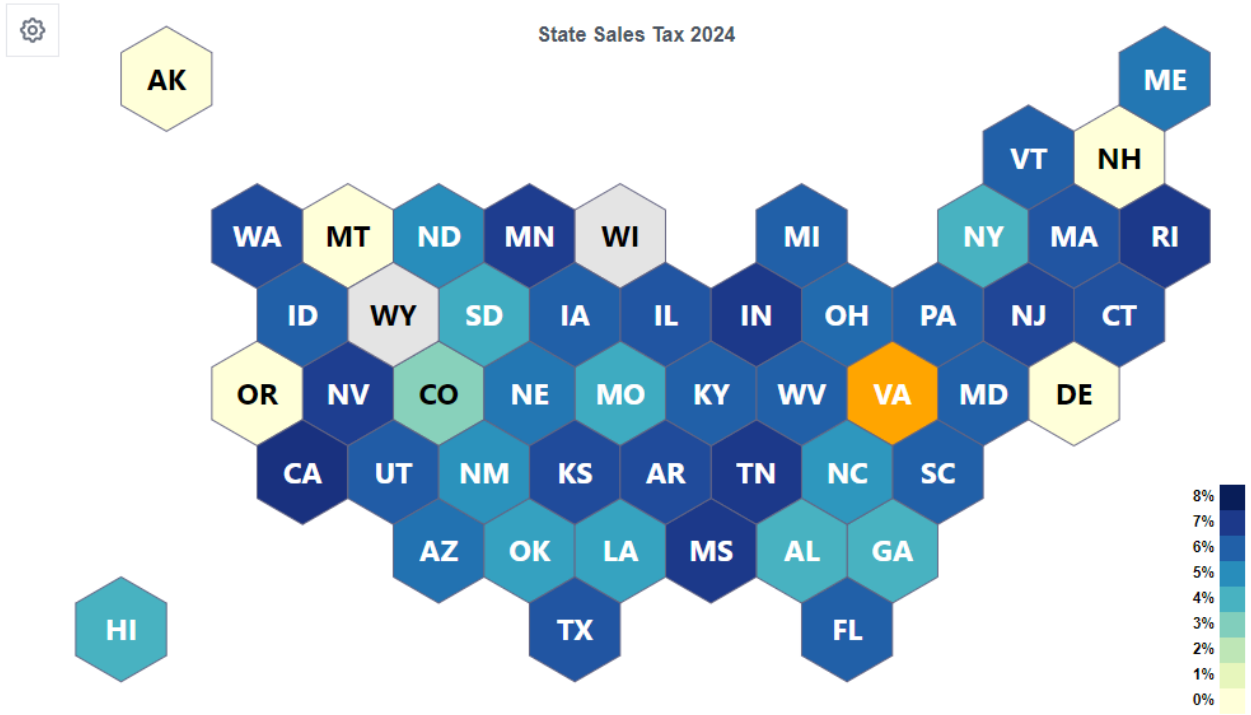

Fig.1. Sales Tax by State 2024.

Providing a map showing varying tax rates is crucial, as it highlights these differences and emphasizes that companies need to rethink their loan policies and account for this tax nuance to minimize risks. The following recommendations can help companies adapt to these conditions:

1. Implementing flexible contract terms. Companies can include special clauses in loan agreements that allow for recalculation in the event of tax rate changes. This approach involves creating flexible contracts that consider possible changes in tax legislation when the customer's location shifts.

2. Developing integrated tax accounting systems. Investing in automated tax management systems that track regional sales tax rate changes will help companies automatically recalculate amounts before agreements are signed. These systems should be integrated with product and service pricing platforms to ensure that the correct tax rate is applied based on the customer's location before contract signing.

3. Employee training and preparation. For the successful implementation of new tax strategies, it is important to train finance and legal department staff. This will allow them to better navigate regional tax differences and respond promptly to tax rate changes. Companies should also continuously upgrade employee skills to ensure timely adaptation to new tax conditions.

4. Incorporating tax risks into loan assessment models. Companies should revise their risk assessment methods for loan offerings, including tax risks. Developing detailed risk management models that account for changes in tax burdens depending on the region will help minimize financial losses and adjust interest rates accordingly.

