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## Is openness inflationary? Policy commitment and imperfect competition

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## ABSTRACT

This paper proposes a channel through which increased openness to international trade can increase a country's long-run incentive to create inflation. The theoretical justification for this channel is the well known "beggar thy neighbor" incentive, and its dominance relies on a monetary authority's ability to commit to policy as well as the asymmetric effects of the underlying frictions in the model across domestic and foreign households. Consistent with previous work, the model predicts that the inflationary bias of openness is dampened by the degree of imperfect competition within a country.

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## 1. Introduction

Most of the empirical literature measuring the relationship between openness and inflation has found a negative relationship between the two or no relationship at all. These empirical studies use as their foundation a theory based on time-consistent discretionary monetary policy. Consistent with those theoretical assumptions, many of the empirical studies sample a period before the late 1980s in which discretionary monetary policy and lack of adherence to monetary rules was more common than today. Other empirical studies use a broad sample of countries which includes less developed countries that are more characterized by discretion or a lack of commitment.

This study proposes a long-run analysis of a theoretical channel through which increased openness to international trade can have the opposite effect and can increase a country's incentive to create inflation. The theoretical justification for this channel is the well known "beggar thy neighbor" incentive, and its dominance relies on a monetary authority's long-run ability to commit to policy, the degree of imperfect competition within the country, and the asymmetric effects of the underlying frictions in the model across domestic and foreign households.<sup>1</sup>

The stylized theoretical environment is a two-country perfect foresight overlapping generations model in which monetary authorities precommit to their respective money growth rates in order to maximize the lifetime utility of the representative household. Consumers have preferences for both domestic and foreign goods, producers have some degree of market

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E-mail address: [revans@byu.edu](mailto:revans@byu.edu)<sup>1</sup> This "beggar thy neighbor" spillover from monetary policy has been studied in the trade literature in terms of fiscal policy as well. See Corsetti and Pesenti (2001) for a monetary example, and see Eaton and Grossman (1986) and Canzoneri (1989) for a fiscal policy example.

power, and monetary authorities have a degree of influence over the terms of trade because transactions must occur in the currency of the producer.

Three recent papers provide the foundation for the theoretical approach taken here. In order to answer the question of whether monetary cooperation is optimal among countries, [Cooley et al. \(2003\)](#) and [Cooper and Kempf \(2003\)](#) propose similar models in which the optimal money growth rate in the presence of inelastic demand for foreign goods is inflationary. However, both papers characterize firms as being perfectly competitive and neither paper characterizes the degree of openness of each country. [Arseneau \(2007\)](#) adds imperfectly competitive firms to this type of framework and shows that the inflationary bias of non-cooperative monetary policy in an open economy is dampened by the degree of imperfect competition. I use the two-country overlapping generations with commitment approach of [Cooper and Kempf \(2003\)](#) and include imperfect competition as in [Arseneau \(2007\)](#). For an intuitive reason to be explained more in Section 2, I then parameterize the degree of openness of a country in the household preferences of that country.

The positive effect of openness on inflation described in this paper runs counter to much of the previous work addressing this question. The theoretical paper that is the foundation for most research on openness and inflation is [Rogoff \(1985\)](#). His approach is to extend the [Barro and Gordon \(1983\)](#) time-consistent policy framework to a two-country Mundell–Fleming model. As in Barro and Gordon, a labor market friction causes the optimal time-consistent policy of the monetary authority to increase inflation in order to raise the level of employment. However, in Rogoff's international model, the increased inflation has an extra cost in that optimal employment is a function of the real exchange rate and the real exchange rate depreciates with higher inflation. Thus the optimal time-consistent inflation rate chosen by a monetary authority is lower as the deteriorating effect on the exchange rate increases. More openness leads to a lower equilibrium inflation rate in this time-consistent environment.

Two main differences explain why the theory of this paper predicts that increased openness will have an inflationary effect on optimal monetary policy while [Rogoff \(1985\)](#) predicts a deflationary effect: asymmetric effects of the underlying frictions and the focus on optimal monetary policy with commitment. The first difference is that underlying frictions of Rogoff's model have symmetric costs and benefits to both domestic and foreign consumers, while the underlying frictions of this paper have asymmetric effects. The underlying friction in Rogoff's Mundell–Fleming framework is a labor market friction in which the privately supplied labor is exogenously less than the socially optimal level, based on a wage contracting model in which wages are negotiated at the end of the previous period, fixed for one period, partially indexed to consumer prices (which include foreign goods), and labor is supplied at whatever level is demanded at the contracted wage. As in [Barro and Gordon \(1983\)](#), Rogoff's monetary authority has the incentive to create surprise inflation to temporarily increase labor supply closer to the socially efficient level. Because this increases output (without any disutility of work costs) and output is a tradable good, the benefits of this policy are symmetric to both domestic and foreign consumers. Also, because of the demand specification for both domestic and foreign goods, the resulting inflation tax from the depreciation of the real exchange rate is symmetric across consumers.<sup>2</sup>

This paper follows the convention of the New Open Economy Macroeconomic (NOEM) literature and other recent papers in which the benefit of domestic monetary inflation accrues only to the domestic country while the costs of the inflation are shared equally across domestic and foreign consumers—the foundation of the beggar-thy-neighbor effect. In this paper's model, the existence of monopolistic competition in both countries lowers output below its socially efficient level. Instead of a pricing friction, this paper includes a money demand distortion in the form of a particular form of cash-in-advance constraint.<sup>3</sup> Inflationary monetary intervention causes the return on savings to rise above the return on cash balances, thereby causing households to substitute away from labor into leisure. Because labor and leisure are non-tradable goods, this leisure subsidy is felt only by domestic households. However, increased price of domestic goods consumption is shared equally across domestic and foreign households. In this framework, the more open is an economy, the larger portion of the inflation costs can be shared abroad given a particular non-tradable leisure subsidy of inflation. Thus openness can be inflationary.

The second main difference between [Rogoff \(1985\)](#) and this paper that leads to a more inflationary bias of monetary policy is this paper's focus on long-run monetary policy to which a central bank can commit rather than discretionary policy. [Arseneau \(2012\)](#) shows in a New Keynesian Open Economy Model that discretionary monetary authorities have the incentive to create deflationary surprises if the private sector has expectations that are sufficiently low. That is, discretion can lead to a deflationary bias in an open economy setting.<sup>4</sup> [Terra \(1998\)](#) argues empirically that less developed countries suffer more from the time inconsistency problem in monetary policy than do developed countries, and she shows empirically that the negative relationship between openness and inflation is found mostly among those less developed and “severely indebted” countries. [Cooley et al. \(2003\)](#) show theoretically that time-consistent discretionary policy is more inflationary than commitment

<sup>2</sup> [Rogoff \(1985, p. 213\)](#) assumes that consumers hold only domestic currency but hold both foreign and domestic bonds which are perfect substitutes and are characterized by uncovered interest rate parity. This assumption abstracts from macroeconomic effects of sterilized intervention.

<sup>3</sup> See [Appendix B](#) for a more detailed discussion of the effects of the cash-in-advance constraint.

<sup>4</sup> [Arseneau \(2012\)](#) documents that “surprisingly little work has been done in the direction of providing a complete characterization of [equilibria] under discretion in an open economy.” His paper uses the same model as [Arseneau \(2007\)](#). [Arseneau \(2012\)](#) shows that a multiplicity of equilibria can arise in this open economy environment—both inflationary and deflationary—but that a deflationary global Friedman rule equilibrium results if private inflation expectations are below a threshold. His two papers together provide a comparison of the effects of discretion versus commitment in a NOEM framework.

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