5. Using technological solutions for tax monitoring. The use of modern technologies, such as blockchain and artificial intelligence, to monitor tax changes in real-time can become an important tool for mitigating tax risks. These technologies can automatically alert companies to tax rate changes and provide opportunities for timely responses [5].

Implementing these solutions will help minimize the negative impact of tax rate differences, reduce business risks, and improve conditions for customers.

2. Operation Principle of the Tax Buffer

During the implementation of a project related to online orders on the Amazon platform, it was discovered that changing the customer's address or the fulfillment center after an order is placed could result in tax adjustments, which might increase or decrease depending on the circumstances. This is because taxation depends on where the order is actually processed. During the development of payment methods, a credit mechanism was proposed, which involves fixing the credit amount at the time the order is created. However, as the order is fulfilled, the credit may be reduced but not increased due to existing legal restrictions [7].

At a later stage of the project, it was revealed that other payment methods, such as credit and debit cards, have a different structure. They allow for an increase in the payment amount after the order is placed, followed by a downward adjustment. To ensure the timely execution of the project, a temporary solution was proposed. Initially, the maximum possible tax rate for the state was set, and then, during order processing, the tax was recalculated, and the credit amount was reduced using a special service call designed to adjust the credit limit. This service call, named VoidLoanAmount, was developed to reduce the credit amount in the case of partial order cancellation.

During test checks conducted among employees and their families, it was found that an excessive number of credit cancellations could lead to legal issues. Nearly 90% of the orders involved adjustments to the credit amounts, raising concerns since such a high figure could be interpreted as suspicious activity by the fintech partner, Affirm. This issue became a significant obstacle to the further advancement of the project.

3. Technical Aspects of the Tax Operations Buffer

Instead of presenting customers with inflated contribution amounts followed by a reduction in credit obligations, Amazon's existing accounting systems were utilized to automatically perform the necessary calculations. This approach helped avoid excessive notifications to customers about intermediate changes. Amazon's internal accounting requires that all financial operations related to order fulfillment be fully aligned with the inflow and outflow of funds. At each stage of order fulfillment, data on revenue and taxes for each individual shipment is recorded in the accounting system. For example, if an order consists of multiple shipments, the information for each, including tax charges, is entered into the system as each shipment is ready for dispatch.

Once all shipments are delivered, the total amount is finalized in the accounting system, with the final total matching the sum of all shipments. The system also accounts for possible changes in tax liabilities: the difference between the maximum and minimum tax rates for the order is automatically included in the calculation.

With each shipment, the API systems update the accounting data to reflect any changes in the final amount, as tax obligations may be adjusted at each stage of delivery. If necessary, the system makes an additional request to adjust the final amount in the

cash register system. To ensure accuracy, both the initial order price and the current cost of all delivered shipments are tracked. After the completion of all deliveries, these values are used to calculate the tax buffer.

To implement this mechanism, a new table was created in the AWS DynamoDB database. Additional changes were made to the Java code, allowing the system to update the table with each new shipment. This solution enabled the project to be completed on time, generating $1.7 billion in revenue in its first year of operation. The payment system was integrated into Amazon's checkout pages, resulting in a sharp reduction of invalid loan requests by 95%. This figure had a significant impact on the company's legal obligations to Affirm.

Below, Table 1 describes the issues addressed by the Tax Buffer mechanism.

Table 1. Problems solved by the Tax Buffer mechanism

Problem	Description	Solution through the Tax Buffer mechanism
Need to adjust tax obligations due to tax changes	During product shipments, tax rates may change depending on the jurisdiction, requiring recalculation of tax obligations for each shipment.	The Tax Buffer mechanism automatically recalculates tax obligations when tax rates change, reducing the risk of incorrect calculations and accounting errors.
Reconciliation of cash inflows and outflows	Ensuring an exact match between cash inflows and outflows, which becomes more complex with multiple shipments and changes in amounts.	The Tax Buffer ensures automatic updates to the accounting ledger at every stage of the order lifecycle, guaranteeing reconciliation of amounts across all shipment levels.
Customer notifications about intermediate changes in amounts	When tax amounts or costs change, there is a need to notify customers, which adds complexity and lowers user satisfaction.	The mechanism eliminates the need to notify customers of every change by performing all calculations in the background without customer involvement.
Delays in accounting for shipment changes	The need to update accounting data after each shipment and tax amount change. Failure to synchronize can lead to accounting discrepancies.	The mechanism ensures automatic data updates using APIs at each stage of shipment, enabling prompt adjustments to accounting records.
Risk of legal consequences due to incorrect accounting	Errors in tax calculations or credit operations can result in legal consequences and financial risks for the company.	Automation through the Tax Buffer reduces the number of errors in tax and credit calculations, minimizing legal and financial risks.

High number of invalid loan requests	Frequent errors in credit and tax accounting lead to increased inquiries and audits, putting additional strain on systems and legal departments.	The implementation of the Tax Buffer reduced the number of invalid loan requests by 95%, significantly easing the load and lowering the risk of legal disputes.

4. Practical Experience with the Tax Buffer Method

As part of the Affirm project on the Amazon platform, the goal was set to create a new payment solution for customers in the U.S. and Canada. The objective was to develop a system that would allow customers to use credit to pay for products priced over $50 on Amazon.com. In Canada, the credit process also became available for local users making purchases exceeding the same threshold.

Initially, Amazon had no such solutions in place, which meant that implementing this system required a complete overhaul of the interaction mechanism with the fintech company Affirm. Additionally, full integration with the existing delivery and audit processes was necessary to support the new payment method. Significant changes were made to the payment processing infrastructure, and new services were created to handle every stage of the payment cycle.

The project was successfully implemented in 2021, and its completion contributed to a substantial increase in the company's revenue. In the first year alone, the system generated significant profits. Moreover, the launch of the new system in Canada became part of Amazon's global strategy for expanding payment solutions, helping the company adapt to the global "Buy Now, Pay Later" trend.

However, the implementation process was not without challenges. One of the key issues was the lack of a mechanism for processing credit payments on the Amazon platform, which created numerous uncertainties and required the development of unique solutions. There were also differences in tax regulations between the U.S. and Canada, making it difficult to implement a unified solution for both countries. To overcome these obstacles, an innovative scheme was developed, allowing the system to be adapted to the specific features of both markets while meeting launch deadlines.

The launch of the new payment method not only enhanced the user experience but also laid the foundation for further development of financial services on the Amazon platform, strengthening its market position. Below, Table 2 outlines the advantages of this method.

Table 2. Advantages of the Tax Buffer method

Advantage	Description
Automation of tax calculations	The Tax Buffer mechanism automatically recalculates tax obligations when tax rates change, reducing human errors and increasing the accuracy of calculations.
Optimization of accounting	The process of maintaining records is simplified by automatically

	updating data at each stage of order fulfillment, improving the accuracy of tracking inflows and outflows.
Reduction in operational costs	Automating calculations and data synchronization reduces the amount of manual work, decreases the need for human resources, and lowers associated costs.
Elimination of the need to notify customers of intermediate changes	Customers no longer need to be notified of every change in tax rates or order costs, making interactions with the system more transparent and improving the user experience.
Minimization of legal risks	Reducing errors in tax calculations and credit operations lowers the likelihood of legal disputes and claims from customers or regulators.
Increased efficiency of API interactions	The Tax Buffer mechanism reduces the number of API calls related to invalid loans, improving overall system performance and reducing server load.
Consistent compliance with tax regulations	The mechanism ensures that all tax obligations are accurately calculated in accordance with changes in tax legislation, helping avoid fines and penalties from tax authorities.
Acceleration of financial operations	Fast data processing and synchronization at each shipment stage significantly reduce the time required to complete financial transactions, enhancing the company's overall efficiency.
Improved customer experience	Simplifying and speeding up payment and tax calculation processes enhances customer interactions, leading to higher satisfaction and loyalty.

CONCLUSION

As a result of the analysis, the Tax Buffer mechanism was examined, demonstrating significant potential in addressing the issue of tax changes in the fintech industry. Its successful implementation not only automated tax calculation processes but also reduced operational costs, minimized legal risks, and improved overall customer interaction efficiency. The future potential of the Tax Buffer mechanism lies in its adaptation to other regions and types of financial operations, as well as in the possible improvement of algorithms in response to constantly changing tax regulations. This mechanism could serve as a foundation for further innovations in the fintech sector, promoting sustainable growth and development in the long term.

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